HSEE REPORT 2019 WITH INTEGRATED ENVIRONMENTAL STATEMENT

Environmental Protection. Climate Protection. Health Protection. Employee Protection. CSR.

voestalpine Railway Systems GmbH
voestalpine Turnout Technology Zeltweg GmbH
voestalpine Signaling Austria GmbH
www.voestalpine.com/railway-systems

The HSEE report (Health, Safety, Environment and Energy) of the voestalpine location in Zeltweg also incorporates integrated aspects, projects and data relating to employee protection (health and safety) as well as energy management and corporate social responsibility.

In addition, company HSEE reports can also be studied on our homepage:
http://www.voestalpine.com/railway-systems

In April 2020,
» voestalpine VAE GmbH changed to voestalpine Railway Systems GmbH,
» voestalpine Weichensysteme GmbH was renamed to voestalpine Turnout Technology Zeltweg GmbH,
» voestalpine SIGNALING Zeltweg GmbH was renamed to voestalpine Signaling Austria GmbH.

These changes have already been taken into account on the cover and in the certificates, but the former names can still be found in the following text, which will be updated accordingly with the next HSEE report.
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1. INTRODUCTION OF THE BOARD OF DIRECTORS

Since the introduction in 1996 of a management system in line with the EMAS Directive, it is with pleasure and pride that we have been able to point to our successes in both the economic and HSEE management (Health, Safety, Environment & Energy) fields during the intervening period.

Beginning with one company at the time of the initial certification, three companies have developed at the voestalpine premises in Zeltweg, which participate jointly in EMAS as the “Zeltweg location”.

The early 1980s already witnessed the early consideration of aspects of HSEE, as indicated by the fact that we were one of the first companies to install an energy control system. This took place in 1989 and reduced our energy consumption by around 40%. In the years following the commencement of EMAS participation and the related development of a process-oriented management system, which takes into account the aspects of quality, health, safety and the environment in an integrative manner, and the subsequent systematisation of and focus on preventive mechanisms, we have been able to establish a series of milestones. Worthy of special mention in this connection are the 80-90% reductions in dust impact in the halls owing to a comprehensive new dust capture and separation concept, which minimised fine dust emissions. Moreover, to a certain degree, the extensive energy-autonomous positioning of the company with a CO₂-neutral location balance represents the crowning glory. This status has resulted from a wealth of measures aimed at increased efficiency and prevention with regard to energy use, as well as the successful start-up of biomass-fired district heating by Bioenergie GmbH and the PenzVAEE GmbH small-scale hydropower plant on the River Pöls, which flows near the plant. As far as the issue of energy conservation is concerned, the extensive thermal renovation of the production buildings in recent years confronted our production, logistics and maintenance teams with major challenges, as in spite of the building work, delivery dates had to be met. Nonetheless, with savings of around 1,500 MWh of energy annually, the success is more than worthy of note. Reductions in the accident rate and lost time/costs are naturally of special importance.

Of the projects implemented in 2019, we are most proud of the Apprentice Initiative. In order to provide our youngsters with the best possible communication of current and new technologies, with their active support a new training area, called the Future Zone, has been created in production. During the past three years, apprentice numbers have been more than doubled and on 1 September 2019 totalled 52.

We are also equally proud of the fact that voestalpine Weichensysteme won the “Efficient Factory” category of the “Fabrik 2018” competition and was ranked third overall.

However, it should also be stressed that for us the significance of the various aspects of HSEE does not merely lie in production, but in line with the interests of our customers, also in product design, which begins with R&D work and extends to the offer and design of our services. As a consequence, our range of hydraulic setting and electronic surveillance systems in particular offers customers highly individual solutions with regard to safety and environmental protection, and above all, economies relating to life cycle costs. The innovative products of voestalpine SIGNALING GmbH, which constitute a rapidly growing segment and at the Zeltweg location alone have created over 100 jobs within just ten years, are in turn produced using buildings and plants that have been optimised in line with the technical aspects of HSEE management.

For its part, as a holding company with a current total of 44 production locations on every continent, voestalpine VAE GmbH focuses on the HSEE aspects of the information, motivation, coordination and control of its subsidiaries. The definition of global HSEE minimum standards for the subsidiaries, as well as the completion of conscientious audits within the course of acquisition projects, have made a major contribution to the prevention of material risks for the companies and effects on employees and/or the environment. Along with resource savings, the costs thus avoided make a significant and sustained contribution to economic viability, competitiveness and the securing of employment. Therefore, we are particularly proud of the large number of HSEE measures introduced by our subsidiaries around the world. Examples of these activities are included in an appropriate section of this Environmental Statement.

Thanks to the endeavours and achievements of all our competent and committed employees, we have also been able to receive a completely unexpected number of awards at provincial, federal and European level.

We regard the retention of the high standard attained after 20 years of systematic HSEE activities as both an obligation and a responsibility. Undoubtedly, projects will repeatedly arise that will serve to improve HSEE performance at the Zeltweg location still further. However, the bulk of
the personnel and financial resources available will be required for the maintenance of the status quo, whether this be through the servicing, auditing or repair of plant of HSEE relevance, reinvestments, or the repetition of training and information for the consolidation of correct sequences and conduct, and the creation of appropriate HSEE awareness. This is all the more important, as in future these efforts will be directed towards areas that to date have already been evaluated as being of priority and relevance. Under no circumstances do we wish to implement “upgrading measures” in areas where the ratio between expense and effect is simply not given, and to the extent that our possibilities allow, we will take a clear stand against such demands should they be proposed by legislative bodies. Over a long period, we have proven the compatibility of HSEE success with economic viability and this must remain the paramount objective of all those involved.

The following is a compilation of what we regard as the most important information that has been collated in the Environmental Statement designed by our personnel. In closing, should you have any questions or suggestions do not hesitate to contact us.

voestalpine VAE GmbH

f.l. Wolfgang Schriefl (COO), Dieter Fritz (CEO), Jochen Holzfeind (CTO), Werner Saringer (CFO)

voestalpine Weichensysteme GmbH

f.l. Thomas Stocker (CFO), Helmut Kreiter (CEO), Heinz Schatz (COO)

voestalpine SIGNALING Zeltweg GmbH

f.l. Markus Maier (CCO), Josef Winter (CEO), Holger Pütz (CTO), Johannes Kreinbuecher (COO)
2. THE MANAGERIAL POLICY FOR HEALTH, WORK SAFETY, ENVIRONMENTAL PROTECTION, ENERGY AND CSR AT THE ZELTWEG LOCATION

THE SECURING OF THE NATURAL BASES FOR YPROTECTION REPRESENT PRIMARY CORPORATE GOALS FOR VOESTALPINE WEICHENSYSTEME GMBH, VOESTALPINE SIGNALING ZELTWEG GMBH AND VOESTALPINE VAE GMBH. THESE ISSUES RELATE NOT ONLY TO TECHNOLOGICAL LEADERSHIP, BUT ALSO A ROLE AS A FORERUNNER WITH REGARD TO ECOLOGICAL AND SAFETY MATTERS IN THE COMPONENT AREA OF THE ENVIRONMENT-FRIENDLY RAILWAY SECTOR AND THE ACCEPTANCE OF SOCIAL CORPORATE RESPONSIBILITY.
Consequently, we are committed to both comprehensive quality, safety, environmental and energy management subject to compliance with statutory requirements and the objective of continuous improvement. Therefore, the fundamental, integrated principles of our corporate activities in the areas of health, work safety, environment and energy (HSEE-policy) comprise the following:

- An adherence to all relevant laws and stipulations concerning environmental and employee protection and a declared commitment to the principles of sustainable development and social responsibility.
- On the basis of the UN Charter and the European Convention On Human Rights, human rights are seen as a fundamental value that is to be respected and observed by the entire workforce. Our corporate culture recognises and greets the fact that every person is unique and valuable and is to be esteemed for his or her individual abilities. Therefore, in our company we do not tolerate any form of discrimination or exploitation and attach particular importance to the safeguarding of the rights of children and young people. In this connection, we would also refer to the voestalpine AG's code of conduct.
- A commitment to the continuous improvement of operational environmental protection, work safety and energy efficiency with the aim of eradicating environmental impact and accident and health hazards to an extent that is economically viable and possible using the best available technology.
- Involvement of our employees and staff representatives in planning and implementing HSEE activities, as well as promoting a sense of responsibility regarding environmental protection, employee protection and energy consumption at all levels.
- Efforts aimed at achieving the highest quality, safety and reliability, as well as user- and environment-friendliness during product development, whereby reduced maintenance, the protective use of raw materials and resources in production, and the minimisation of environmental impact during transport, consumption and disposal are of special relevance.
- The avoidance of waste and where this is impossible, its environmentally compatible return to the material cycle.
- The employment of active risk management in which materials and processes are logged and evaluated according to specific company requirements, in order to facilitate the advance planning of essential, operational safety measures.
- The on-going consideration of health, work safety, environmental and energy issues during the planning and operation of working facilities, production equipment and infrastructure.
- A focus on preventive measures for the retention of the health of our workforce, as well as the avoidance of accidents and their related after-effects on both people and the environment.
- The involvement of our suppliers, waste disposal companies and external enterprises in the implementation of both our HSEE guidelines and mutual dialogue aimed at further improvements in operational environmental protection and work safety as well as energy efficiency.
- Candid and objective communications with our customers, the general public and the responsible authorities, as well as a request for suggestions and criticism in order to jointly reduce environmental impact and risks.
- Active strategic and operative energy management targeted on the greatest possible energy self-sufficiency at the Zeltweg location on the basis of renewable and sustainable energy sources, as well as maximum efficiency with regard to energy use during production and the life cycle of our products (not only taking into consideration the energy consumption of the products themselves, but also characteristics of relevance to energy consumption during railway operations).
- For voestalpine VAE GmbH as a holding company, it is a matter of great importance that its subsidiaries improve their HSEE performance continually and live up to their individual responsibilities. Accordingly, without releasing them from their obligations, voestalpine VAE GmbH fulfils the following functions for its subsidiaries:
  - The provision of information and motivation concerning actual HSEE-topics and developments
  - Advice regarding technical questions
  - Coordination, especially in connection with projects involving various locations or inter-group activities
  - The design of due-diligence audits in the case of acquisitions or enlargements of existing locations
  - Controls with the help of the supervisory board
- In those areas deemed as being of relevance, in line with group risk management, the subsidiaries are allotted obligatory, minimum requirements concerning employee and operational environmental protection, which may also exceed the respective national stipulations. The subsidiaries then have to provide periodic progress reports at supervisory board meetings.
- Furthermore, useful synergy effects result from these control and advisory functions, which allow the appropriate use and promotion of an exchange of experience between locations with the intention that sustainable ideas and exemplary solutions be communicated within the VAE Group on an inter-company and cross-border basis.
3. THE LOCATION, ITS COMPANIES AND THE GROUP STRUCTURE

The Zeltweg location has a more than 160-year history of turnout production and today is home to the headquarters of Voestalpine VAE GmbH, Voestalpine Weichensysteme GmbH and Voestalpine Signaling Zeltweg GmbH.

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<th>Europe / Middle East</th>
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3.1 VOESTALPINE VAE GMBH

voestalpine VAE GmbH, or VAE for short, is a **globally active group and the market leader** in the field of turnouts for railways (high-speed, heavy axle and combination traffic), metro and tram systems. VAE is a complete turnout systems supplier offering everything from the turnout to the related surveillance, safety and drive units, as well as their maintenance and additional services.

Since 1990, VAE has implemented a highly successful internationalisation strategy and in the meantime has **44 production centres on six continents** (Europe, North and South America, Australia, Africa and Asia) and a workforce of around 5,600.

Since 2003, the voestalpine Metals Engineering Division of the listed voestalpine AG has been the 100% owner of VAE, allowing the opening up of new markets and the provision of optimum customer support.

The various company law changes implemented over the course of time have had no influence on the elements, procedures and content of the existing HSEE management system at the Zeltweg location, or on VAE’s plants and buildings.

VAE disposes over leased office accommodation at the Zeltweg location and in Vienna, primarily for the Sales and Legal Departments, the personnel of which are fully integrated into HSEE management system procedures.

As from 1 April 2018, the “Rails” business area and VAE’s “Turnout Systems” and SIGNALING/Signaling Technology” business areas have operated jointly in the market under the **“Railway Systems”** brand name.

This organisational development within the Metal Engineering Division has facilitated the even better use of internal synergies and optimised customer support as a full-liner.

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**voestalpine VAE GmbH**

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<th>Region</th>
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<td>Africa</td>
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<td>Australia/Asia</td>
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<td>voestalpine VAE Railway Systems Pty Ltd.</td>
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<td>CNTT Chinese New Turnout Technologies Co., Ltd.</td>
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<td>voestalpine VAE Railway Systems (Thailand) Co., Ltd.</td>
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<td>Mangan Competence Center</td>
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<td>Regional Sales Offices</td>
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<td>voestalpine VAE Italia S.r.l.</td>
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**GROUP COMPANIES**
3.2 VOESTALPINE WEICHENSYSTEME GMBH

At the voestalpine Weichensysteme GmbH location in Zeltweg, which is the voestalpine VAE GmbH parent plant, a workforce of around 580 is employed in production, logistics, R&D, engineering and administration.

The following companies have been allocated to voestalpine Weichensysteme GmbH within the corporate structure:

» **Weichenwerk Wörth GmbH (WWG)**, which was founded as a joint venture and is located near the Lower Austrian capital of St. Pölten, employs a workforce of approximately 130. The Wörth location produces turnouts and other permanent way items, recycles old but usable turnouts, and provides services in the form of logistics, turnout servicing and line layouting.

» **TSF-A GmbH**, which is situated near Wiener Neustadt in Lower Austria, is also operated as a joint venture. The company’s production programme consists of concrete turnout sleepers for railways and metro systems.

The aim of these joint ventures is to use the respective specialist competence of the partners for the further development of turnouts as a complete product.

Environmental consciousness and sustainability play a special role at voestalpine Weichensysteme GmbH because the company focus lies on **constant technological innovation**. In 2011, a positive, overall CO₂ balance was achieved at the Zeltweg location for the first time, following the putting into operation of a new hydropower plant for own electricity generation with PenzVAEE GmbH at the end of 2009.
As early as the 1990s, the location’s own R&D department was already working intensively on setting systems for standard and high-speed turnouts. A special emphasis was placed on completely new hydraulic solutions, which as compared to traditional mechanical technology would offer numerous advantages, as well as electronic surveillance and safety systems, and diagnosis technologies for fixed installations.

Finally, in 2002 all the activities in this connection were merged and a new “HYTRONICS” business unit established with the resultant products, which were ready for serial production. The new unit was provided with its own buildings and equipment, and subsequently began the industrial production of HYTRONICS/SIGNALING items. In the meantime, voestalpine SIGNALING Zeltweg employs a workforce of about 120.

In September 2014, the firm was renamed voestalpine SIGNALING Zeltweg GmbH with the following assigned companies:

» voestalpine SIGNALING Sainerholz GmbH, which above all is concerned with the development and manufacture of turnout setting systems and controls in the local transport sector, and voestalpine SIGNALING Siershahn GmbH, which specialises in electronic diagnosis systems for the monitoring of rolling stock (trains). All in all, these two German participations employ a workforce of around 350.

» voestalpine SIGNALING Sopot Sp.zo.o in Poland, which has roughly 100 employees and focuses on the development and sale of axle counters, control and diagnosis systems.

» voestalpine SIGNALING Fareham Ltd in the UK, which has about 25 employees and develops diagnosis solutions for railway infrastructure.

» voestalpine SIGNALING USA Inc., which has some 15 employees, has been part of the group since the beginning of 2017 and with acoustic bearing monitoring has expanded the product portfolio in the diagnosis area.
4. THE ZELTWEG LOCATION, ITS PRODUCTS AND PROCESSES

4.1 LOCATION DESCRIPTION AND HISTORY

Situated in the district of Murtal some 190km from Vienna, the voestalpine location in Zeltweg can look back on a long industrial history. The “Hugo Hütte” founded by Hugo Graf Henckel von Donnersmark in 1851 and a subsequent, systematic and innovative involvement with the topic of the railways has culminated in the voestalpine Weichensysteme GmbH, voestalpine SIGNALING Zeltweg GmbH and voestalpine VAE GmbH of today.
History - 160 years of competence and experience

1851: Foundation of the „Hugo Hütte“ by Hugo Graf Henckel von Donnersmark
1866: Begin of industrial turnout production
1973: Part of the nationalised VOEST-Alpine
1990: Start of a new historical era. Foundation of VAE as an independent company – begin of internationalisation with currently 44 locations worldwide on 6 continents

2000: Integration of the Zeltweg location in VAE Eisenbahnsysteme GmbH as an independent company within the VAE Group
2000: First plug-in turnout with “just in time” delivery (JIT)
2002: Foundation of the HYTRONICS business unit - start of industrial production
2003: voestalpine AG - Division Bahnsysteme becomes the new VAE Group owner with VAE GmbH as a holding
2011: Splitting of VAE Eisenbahnsysteme GmbH into the newly founded voestalpine Weichensysteme GmbH and voestalpine HYTRONICS GmbH and renaming of the holding into voestalpine VAE GmbH
2014: Renaming of voestalpine HYTRONICS GmbH as voestalpine SIGNALING Zeltweg GmbH
2016: 150 years turnout production in Zeltweg
2018: activities in the rail, turnout and signal technology areas are combined organisationally in the new Railway Systems business area
2019: Future Zone: creation of an apprentice teaching area in production

The voestalpine premises cover an area of approx. 164,000 m² and apart from the voestalpine companies, this industrial park also houses the neighbouring Sandvik Mining & Construction GmbH and Sepero GmbH, and is bordered to the south and east by the River Mur.

The historically intertwined evolution of the town and the company site has led to the current situation in which the industrial estate is in the immediate vicinity of residential areas. Consequently, the voestalpine location in Zeltweg feels obliged to not only provide independent problem solutions in the areas of noise and waste gas emissions, but also to conduct active and open communications with the local population. Participation in the EMAS since 1996 and the issue of yearly environmental statements offer an appropriate framework for the realisation of these intentions.
4.2 PRODUCTION AT THE ZELTWEG LOCATION

In addition to the latest turnout solutions for heavy load, high speed and local transport, the Zeltweg location is also where the bulk of the innovative products from the signalling area are developed and manufactured. These are supplied to customers as intelligent turnout systems on a plug-in and just-in-time basis and are offered along with services for all product areas.

4.2.1 PRODUCT RANGE IN THE TURNOUT TECHNOLOGY BUSINESS AREA

» Intelligent turnout systems – pre-assembly in the plant and ready-to-install delivery to the construction site
» Turnout systems and components, vignal and grooved rails with every type of section for heavy load, high speed and local transport applications

4.2.2 PRODUCT RANGE IN THE SIGNALLING AREA

» Hydraulic drive and setting systems, low-maintenance and easy to install for low life cycle costs
» Electronic surveillance and safety systems

4.2.3 THE PLUG-IN TURNOUT

Owing to the realisation of a completely new concept, it is now possible to also deliver fully assembled turnouts ("just in time" – JIT turnouts). The supply of these plug-in components to the construction site permits precise and rapid installation and thus the speedy availability of the line without lengthy track closures. In-plant pre-assembly enables the attainment of maximum installation standards and thus markedly extended turnout life. The system is characterised by high reliability and safety levels, low maintenance expenditure (eradication or enormous reduction in the lubrication requirement, above all due to the integration of signalling solutions) and minimised wear, which are all aspects of major economic and ecological relevance.
4.3 PRODUCTION PROCESSES AT THE ZELTWEG LOCATION

Turnout terminology:
» The moving part, which initiates the change of direction of the rail vehicle, is called a “switch”.
» The rail running through the turnout is called the “stock rail”.
» The actual crossing area is designated as a “frog” and can be supplied in numerous variations (up to moving frogs).
» The rails are mostly attached to the sleepers with so-called “ribbed plates”, which are individually produced for the turnout area in accordance with the prevailing geometry.
» The tongue rails move on “sliding plates” and are secured in their final position by locking systems. Various mechanical designs exist for this purpose.
» Turnout setting can occur using either electromechanical or electrohydraulic systems. voestalpine SIGNALING Zeltweg GmbH has created a globally unique innovation in this area, which is already established in the market, with complete and integrated drive, locking and surveillance systems.
» According to customer requirements, sleepers can be made from impregnated wood, concrete, or steel.

The most important production processes for these main turnout components (please see the exemplary and simplified model lay-out in the subsequent diagram) are:

» The cutting to length of rails and webs with saws and shears.
» Mechanical processing through milling, planing, drilling and bending.
» Component welding using a variety of processes (butt welding, submerged arc welding, etc.).
» Weld grinding (in particular switch and frog grinding).
» Pressing and forging of the lower switch sections at the transition point to the complete rail section.
» Heat treatment and inductive hardening to achieve special material qualities.
» Production of ribbed plates, sliding plates and chairs (shears, drilling, milling, welding, grinding).
» Bonding of special components (e.g. insulated rail joints).
» Demagnetisation.
» Accompanying quality assurance processes (X-ray, cobalt 60, ultrasonic and penetration testing, etc.).
» Prior to delivery, all turnouts are assembled and adjusted, coated on request (corrosion protection) and subsequently disassembled, marked, packed and dispatched to the customer. (or supplied as JIT complete components).

In accordance with the NACE categorisation for the international classification of industrial companies on the basis of production processes, voestalpine Weichensysteme GmbH is allocated to Group 24.10 “Production of Pig Iron, Steel and Ferroalloys – Permanent Way Production Subgroup”, voestalpine SIGNALING Zeltweg GmbH to Group 3020 “Manufacture of Locomotives and Rolling Stock” and 2790 “Manufacture of Other Electrical Equipment” and for voestalpine VAE GmbH C 33.20.-0 “Repair and Installation of machines and equipment”.

[Image]
4.4 HSEE ASPECTS OF THE PRODUCTS

The finished products are not only of technical safety importance during railway operations, but were and are developed in the course of ongoing R&D, which is also focused on the reduction or complete avoidance of typical environmental problems:

Soil contamination and safety

» Essential component lubrication and the possible, resultant contamination of track gravel due to grease and oil are largely avoided. On the one hand, encapsulated signalling products facilitate a reduction in the use of lubricants and on the other, prevent the escape of contaminants. This innovative technology and the employment of special, lubricant-free sliding plate systems in the turnouts are in line with the clear-cut environmental thinking of the company.

» The extensive use of innovative technologies with low-maintenance and partially entirely maintenance-free components in turnouts allows a major prolongation of maintenance and inspection periods. As a consequence, necessary maintenance work can be completed in combination with the use of electronic surveillance systems in a requirement-oriented rather than time-oriented manner.

» Reduced maintenance and inspection expenditure and the use of remote diagnosis devices also minimise the accident risk for the service personnel commissioned with the work, as the necessary time spent in the danger zone on the track is far shorter.

» Danger reporting systems of the latest generation subject the wheels and brakes of trains at full run-over speed to a diagnosis with regard to their technical condition and the possibility of overheating due to a malfunction. These systems thus make a sizeable contribution to the increased safety of people, the environment and transported freight.

» The delivery of pre-assembled turnouts using special logistics and transport wagons means that individual components need no longer be assembled at the construction site. This enhances product quality, while at the same reducing the essential amount of time spent in the danger zone on the track by assembly crews and minimising work in the night and cold weather. An improvement that is entirely in line with safety and health protection.

Resource and energy savings

» Turnout geometry optimisation and appropriate component design permit increases in both axle loads and run-over speeds and thus energy/CO2-savings derived from reduced train braking and reacceleration.

» In addition, the use of diagnosis systems for integrated systems such as the “ROADMASTER” for turnouts, contributes to a major improvement in line availability. A customer study has shown that on a highly frequented stretch of line, turnout faults have been reduced by 41%. The stand- stills or need for reduced train speed zones caused by such defects result in increased energy consumption and costs for railway operators. For example, a 1,000t train requires roughly 150 kWh to attain the necessary reacceleration from 40 to 120 km/h following a go-slow area, which when the average European current mix is applied (pursuant to ENTSO-E), is linked to CO2-emissions of around 60 kg per train and fault. This figure multiplies with every train and hour of disruption and therefore in view of the large number of turnouts (e.g. approx. 16,000 in Austria and 70,000 in Germany) represents significant potential for cost and emission reductions. Moreover, it is even higher when diesel locomotives are involved, as is the case in many countries (USA, Canada, Australia, etc.), rising to around 120 kg of CO2 emissions per train and fault.

» In cooperation with the subsidiary WWG, logistical and technical solutions have been developed with regard to the issue of turnout recycling. Above all, suitable answers can be provided for areas subject to lower loads through the redeployment or reworking of components that remain usable. This conserves resources, as indicated by the fact that in comparison with new production, every metric ton of recycled steel components saves roughly 2t of CO2 emissions!

Material selection

» Special metallurgical materials and material technologies in general, and hard manganese steels, head hardened rails (HSH) and explosion-hardened manganese frogs in particular, constitute a significant factor in increased service life and the run-over speeds achieved.

» During the purchase of wood sleepers, particular attention is paid to their ecologically compatible origins (suppliers with sustainable forestry management) and the use of the best possible impregnation agents and processes (with regard to hazardous and malodorous substance content), in order to ensure the protection of both company employees and customers.

» The growing use by customers of concrete sleepers in the turnout area, which can be recycled and are free of impregnation agents, contributes to a sustained reduction in environmental loads and a reduction in the impact upon employees handling chemical substances.

» Natural linseed oil has been used as corrosion protection instead of coatings containing solvents and even heavy metals since the 1980s, particularly for deliveries to European customers. However, in the case of overseas transports, the employment of anti-corrosion coatings is unavoidable, although these are selected on the basis of the lowest possible environmental impact.
Systems suppliers are subjected to an evaluation that includes HSEE and CSR aspects. Of special note in this connection is the fact that the manufacture of the rails and plates, which are further processed at the Zeltweg location, takes place within a production chain of voestalpine companies that all have environmental certification (steel production at voestalpine Stahl Donawitz GmbH, rail production at voestalpine Schienen GmbH). For preference, frog manufacture is also completed in voestalpine and voestalpine Group foundries, which also possess environmental certification. All in all, numerous suppliers already have accredited environmental or safety management systems, which is very much in line with the wishes of our company and during supplier evaluations is honoured with the highest number of points in the respective group of questions.

Noise reduction

Hydraulic setting systems are not only virtually noiseless and vibration-free, but also facilitate the mechanical tamping of the track bed as they lie inside the rails. In addition to improved track quality, this again leads to a prolongation of turnout service life.

PERFORMANCE OF VAE ALONG THE LIFE CYCLE OF TURNOUT SYSTEMS
4.5 THE HYDROPOWER PLANT

With its participation in the construction of the small-scale power plant on the River Pöls (PenzVAEE power plant), voestalpine Weichensysteme GmbH moved into a new, sustainable energy management dimension. The objective was a maximum degree of autonomy with regard to the electricity supply of the voestalpine location using clean, CO₂-neutral hydropower while taking into account economic viability and the preservation of the water rights and aspects of environmental relevance in the course of the construction and operation of the power plant.

The small-scale hydropower plant on the Pöls offers advantages on a number of levels, as underlined by an expertise from the Graz University of Technology, which points to total Austrian value added of over EUR 10 million and thus underlines the special national and regional economic interests inherent to the construction of the plant. A considerable portion of electricity production is employed for the new inductive furnace for rail forging. This not only replaces the natural gas fired furnace used to date, thus saving some 340t of CO₂ emissions per year in the long-term, but also secures technological market leadership and roughly fifty jobs in tongue production at the location.

The key technical data of the power plant is also impressive, as is clearly demonstrated by a comparison with the figures from the Penz power plant, which went into operation at the beginning of the 1980s and has continued in use until now. This data was first achieved by a series of optimisation measures taken with regard to the turbines, generators and the plant as a whole:

<table>
<thead>
<tr>
<th></th>
<th>FORMER PENZ POWER PLANT</th>
<th>PENZ VAEE POWER PLANT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output (kW)</td>
<td>290</td>
<td>2,576</td>
</tr>
<tr>
<td>Power generation/year (MWh)</td>
<td>1,300</td>
<td>12,900 up to max. 14,100</td>
</tr>
<tr>
<td>Gross head height (m)</td>
<td>4.44</td>
<td>31.44</td>
</tr>
<tr>
<td>Turbines (output in kW)</td>
<td>215 and 116</td>
<td>respectively 1,447</td>
</tr>
<tr>
<td></td>
<td>85 and 84</td>
<td>respectively 92.5</td>
</tr>
<tr>
<td>Generators (output in kVA)</td>
<td>320 and 160</td>
<td>respectively 1,750</td>
</tr>
<tr>
<td></td>
<td>92.5 and 91.0</td>
<td>respectively 96.2</td>
</tr>
<tr>
<td>Design inflow (m³/s)</td>
<td>10.00</td>
<td>12.44</td>
</tr>
<tr>
<td>Conduction line length (m)</td>
<td>200 (open duct)</td>
<td>2,810 (DN 2400 pipeline)</td>
</tr>
</tbody>
</table>
With a length of around 3km, the penstock is among the largest in Austria. The pressure pipes have a clear width of 2.4m and a length of 6m, which meant that over long stretches, their laying represented a logistical masterpiece. This was because the route not only ran across agricultural land, but also near a residential area, which as in the works necessitated complex pipe installation.

The turbines were precisely matched to local conditions and circumstances by means of technical flow optimisation and their respective efficiency raised once again to 92.5%. Moreover, the performance and efficiency of the generators were also increased (from 92.5% and 91.0% to 96.2% respectively).

Optimisation was not only completed with regard to machine technology, but also structural improvements throughout the entire power plant, which successfully cut the net head height losses by approximately 15%.

Since 2010, average annual power generation has amounted to approximately 12,100 MWh, whereby on average 87% of own consumption at the Zeltweg location was covered (in the summer months virtually 100%). The surplus electricity produced, especially in the afternoon and night hours, was fed into the national grid. Naturally, the officially stipulated levels of residual water flow in the Pöls were maintained by means of electronic regulation (1,500 l/sec in the winter half-year, 2,200 l/sec (dynamic up to 3,500 l/sec in the summer half-year).

On the basis of the Western European average value for the composition of electricity (UCTE Mix 2009 – approx. 440 kg CO₂/MWh) the planned power generation saves some 5,600t of CO₂/year. As a comparison, the annual quantity of electricity corresponds with the consumption of roughly 3,500 average family homes and thus a conurbation of roughly the same size as the urban district of Zeltweg. Were this volume of electricity to be produced in a (modern) coal-fired power plant this would require approx. 3,700t of hard coal annually, or in the case of a (modern) gas-fired power plant, approx. 2.2 million m³ of gas per year.

Clearly, the construction and operation of a power plant cannot occur without any environmental disruption. However, as a result of numerous ecological structuring and supportive measures, impact has been limited to the greatest possible extent and hence to a tolerable level:

In addition to a fish ladder, an especially innovative feature was installed in the water catchment area in the shape of a so-called water hydropower screw, which on the one hand operates as a residual water turbine, as the water not conducted into the penstock is used for the production of electrical energy (30 kW output; approx. 200,000 kWh of electricity production per year), and on the other, acts as a fishway.

The upgrading and dynamisation of the residual water reach was achieved by measures such as the use of activation stones and the retention of existing island areas.

In the backwater area of the power plant, a hydro-geological link was formed between the residual water reach and the River Mur with a simultaneous hydro-geological separation of the outflow area of the power station in order to prevent fish from swimming into the turbine backflow.

All these achievements and successes would have been impossible without our partners Robert Zotter and Rochus Penz, the cooperating authorities and political decision-makers, as well as our neighbours along the construction road and the anglers with fishing permits. Accordingly, our sincere gratitude goes to all these persons for their constructive cooperation and understanding.
5. INTEGRATED MANAGEMENT SYSTEMS (IMS)

The various companies at the voestalpine location in Zeltweg possess integrated management systems, which regulate the required sequences and tasks within the company in an inter-departmental and inter-disciplinary manner on a process-oriented basis. In particular, this applies to the areas of environment and energy, health and occupational safety, quality, engineering and finance.

The requirements relating to the form, content and interplay of the elements derived from respective specialist stipulations are fulfilled entirely by systems in line with the following:

- The EMAS III Directive, as well ISO 14001:2015 with regard to environmental management,
- ISO 45001:2018 with regard to occupational safety and health management,
- ISO 50001:2018 with regard to energy management and
- ISO 9001:2015 with regard to quality management

In this connection, the prefix “HSEE” (Health, Safety, Environment & Energy) classifies interdivisional elements such as policy, targets, etc.

In accordance with the most expedient solution, the companies at the location employ joint or independent processes and specification documentation. However, in all cases the interfaces between selective processes are coordinated and the relevance of the documents is left to the individual companies.

5.1 IMS CORNERSTONES

The integrated management system (IMS) guarantees the implementation of our HSEE policy, as well as established HSEE objectives and individual targets. This facilitates the retention of the high level already attained and where meaningful from a contentual perspective and economically acceptable, a continual improvement in performance with regard to operational environment protection, health and safety, and quality. The IMS is documented in the integrated process landscapes of the three companies and regulates the main operational procedures in holistic form.

5.2 HSEE ORGANISATION AND RESPONSIBILITY

5.2.1 OVERALL RESPONSIBILITY

Executive management bears overall responsibility for environmental protection at the individual companies. It must establish HSEE policy and examine the effectiveness of the environmental management system in the course of regular managerial reviews.

From an operative perspective, since 2015 the HSEE Department has been divided into:

- The HSEE Department of voestalpine Weichensysteme GmbH, which will also serve voestalpine SIGNALING Zeltweg GmbH and thus the two production companies at the Zeltweg location

The respective HSEE departmental heads bear responsibility for the design and management of the system and provide the various executive managements with basic information for the management reviews and the planning of environmental targets and programmes.
5.2.2 SPECIFIC FEATURES OF THE SAFETY AND HEALTH PROTECTION AREA

With regard to safety and health protection:

» **Responsible officers** are appointed that are answerable for defined areas of legal responsibility relating to employee protection in accordance with the stipulations contained in the Austrian Work Inspectorate Act.

» Executive management, responsible officers and company employees receive advice from trained and **state approved prevention specialists** in line with Austrian directives.

» The two HSEE departments will furnish a total of **three safety specialists**.

» An **occupational physician** from the Donawitz Occupational Medicine Centre has been appointed for the location.

» Furthermore, in cooperation with AUVA (Austrian General Accident Insurance Fund), **safety officers (some 40 persons)** have attended 3-day training courses, the content of which was designed specially to match our requirements. AUVA experts not only gave the safety officers instruction regarding the general principles emanating from various special areas, but also informed them of the specific relevance and the concrete applications of the teaching content at the locations in interaction with the company’s safety specialists. The safety officers agree HSEE focal points at monthly meetings.

» The **Work Safety Committee** holds an annual meeting, in which line management (including masters and forepersons), internal specialists and the safety officers participate. Above all, these gatherings focus on the communication and discussion of information and special issues.

» The **consultations and examinations** (suitability and regular medical checks) provided by the occupational physician and the Donawitz Occupational Medicine Centre are of singular importance. These are carried out on the basis of legal stipulation and voluntary additions in connection with occupational burdens. **Work psychology consultations** constitute a special service and the Occupational Medicine Centre possesses the very latest diagnostic possibilities in this regard.

5.2.3 OTHER PLAYERS

» A **waste officer** and a deputy waste officer have been appointed for the location.

» In addition a radiation protection officer (+ deputy), a fire and disaster officer (+ deputy), a poisons officer and an external hazardous materials officer have been chosen.

» A major contribution to overall success is provided by the integration into and support of HSEE activities by the blue and white collar works councils.
5.3 EMPLOYEE MOTIVATION AND TRAINING

5.3.1 EMPLOYEE INVOLVEMENT

The involvement of the entire workforce in HSEE activities represents an important element in company policy. Indeed, every employee is called upon to “breathe life” into the aspects of HSEE policy pertinent to his or her workplace. Personnel are motivated to act on their own initiative and use innovative thinking by means of internal/external training, open discussions, idea management within the framework of the continuous improvement process (CIP), as well as bonuses for implemented improvements and the HSEE-related awards received. These measures ensure that HSEE objectives are attained with greater efficiency.

5.3.2 TRAINING PROGRAMME

As a result of the implementation of the Austria-wide training programme at the Zeltweg location, from 2015 onwards the range of training available in the areas of environment, health and occupational safety was further intensified and made available to the entire workforce. The desired objective of longer-term employee health, not only benefits the individual employee per se (especially in view of an extended working lifetime), but also the company. In addition, the training programme offers the possibility to acquire further and higher professional qualifications, which assist personal development, once again with a special focus on job loads, and further enhance the operational flexibility of the company.

5.3.3 ADDICTION PREVENTION

An active approach to this problem area, which on a social level is preferably ignored, has been adopted through participation in the “Clean & Dry” programme. This is used throughout the voestalpine Group and is targeted on the early recognition of addictive behaviour and the offer of external help to those affected with the healing of their illness. Managers and subsequently, first and foremost, employees are appropriately trained and informed, in order to create an atmosphere, which will ultimately result in quality of life for sufferers and the retention or recovery of their working capacity by the company.

5.3.4 “TOP FIT” OCCUPATIONAL HEALTH CAMPAIGN

In April 2017, an occupational health campaign was launched at the location. This has the aim of developing company structures and processes, which apart from the statutory basis formed by workplace evaluation and occupational medicine examinations, should achieve work and workplace design that is conducive to good health.

The “Top Fit” campaign project incorporates all the measures targeted on improving health and well-being in the workplace.

Our educational programme already includes numerous health-related offers, but in addition other employee needs were determined through health and job satisfaction surveys, and the appropriate measures instituted.

The prime motivation behind these moves is provided by the fact that only healthy employees, who feel at ease in the working environment, can remain in company service on a long-term basis.

5.3.5 ACCIDENT DATA MONITORS

Special “accident data monitors” have been installed at prominent points in order to show the current accident statistics.
The administration of obligations relevant to HSEE and plant data is carried out using “Gutwin” legal and task management software. In particular this incorporates:

- The management of the legal register and the resultant one-off and recurring legal obligations.
- The management of a directives register and the resultant one-off and recurring obligations.
- The preparation of a report pursuant to §82b Commercial Code (incl. §134 Water Rights Act) and multifaceted evaluation possibilities for the evaluation of the legal conformity of company plants.
- Management of an equipment database (currently includes approx. 820 items including the working facilities administered according to the same principles:
  - The categorisation of decrees relating to equipment/plants (= creation of a directive history for the plants; at present over 300 directives are of relevance for the location of which the majority affect or relate to the approval of a large number of plants or plant alterations).
  - The categorisation of the obligations affecting the respective plants (to date a total of over 1,700 one-off and more than 240 recurring obligations have been categorised).
- Approval management in connection with the construction or alteration of plants (preparation and administration of documents submitted for approval procedures, especially in the form of plant datasheets with data of relevance to approval and the required enclosures (e.g. EC conformity declarations, measurement reports, technical machine descriptions or audits, planning documents, etc.)).
- Management of a materials database including system-integrated, electronic work flows for material evaluation and release prior to sourcing and the administration of manufacturer safety datasheets (at present roughly 360 materials (in the sense of products) are in use).
- Registration and processing of occupational accidents and critical situations using the accident management tool.
- Provision of work station danger assessments (“evaluation”) including the preparation of the resultant documentation:
  - Safety and health protection documents, which deal with all the relevant factors and in particular:
    - Technical safety.
    - Exposure to working materials (including dust), noise, vibrations, radiation, etc.,
    - The resultant examination obligations and restrictions in use (apprentices, female employees, pregnant employees, possibly employees with handicaps).
    - The required personal protection equipment.
- Company directives regarding the required instructions, bans, danger warnings and conduct,
  - as a special area, evaluations in the case of accidents or incidents (critical situations/near misses).
- Completion of general task management with regard to the plants, e.g. derived from:
  - Internal or external audits
  - Company improvement suggestion scheme
  - Company walkabouts
  - CIP entries (= continuous improvement measures)

Additional systems that supply or administer data of relevance to HSEE are:

- The SAP system, especially in connection with input-output data (material quantities)
- The SAP maintenance module
5.5 DATA COLLECTION AND EVALUATION METHODOLOGY

On the basis of many years of qualified consideration, checklists that are specifically suited to company activities have been drawn up for the collation of aspects of environmental, energy and health and safety relevance.

For example, onion layer model evaluation checklists have been prepared for the area relating to the evaluation of dangers to health and safety in the workplace:

» Workplaces – criteria catalogue for the evaluation of buildings and premises
» Equipment – criteria catalogue for the evaluation of machinery and work stations
» Materials – criteria catalogue for the evaluation of the chemical substances employed
» Specific activity-related details/dangers (e.g. moving parts)

This classification ensures that capacities are deployed in a highly efficient manner, e.g. that it is unnecessary to administer the entire workplace for every machine. This is based on the “first layer” level, as the machines represent the “second layer” (whereby the identical places in this model are ideally suited to grouping!). Materials constitute the “third layer” (and can be again allocated to particular activities without multiple management of the plants/processes).

The evaluation model for the assessment of danger and establishment of priorities is equally straightforward. In line with the general basic principle, risks are determined and classified as the product of their potential impact and the probability of occurrence. The following categories were employed

<table>
<thead>
<tr>
<th>Factor</th>
<th>Impact</th>
<th>Probability of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Slight</td>
<td>Improbable</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>Seldom/possible</td>
</tr>
<tr>
<td>3</td>
<td>Serious</td>
<td>Occasional/already occurred</td>
</tr>
<tr>
<td>4</td>
<td>Major</td>
<td>Frequent/probable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact/Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

The numerical values correspond with the following activity priority classes, which can be called up in accordance with this evaluation (please see the extract from the evaluation template below):

<table>
<thead>
<tr>
<th>Points</th>
<th>Action requirement/Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Residual risk acceptable</td>
</tr>
<tr>
<td>2</td>
<td>Long-term action requirement exists</td>
</tr>
<tr>
<td>3-4</td>
<td>Medium-term action necessary</td>
</tr>
<tr>
<td>5-8</td>
<td>Short-term action necessary</td>
</tr>
<tr>
<td>9-16</td>
<td>Immediate action necessary</td>
</tr>
</tbody>
</table>

This evaluation can be stored directly in the Gutwin software evaluation tool for task management. In addition, the resultant assignments can be administered in line with responsibility, schedule surveillance (one-off and recurring activities) along with the related documentation of completion.
The identical basic principle is also employed in the environmental and energy areas for measure prioritisation. However, a modification does occur, as in these areas the risk of an accident/damage is less pertinent than the determination of a ratio between the extent of impact/effects/resource consumption and the respective potential offered by an improvement or the exertion of influence. The following matrix of the environmental and energy aspects results:

<table>
<thead>
<tr>
<th>Colour matrix for yearly amounts/ Possible % of improvement</th>
<th>Low emission volume</th>
<th>Medium emission volume</th>
<th>High emission volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>No or slight % improvement possible</td>
<td>P4</td>
<td>P4</td>
<td>P3</td>
</tr>
<tr>
<td>Improvement possible</td>
<td>P4</td>
<td>P3</td>
<td>P2</td>
</tr>
<tr>
<td>Sizeable improvement possible</td>
<td>P4</td>
<td>P2</td>
<td>P1</td>
</tr>
</tbody>
</table>

(Resultant Priority Classes: P1 to P4)

Apart from the determination and evaluation of plant status and the resultant measures, which have already been implemented successfully in the HSEE programmes of past years, at any early stage the main focus was on prevention and thus the avoidance of potential problems, especially through the optimum planning of new activities. For many years (since approx. 2001), project managements and the purchasing and HSEE departments have drawn up appropriate HSEE project specifications in both the investment (machinery, buildings) and maintenance (repairs, servicing, audits) areas, which then have to be implemented by both internal and external contributors. This planning, which integrates HSEE from the outset, has not only saved large amounts of subsequent effort and expense, but also secured the safe and legally compliant operation of plants immediately after completion.

The documentation for these specifications is constantly updated for future projects in line with the experience gathered and new stipulations (laws, etc.) and a continuous improvement process. Moreover, in accordance with this precautionary principle the evaluation of materials has been completed prior to purchase ever since the system was introduced in 1996 (exclusion of unsuitable products, classification of permissible variants pursuant to HSEE criteria). To this end, it was also integrated into the Gutwin software in 2013 as an electronic workflow.

The data gathering and evaluation principles employed constitute a solid foundation for the determination of HSEE programmes as a significant element in the company’s continuous improvement process.
5.6 CONTROLS AND ENVIRONMENTAL AUDITS

The ISO 9001, ISO 14001, ISO 45001, EMAS and ISO 50001 management standards foresee the introduction of a closed circuit ("PDCA cycle"), which contains the following measure sequence:

» **P**lan (= planning of improvement projects with the involvement of the relevant persons)
» **D**o (= completion of the project in line with planning)
» **C**heck (= surveillance as to whether problems or deviations occur during implementation, or the desired success is finally achieved)
» **A**ct (= take action in order to carry out possible corrections)

This cycle is employed for all operational activities and its repetition leads to a steady rise in standards and in the course of time, the realisation of a **continuous improvement process (CIP)**.

The implementation of policies, objectives and legal stipulations of relevance to HSEE, as well as the effectiveness of the measures taken are monitored by:

» Regular **internal audits** (in the meantime more than 40 employees from differing departments have been trained as internal auditors)
» **Input-/output analyses**
» The evaluation of HSEE-relevant factors (in particular the evaluation of workplaces, materials, etc.)
» The results of regular audits on the basis of legal guidelines, as well as guidelines emanating from commercial authority and water rights directives

These measures then form the **annual environmental audit**. Apart from system-oriented internal audits, voW carries out so-called "LPA Audits" (LPA - Layered process audit). These involve the examination by management from differing hierarchical strata of adherence to standards at area level. Checklists are employed for this purpose and if possible any deviations are corrected immediately, or suitable measures are initiated. Completion and the findings of the LPAs are visualised in an appropriate and clear manner, and are then shown in the company on the LPA Board.

300 scheduled and 50 random LPA audits have been designed for audit planning and take place in the course of a financial year in a systematic sequence. In addition, audits take place in forty defined areas and thus guarantee a uniform approach. More than 60 nominated LPA auditors complete the audits. The scrutiny of standards employs checklists related to the 5S thematic areas comprised by Workplace Organisation, HSEE, Training & Authorisation, Marking & Tracing, Process Conformity and Office Standards. Furthermore, the findings are visualised in the form of active shop floor management and shown on the LPA Board.
5.7 THE “SYNCHRONISED TURNOUTS” PRODUCTION SYSTEM

vaW’s “Synchronised Turnouts” production system adheres to the principles applied in this connection by Toyota. When production is synchronised to match the rhythm used by the external customers and, starting from final assembly, all the upstream areas only produce what is currently needed, one refers to a pull system operating on a just in time (JIT) basis.

What are the principles of the “Synchronised Turnouts” production system?

» **The elimination of waste** (process efficiency in both the production and administrative areas)

Work is composed of value added and waste. The former consists of machine processing times, while waits on the part of the equipment operator following the end of the machining process, or the unnecessary transport of parts, constitute the latter. Therefore, the objective is to substitute value added for the waste caused by over-production, superfluous movements, waiting times, overwork, large material stocks, reworking and rejects. This also involves the prevention of accidents, sick leave, wasted materials and energy.

» **Process synchronisation** (process and product orientation)

Production is limited to only that which is currently required. Rapid reset procedures make the production of small lots possible and cost efficient. Throughput times are minimised and ideally are virtually identical with pure machining time. The material stream is constantly in motion and this is achieved largely by a switch from batch size production in line with the workshop principle to individual workpiece output according to the flow principle. The method for tool change time optimisation is called the single minute exchange of die (SMED).

» **Process standardisation** (visualisation and standardisation)

Standards must be universally visible. However, the publication of standards is only meaningful if one can see at a glance that they are adhered to. Both employees and the responsible managers must be able to recognise if the process standard is being observed or not. For this purpose, we employ the visualisation process in the “Synchronised Turnouts” system, as deviations from standards must immediately catch the eye. Moreover, in order to secure lasting adherence to standards, these must be audited. Managerial staff from all hierarchical levels, as well as employees from every area, participate in the auditing process.

» **Defect prevention** (zero defect strategy)

With the “Synchronised Turnout” production system, we wish to attain a zero defect target by means of various measures such as automatic surveillance (Jidoka), machine and/or employee self-supervision. In addition, structured measures such 8d, PDCA and Poka Yoke, which roughly translated means the “avoidance of unintentional errors”, are implemented. The topics of accident and waste prevention, resource conservation and energy efficiency are again integrated into this strategy.
» Production plant improvements (optimised plant availability)
The personnel in the “Synchronised Turnouts” production system are trained with regard to maintenance and to a certain degree are capable of correcting faults themselves. Only when the repair cannot be completed within a defined period, or special know-how or authorisation is required to correct the fault, the central maintenance team is called into action (autonomous servicing). In the case of a defect, the aim is to find the actual cause and remove it on a lasting basis. The “6W method” is employed as an approach, as five “Whys?” and one “How” are almost always sufficient to find the real root of the problem.

» Employee qualification and training (employees as a key factor)
Investments in employee qualifications create a decisive competitive advantage in the fight for quality and lower costs. In the “Synchronised Turnouts” production system, the continuous improvement process (CIP) also means constant employee training.

» Continuous improvement process (PDCA cycle; 8D problem solution process)
In the “Synchronised Turnouts” production system, we wish to give every employee an opportunity to improve the conditions in their workplaces and hope for the release of the considerable creative potential that our workforce possesses. In the workplace, the employee is the expert and not the engineer, who planned this station months, or even years earlier. Personnel have to deal with day-to-day problems and frequently ask, “Why so and not differently?” A sense of personal identification is only created following workplace design and both the 5S method and an effective and non-bureaucratic continuous improvement process (CIP) serve this purpose.

» Process and product orientation (module formation)
By means of the “Synchronised Turnouts” production system we intend to create the structural and sequential organisational framework required for efficient output in line with customer rhythm. Among other tools, to this end we utilise production on the basis of the key components in a turnout (production orientation), as well as the required planning team, in order to reduce interfaces wherever possible (process orientation).

» Management via key figures (Performance Measurement System)
In order to know just where we stand in the “Synchronised Turnouts” production system, we have introduced a key figure system at company level under the motto, “We do not want to look in the rear view mirror, but rather see the obstacles ahead in the headlights”. With this in view, key figures were drawn up for the company areas (production, logistics, ...) and the production area (shop floor, modules, ...). The shop floor parameters were published for each module in the “Synchronised Turnouts” communications boxes and made known to all employees. Apart from the current actual figures, these will also provide us with the established target values. In this connection, please see the diagram and details in Section 5.8.2.

Achieving these objectives also demands a corresponding corporate culture orientation, as expressed in our Guiding Principles.
OUR MISSION: TO SHAPE AN EFFICIENT FUTURE

OUR MISSION: TO BE EXEMPLARY

OUR MISSION: TO BE THE BEST

OUR MISSION: TO WOW OUR CUSTOMER

OUR MISSION: TO MAKE A CHANGE

OUR MISSION: CONSISTENT ACCURACY
Employee safety measures were characterised by a focus on technical protection. However, the methods employed demonstrated limitations and the number of accidents could not be reduced further. In addition, the accident pyramid, which shows the ratio between the seriousness and frequency of work accidents, indicated that severe accidents were merely the tip of the iceberg. It was evident that to achieve a further improvement, not only was there a need to provide technical equipment and draw up suitable rules and regulations, but a new awareness of work safety had to be created.

The conduct-based approach now adopted not only takes into account the previously prepared pyramid but also extends its base. Apart from every near miss, principally all examples of risky and unsafe conduct on the part of employees are taken into account (“that was a close shave.” - near misses). We have thus placed the accident pyramid on a new and secure foundation.

The accident pyramid creates a ratio between serious work accidents and their frequency. It shows that serious accidents merely represent the tip of the iceberg. According to estimates, for every fatality, 10,000 to 70,000 near misses occur.

**5.8.1 ONGOING HSEE ACTIVITIES**

» All **work accidents** and **near misses** are evaluated and visualised using an incident analysis (in order to discover the accident cause, whereby this is questioned several times with five “Whys?” and one “How?”, “Good or bad luck?”, and then measures are established), which includes the partial drawing up of **lessons learned**.

» During **weekly module meetings**, under the auspices of the Production Manager, employees from production control/planning, work and process technology, the master craftsmen, supervisors, maintenance and quality management, as well safety specialists discuss matters that include current topics such as work safety and accidents, incident and near miss analyses.

» Following the end of sick leave, a **discussion** is held with the returning, injured employee. The aim is to jointly define measures for both the prevention of accident situations and a reduction in problematic stresses and strains.

» **A HSEE Newsletter** is published monthly for vaW and quarterly for vaSIG. This contains statistics such as vaW’s overall LTIFR and the accident trend in the modules, along with current issues, highlights and a report on occupational health promotion. All the incident analyses are included in the “Learning from Accidents” supplement to the “Newsletter”, which is also employed during the module meetings and the team talks between the masters, supervisors and employees.

» **Monthly safety officer meeting**: quarterly tasks are assigned to the safety officers and are dealt with at the monthly meetings.

» **Monthly safety specialist photo safari** at vaW with positive and negative findings. Presentation of the photos during the masters’ circle. At vaSIG, the tours take place on a quarterly basis.
LESION LEARNED
Unterlagshölzer wegräumen

Das Unterlagsholz wurde von einem MA liegengelassen --> Stolpergefahr;
Folge: eine Woche Krankenstand eines Kollegen der sich den Fuß verletzte!

Das Unterlagsholz wird entsprechend wegeräumt; in die dafür vorgesehenen gelben Sammelstander oder auf einen sicheren Platz (am Stapel z. Bsp.).
5.8.2 VISUALISATION ON THE HSEE BOARD

The HSEE Board, which is part of the Module Box, serves the monitoring of accident events, operative HSEE occurrences, as well as the extrapolation of measures on the CIP Board.

Procedure and findings

1. Every work accident and near miss is evaluated in the basis of an incident analysis.
2. Each work accident and near miss is represented by a magnet pin in the incident analysis (3W):
   - What injury?
   - Where? (geographic classification)
   - When? (temporal classification).
3. Subsequently, the result is placed in the “findings” field for all employees as information/coaching/instruction.
4. Finally, in the module box, the superior runs through the instructions following the accident with the victim and the team.

Information/News

- During the weekly module meeting, a note is made under “S” for safety, which shows whether or not an accident occurred during the past week. Green stands for no accident, red for an accident.
- On the HSEE Board, a smiley also shows whether or not an accident had taken place in the preceding month. A sad smiley represents an accident, while a happy smiley denotes zero accidents and the period during which the module has been accident-free.
- Under the Information/News heading, one can also find current topics such as PSA tests, noise measurements, etc.
- In addition, all employees are instructed to enter all findings/observations from plant tours such as near misses, unsafe conduct, weak points, potential dangers, etc. into the CIP (continuous improvement programme) topic cards, as the personnel on the spot know best.

The monthly accident statistics for the respective modules and voW overall are posted on the Key Figure Board.
5.8.3 RAISING OF AWARENESS REGARDING DANGERS, INFORMATION AND TRAINING

Safety principle visualisation

» In order to increase danger awareness, safety principles have been defined and linked to suitable images from the private sphere.
» These pictures are used in the form of roll-ups at the time clocks and are exchanged every month.
» In addition, the images have been used in a calendar and poster for our apprentices.
Further sensitisation through the deployment of beach flags
Following a work accident, a beach flag is installed at the accident site for three days. It marks the spot in the company where an accident has occurred and should give cause for reflection:
» What has happened?
» And why?
» Moreover, how can a recurrence be prevented in future?
In the final analysis, the flags should also prompt a positive change in our attitude towards safety.

Information
» A 16-page brochure was designed for the workforce.
» A comprehensive 80-page manual has been drawn up for the safety officers.

Work safety, first aid and health promotion course
In 2017, a safety course was created at the location with the aim of achieving “learning by doing”. The course’s ten stations deal with a variety of issues relating to work safety in a clear manner. The themes are:
» Personal protection equipment
» Eye injuries
» Hand injuries
» The handling of chemicals, chemical spillage, hygiene and skin protection
» Noise and hearing protection
» Ergonomics and first aid
» A practice crane and lifting gear
» Seeing and being seen
» View and visibility on the forklift
» In-company health promotion with the topics health training and addiction prevention
The individual stations are so designed as to allow the coaching of employees with regard to both the causes of injuries and their prevention. For example, during the classification exercises, personnel should themselves find errors, or the correct personal protection article, while the respective perception exercises serve the creation of awareness regarding the importance of personal health.
The safety course serves both annual instruction and the coaching of new employees.
First Aid Board, Skin Protection Board
Apart from numerous first aid stations, First Aid Boards have been installed at two central points. These are equipped with eyewash bottles, a first aid case, plaster dispenser, etc. and in an emergency thus facilitate a speedy response.

The skin protection plan has been revised and standardised in the form of boards (Skin Protection and Skin Cleaning Boards). These are to be found in all changing and washrooms.

Onboarding
In order to ensure the attainment of company objectives, onboarding and quick training help newly recruited employees to understand the established standards and methods.

Topics and content:

» Production/modules
» Plant layout
» Logistics
» Quality management
» Maintenance
» HSEE
» WIT production system
» Guiding principles
» CIP/PDCA
» 5S standardisation
» Value added
» OEE, MDE, BDE
Personal Safety Equipment standards
PSE standards have been drawn up for all production and white-collar personnel, and visitors. Twelve differing standards illustrate mandatory wear, as well symbols and their meaning. The standards are shown in each of the “affected” areas and thus facilitate the quick recognition of the correct PSE for the workplace.

Safety instruction video
The safety instruction film for personnel at the location supports annual instruction. The film resulted from a joint project with the company apprentices.
5.9 INTERNAL AND EXTERNAL COMMUNICATIONS

The head of HSEE is responsible for the coordination of related communications:

- **Internally** through the HSEE report, HSEE Newsletter as well as messages and notices, above all in the module boxes, accident monitors and regular reports in works council journals.

- **Externally** through the handling of enquiries, suggestions or complaints, the active distribution of the HSEE report (Internet download possible via www.voestalpine.com/weichensysteme), numerous publications and lectures.

5.10 CORPORATE SOCIAL RESPONSIBILITY (CSR)

Achieving compliance between economic requirements, the principles of social responsibility and sustainable business practice is a major challenge that we are pleased to face and understand less as a basic contradiction and burden, and much more as an opportunity. And in this regard, we may not only present words but deeds:

- **The numerous activities and successes in the area of health, safety, environment and energy** both at the Zeltweg location and the worldwide subsidiaries of the VAE Group (please see the separate chapter in this HSEE report) represent a major cornerstone in this regard. The many awards received at a regional, national and European level reflect this commitment.

- In addition, the **upholding of human rights** is an integral part of our corporate policy and **fair working conditions and contracts** are a major feature of the orientation of our group.

- These claims are also lent expression by **membership of the UN Global Compact**, to which not only the Zeltweg location and the VAE Group belong, but also the entire voestalpine Group.

- We attach equal importance to the **support of our employees with their careers**:

  - Therefore, at the Zeltweg location for example, we offer a range of opportunities that extends from plant visits, internships and trial apprenticeships to bachelor and diploma studies and provides school and college students with **initial contacts to the world of work** and directional possibilities in order to determine their talents and interests. The “Girls’ Day” is a special event in this regard and is intended to awaken their interest in the technical professions.

  - In the final analysis, **apprentice training** provides us with the employees with whom we can successfully hold our ground in the global markets.

  - It is also important to proceed against the potential area of conflict caused by work and family. This is achieved through **flexible working time models** (sliding time and part-time working arrangements), in order that employee needs are met as far as possible.

  - **Further training programmes** support employees’ careers and in view of the rise in the pensionable age, should facilitate internal transfers, when in spite of the best possible equipment from a technical and ergonomic perspective, with advancing age the workload in certain areas becomes too great. However, naturally the overriding principle is the retention of working capacity until retirement by means of design measures, occupational medical care and motivation to participate in health programmes.

  - The participation of the special needs of **personnel with physical disadvantages** is systematically pursued through appropriate evaluations and a separate representative committee for these employees.

  - For **VAE, local projects and cooperations** are of special importance as exemplified by the following activities at the Zeltweg location:

    - **Teamwork with the Zeltweg Volunteer Fire Service**
    - The special range of leisure activities for all ages offered by the **works orchestra**, which with its high artistic standards enjoys great public popularity
    - The **clubs organised by employees themselves for their own diverse hobbies** (running, cycle tours, water sports, ice hockey, ..), of which we are especially proud
    - **Sports, cultural and social sponsoring**, which rounds off this range of offers and for example includes the involvement of numerous members of the management in the regional Lions Club in activities aimed at helping to improving the lot of underprivileged members of our society

  - Reference should also be made to **financial matters**:

    - The participation of the workforce in the company and its success is long established (**employee holdings** amount to roughly 14% of voestalpine AG stock)
    - **Location agreements regarding employee bonuses** in line with company success
    - **Offers regarding participation in company pension schemes**

  - Another central issue is naturally **behaviour towards suppliers and customers**

    - **Unconditional compliance with our Code of Conduct** in order to prevent conduct that is corrupt or in breach of anti-trust law through information and training, and to identify and without exception sanction possible infringements.

    - **Supplier qualification and assessment** in line with our processes in this regard as an important part of our sourcing procedures and the related “**CSR questionnaire**” and evaluations.

    - **VAE is a leading company in its region** and is therefore not
only a source of direct employment, but also an important local economic factor due to the allocation of orders for services and materials.

Participation in rating processes such as Ecovadis and BSCI (Business Social Compliance Initiative), which is very much in line with the interests of our customers.

More information regarding the topic of corporate responsibility at group level is available in the voestalpine AG Corporate Responsibility Report, which follows the Global Reporting Initiative (GRI) standard and can be downloaded from the voestalpine AG homepage: http://www.voestalpine.com/group/en/group/corporate-responsibility/
6. HSEE ASPECTS AT THE LOCATION: EVALUATION, DATA, PERFORMANCE

6.1 WATER

The location stands out due to its autonomous water supply and 60% consumption savings and the fact that no large amounts of process wastewater are created.

6.1.1 WATER

The plant’s own well supplies both voestalpine’s production facilities and the neighbouring firms at the Zeltweg industrial location with drinking and process water. The total extracted volume currently amounts to approx. 130,000 m³/y.

Numerous measures such as the implementation of a meter concept, related leakage monitoring and minimisation, as well as savings in the consumer area mean that in spite of a marked increase in production and employee numbers (>35%), since 1995 water consumption (sanitary water) at the Zeltweg location has been reduced by over 90 % to approx. 7,000 m³/y.
6.1.2 WASTEWATER

Wastewater of the following types, ordered in terms of volume, is produced at the location:

» Cooling water (direct discharge into the River Mur)
» Wastewater from the hygiene area (indirect discharge into the treatment plant of the Zeltweg Wastewater Association)
» Wastewater from plant cleaning (two wash boxes; treatment through modern oil and solids separation systems and subsequent indirect discharge into the treatment plant of the Zeltweg Wastewater Association)
» Process wastewater from rail descaling can be completely avoided by switching to inductive heating process.

The induction plant, as well as changes to other cooling units and systems, have resulted in a further marked increase in the cooling water requirement. This step has been taken deliberately on the basis of concepts drawn up with experts and involving the analysis of alternative solutions. As a result, we can avoid the use of cooling unit lubricants containing CFCs and this fact in combination with the electricity consumption of the cooling systems currently provides a superior overall ecological evaluation for water throughput cooling, especially as sufficient water is available. Moreover, apart from a limited and acceptable increase in temperature, the cooling water is not subject to any chemical impact.
Examples of successful measures from HSEE programmes implemented to date:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result/Success</th>
<th>Realisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WASSER/ABWASSER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water savings though meter concept + water saving armatures (Zl)</td>
<td>Reduction in hygiene water consumption by 50% (approx. 5,200 m³/y) due to water saving armatures</td>
<td>2001</td>
</tr>
<tr>
<td>Latest technology oil separator for the washing box (vaSZ)</td>
<td>Installation of a 3-stage oil separator Residual hydrocarbon impact in the treated flow less than 10 mg/l</td>
<td>2003</td>
</tr>
<tr>
<td>Wastewater-free small part washing unit for without halogenated cleaning agents containing hydrocarbons (vaSZ)</td>
<td>Completely wastewater-free small part washing unit with solvent-free cleaning agents Waste minimisation due to cleaning agent circulation including oil/heavy material separation</td>
<td>2003</td>
</tr>
<tr>
<td>Renewal of approx. 300 m of rain water sewer and drinking water pipeline at the Zeltweg location (northern branch Stage 1) (Zl)</td>
<td>The replacement of the roughly 60-year-old DN 150 pipeline saves leakages and electricity for spring pumps</td>
<td>2012</td>
</tr>
<tr>
<td>Cooling in the mechanical production area in BG25 using river water instead of drinking water or cooling equipment (vaSZ)</td>
<td>Avoidance of the consumption of approx. 37,000 m³/y of groundwater by means of the installation of throughput cooling using river water. The system can operate without pumps (connection to the pressure pipeline of the mini-hydropower plant), as well as saving of approx. 25 MWh per year of electricity for well pumps (corresponds with the prevention of approx. 13.2 t CO₂/y). Avoidance of the alternative use of a cooling plant and thus energy consumption (approx. 44 MWh/y; corresponds with approx. 23.4 t CO₂/y) and noise emissions. Optimized electronic controls via a connection to the central energy control system.</td>
<td>2014</td>
</tr>
<tr>
<td>Renewal of approx. 150 m of rain water sewer and drinking water pipeline at the Zeltweg location (northern branch Stage 2) (Zl)</td>
<td>The replacement of the roughly 60-year-old DN 150 pipeline saves leakages and electricity for well pumps</td>
<td>2016</td>
</tr>
<tr>
<td>Renewal of approx. 250 m of rain and hygiene water sewer at the Zeltweg location (northern branch Stage 1+2) (Zl)</td>
<td>Refurbishment will prevent leaks in the sewer system</td>
<td>2013+2017</td>
</tr>
</tbody>
</table>

Abbreviations: vaW = voestalpine Weichensysteme GmbH, vaSZ = voestalpine SIGNALING Zeltweg GmbH, VAE = voestalpine VAE GmbH (Holding), Zl = joint, superordinated activities at the Zeltweg location.
6.2 AIR

More than 50 extractor and filter systems are in operation at the location for the capture of dust emissions (from grinding and welding), cooling lubricant aerosols (from mechanical machining centres) and solvent emissions (bonding areas and painting unit). Using the type of extractor best suited to the individual situation, the greatest volume of emissions possible is captured in order to protect employees and prevent diffuse emissions. Moreover, filter systems of the highest standard are utilised to remove the maximum amounts of pollutants that is feasible, in order to reduce environmental impact and allow the direct recirculation of cleaned air into the halls and thus save energy and CO₂ emissions. The results are impressive:

- A 90% reduction in dust levels in the halls.
- Separation rates of over 99% in the dust filters, resulting in clean gas values that are largely under 1 mg/Nm³ and thus more than 90% below the permitted limits.

6.2.1 DUST

Welding and grinding represent two of the major phases in turnout production and are indelibly linked to the generation of welding smoke and grinding dust. Measures leading to significant improvements in this regard have been implemented through the following phased plan as part of a dust capture concept, which enables an average filtration of 4,000kg dust from the air annually:

- **Phase 1:** extraction at the point of origin. If impossible ...
- **Phase 2:** extraction using an adjustable extractor arm. If impossible ...
- **Phase 3:** encapsulation by means of an extractor hood or cabin

In addition, grinders and welders are subjected to regular industrial medicine examinations. Due to the discontinuous production process, a statement concerning total dust emissions is impossible. However, information can be provided with regard to the residual dust emissions in the waste air.

Table. Residual dust emissions from the extractor and filter systems and the legal limits (testing body: ÖSBS, Leoben). Testing interval: 3 years.

<table>
<thead>
<tr>
<th>Filter system</th>
<th>BG</th>
<th>Measurement date</th>
<th>Emission parameter</th>
<th>Measurement value (average)</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000t press</td>
<td>4</td>
<td>23 May 2017</td>
<td>Dust/smoke</td>
<td>1.1 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Frog grinding cabins 1-4</td>
<td>3</td>
<td>24 May 2017</td>
<td>Grinding dust **</td>
<td>&lt;1.0 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Frog grinding cabins 5+6</td>
<td>3</td>
<td>24 May 2017</td>
<td>Grinding dust **</td>
<td>&lt;1.0 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Frog grinding cabins 7+8</td>
<td>3</td>
<td>24 May 2017</td>
<td>Grinding dust **</td>
<td>&lt;1.0 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Frog grinding cabin 9</td>
<td>3</td>
<td>30 May 2017</td>
<td>Grinding dust **</td>
<td>&lt;1.0 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Tongue grinding cabins 1+2</td>
<td>5</td>
<td>23 May 2017</td>
<td>Grinding dust **</td>
<td>&lt;1.0 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Butt welding machine</td>
<td>5</td>
<td>23 May 2017</td>
<td>Welding smoke</td>
<td>&lt;1.0 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Frog nose welding</td>
<td>4</td>
<td>23 May 2017</td>
<td>Welding smoke**</td>
<td>&lt;1.0 mg/m³</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Tool grinding shop</td>
<td>11</td>
<td>30 May 2017</td>
<td>Grinding dust**</td>
<td>&lt;1.0 mg/m³</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

BG: building;
<1 = under 1 mg/m³;
Measurement values in relation to waste gas under standard conditions
** The officially defined limits for chrome (5 mg/m³) and nickel (1 mg/m³) relating to these plant systems were also clearly undercut.
6.2.3 VOLATILE ORGANIC CARBONS (VOC)

These emanate largely from quality checks, painting, bonding and maintenance work (for example from the solvents contained in paints and adhesives, volatile elements in cleaning agents, as well as the propellant gases in spray cans) and are balanced on the basis of the amounts consumed and safety data sheets. As a result of various measures, over the years the absolute emission volume has been cut by roughly a third from a figure of 4,200 kg (1995). Nonetheless, due to a constant increase in production output and maintenance activities, this figure has recently increased to currently stand at around 4,500 kg/y (please see table and diagram). However, in terms of the product volume delivered specific VOC emissions have fallen by 50% from 0.20 kg/t to 0.10 kg/t.

VOC emission trend in kg/year

Table. TOC concentrations in the waste air from bonding work areas (testing body: ÖSBS, Leoben)

<table>
<thead>
<tr>
<th>Plant</th>
<th>BG</th>
<th>Measurement date</th>
<th>Emission parameter</th>
<th>Measurement value (average)</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation and slide rod bonding</td>
<td>11</td>
<td>6 August 2014</td>
<td>TOC</td>
<td>23 mg/m³</td>
<td>100 mg/m³</td>
</tr>
<tr>
<td>Plausibility check</td>
<td></td>
<td>24 October 2019</td>
<td>Exhaust stream</td>
<td>5,900 m³/h</td>
<td>Compliance plausible</td>
</tr>
</tbody>
</table>

TOC: total organic carbon = sum of all organic solvents; measurement values in relation to waste gas under standard conditions; BG = company building
In accordance with §9(1) Clause 1 of the VOC Plant Directive, a second technical measurement (required once during start-up) was completed for the aforementioned plant in order to demonstrate that limits were adhered to. In future, pursuant to §9(1) Clause 1 the functionality of the VOC plant is to be examined every five years and no further concentration measurements are required, as long as the plant is not subject to modification.

6.2.4 OTHER EMISSIONS

In principal, the combustion of propane, acetylene and natural gas (for heating and process heat purposes) is a constant source of nitrogen oxides (NOx) and carbon monoxide (CO). However, due to the quality of the fuels used, as well as the status and setting of the plant burners, these emissions can be adjudged as low. The subsequent table shows the NOx emission values of the VAE gas-fuelled furnaces on the basis of the directive calculation for atmospheric emissions from iron and steel production (Federal Law Gazette 160/1997 as amended by 38/2010) § 4 Section 5. As a result of the partial switch to natural gas powered loaders and proper maintenance, the exhaust emissions of the company vehicle fleet can also be regarded as minimised and thus low.

Table. NOx emissions of the annealing furnace (testing body: ÖSBS, Leoben). Testing interval: 3 years

<table>
<thead>
<tr>
<th>Plant LOI annealing furnace-chamber 1+2</th>
<th>Measurement date</th>
<th>Emission parameter</th>
<th>Measurement value (average)</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG 4</td>
<td>30 May 2017</td>
<td>NOx</td>
<td>70.5 mg/m³</td>
<td>500 mg/m³</td>
</tr>
</tbody>
</table>

NOx: nitrogen oxides, defined as nitrogen dioxide (NO2); measured values in relation to standard waste gas and 5 Vol% O₂.

The table below contains the measurements and limits stipulated in the official authorisations for the natural gas heating boiler, air heater and overhead radiant tube systems, which have to be checked annually. In 2009, the majority of the heating systems were switched to biomass-fuelled district heating.

Table. CO and NOx emission levels of the heating systems in 2018 (testing body: manufacturing company) completed; testing interval: 1 year

<table>
<thead>
<tr>
<th>System</th>
<th>CO</th>
<th>Limit</th>
<th>NOx</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water heaters BG8 (FW) and BG9 (FO)</td>
<td>19</td>
<td>80</td>
<td>0</td>
<td>120</td>
</tr>
<tr>
<td>Water heater (FW) BG8</td>
<td>43</td>
<td>80</td>
<td>0</td>
<td>120</td>
</tr>
</tbody>
</table>

Examples of successful measures from HSEE programmes implemented to date:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result/Success</th>
<th>Realisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR (DUST, VOC ETC.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning and construction of nine frog and two tongue grinding cabins for optimum dust capture and ergonomic relief of the frog and tongue grinders by means of the installation of the very latest extractor and filter systems</td>
<td>Cartridge filters with the latest dust separation technology 80-90% reduction in dust impact in the halls and hence diffuse emissions 25-50% reduction in dust impact on the grinders in the cabins Post-filtration exhaust air values of less than 1 mg/m³ and thus over 90% below the statutory limits; also permits air recirculation in winter 10 dB(A) noise reduction due to absorbent surfaces of the cabins Optimum lighting Additional extractor/filter system for cabin 6 with a resultant doubling of extraction performance to 10,000 m³/h per cabin</td>
<td>In mehreren Schritten 2002 - 2015</td>
</tr>
<tr>
<td>Improvement in dust capture in the 5 and 6 frog grinding cabins (vaW)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renewal of the extraction and filter systems on the 1,000t press for improved smoke capture</td>
<td>Wet separator with five times the extraction capacity of the old system Optimised capture construction with three extractor hoods and pneumatic shield for blowing out 65% reduction in total dust/smoke in the surrounding hall as well as a 33% reduction in fine dust 45% reduction in dust/smoke impact directly in the work station to approx. 10% of the permitted limit (MAK)</td>
<td>2005</td>
</tr>
<tr>
<td>Description</td>
<td>Details</td>
<td>Date(s)</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
| Optimisation of the extraction and filter systems for the welding robots and submerged arc welding in BG 07 (vaW) | Cartridge filters with the latest dust separation technology with removal levels of >99.9%  
Savings of approx. 51 MWh annually and thus approx. 10t CO₂ by recirculation of clean air  
Optimised dust capture with a 40% reduction in impact on both employees and the hall area surrounding submerged arc welding | 2011, 2012 |
| Renewal of the butt welding machine extractor hood and filter system (vaW) | Cartridge filter system with a removal rate of over 99.9%  
40% reduction in dust impact in the surrounding area of the hall  
10% reduction (peak reduction of up to 50%) of welding smoke impact in the immediate working area  
Undercutting of the emission limit by over 90%  
Optimised extractor design with moving shield for the highest possible degree of welding smoke capture  
Doubling of the design air volume to approx. 8,000 m³/h  
A fire protection package consisting of optimised spark protection, a cyclone for spark pre-removal, integrated fire alarm and extinguishing connection  
Energy-efficient system design  
Recirculation of the clean air during the heating period with resultant savings of approx. 75 MWh of heating energy and approx. 15 t CO₂ per year | 2016      |
| Ribbed plate grinding extractor/filter system + ergonomics package       | Cartridge filter system with the latest dust separation technology  
50% reduction in total dust in the BG7-West hall area and  
50% reduction in respirable dust  
Clean gas values below 1 mg/Nm³, possibility for recirculation of the clean air during the heating period with resultant savings of approx. 140 MWh of heating energy and approx. 28 t CO₂ per year  
Noise reduction of approx. 10 dB due to cabins  
Optimum workstation lighting  
Installation of a height-adjustable working surface  
Design of the cabins with ergonomic safety mats | 2013      |
| Replacement of the existing cooling lubricant-aerosol separators on the machining centres with wet cartridge separators centres with wet cartridge separators (vaW, vaSZ) | Markedly improved and more constant separation performance and a reduced maintenance requirement | 2009      |
| Avoidance of VOC emissions/spray cans (vaW)                             | Avoidance of approx. 3,000 spray cans during colour penetration testing due to a refillable system with compressed air  
= prevention of 520 kg of VOC emissions and 400 kg of waste per year | 2008      |
| Optimised central extractor system for insulated rail joint and slide rod bonding in BG 11 (vaW) | Integration of the previously divided working areas  
2.5 times the extraction performance and a doubling of the extraction areas  
Ex-protected design of the extraction system  
Optimum capture of solvents in the work stations through downward suction on the tables  
Underfloor pipe laying in order to prevent the danger of tripping | 2011      |
| Extractor units for soldering areas in BG25 (vaSZ)                      | Two flexibly usable extractor/filter systems for solder smoke fitted with HEPA fine filters (99.97% removal) and activated carbon filters. | 2014      |
| New gas-fuelled side loaders (vaW)                                      | Low-emission (prevention of diesel soot particles), energy-efficient and ergonomically designed transporters for heavy and long loads | 2014      |
| Crossing point welding extractor-filter system + ergonomics package (vaW) | Improved extraction performance to up to 4,500 m³/h  
Fitting of the work station with a lifting table and an ergo mat, in order to ease the physical strain on the employee | 2015      |
| Filter breakage sensor (vaW)                                            | Retrofitting of filter breakage sensors on twelve clean gas filter systems for clean gas monitoring. Should value limits be exceeded (1 mg/m³), the sensors activate a clearly visible optical alarm and in the case of systems fitted with exhaust/circulatory air switching, an automatic changeover to exhaust air | 2015      |

Abbreviations: vaW = voestalpine Weichensysteme GmbH, vaSZ= voestalpine SIGNALING Zeltweg GmbH, VAE = voestalpine VAE GmbH (Holding), ZL = joint, superordinated activities at the Zeltweg location
6.3 ENERGY AND CO₂

As a result of the implementation of an energy concept based on the following three main aspects, the location disposes over a largely autonomous energy supply and CO₂-neutral balance. In particular, the fundamental consideration of this complex of issues has its roots in membership in the “Corporate Climate Alliance” of which the location has been a member since 2001.

6.3.1 MAIN ENERGY MANAGEMENT ELEMENTS

» 1. Measures for a reduction in CO₂ emissions and greater efficiency with regard to energy: The central, electronic energy/building control system for the steering and monitoring of electricity, heating, compressed air, etc. provides a valuable basis in this connection, as does the integration of energy aspects into the planning of machinery and buildings.

» 2. Switch of approx. 75 % of the heating requirement from natural gas to a district heating system, which is fired with CO₂-neutral biomass:
   » Biomass is utilised as energy source. This derives from material that would otherwise not be used such as bark, branches, treetop cuttings and damaged wood, which originates from the immediate area of the Aichfeld and thus contributes to local value added.
   » In addition, the district heating system is fed from the Pöls pulp and paper plant via a regional waste heat network.

» 3. The construction and operation of a small-scale hydropower plant on the River Pöls (PenzVAEE GmbH) have brought the high-quality, autonomous supply of the location with CO₂-free electricity from waterpower. In addition, surplus electricity can be fed into the grid thus preventing CO₂, which is credited to the balance of the voestalpine location and thus compensates for the current remaining CO₂ emissions from fossil fuels (above all natural gas for furnaces, fuel for the vehicle fleet, purchases in the case of electricity requirement peaks). (description see page 20).

It is important to note that these measures did not derive from ecologically utopian ideas, but rather are in line with the economic criteria of cost viability, as well as future attainment stability of energy prices. They therefore constitute an important element in the sustainable development of the location, whereby competitiveness and jobs were and are secured.
6.3.2 ENERGY AND CO₂ BALANCE

In 2019, the voestalpine location in Zeltweg consumed 16,300 MWh of energy. As a result of the implementation of the energy concept, the type and number of the processes of energy relevance have changed, as is evident in the following diagram:

The energy consumption data is employed to determine the CO₂ emissions. Total emissions in 2019 (direct and indirect emissions at the location) amounted to 746t. As a result of the feeding of 4,424 MWh of electrical energy from hydropower into the national grid, 2,321t of CO₂ from conventional electricity production were prevented with the consequence that a clearly positive balance of approx. 1,575t resulted.

Table. Energy and CO₂ balance in the 2019 financial year

<table>
<thead>
<tr>
<th>Energy</th>
<th>Quantity</th>
<th>Unit</th>
<th>Energy content</th>
<th>MWh</th>
<th>Translation factors</th>
<th>CO₂ t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power plant electricity</td>
<td>6,508</td>
<td>MWh</td>
<td>6,508 MWh</td>
<td></td>
<td>0 t/MWh (CO₂-neutral biomass)</td>
<td>0 t</td>
</tr>
<tr>
<td>Electricity purchases</td>
<td>1,701</td>
<td>MWh</td>
<td>1,701 MWh</td>
<td></td>
<td>0 t/MWh (Bezugsmix 2018)</td>
<td>0 t</td>
</tr>
<tr>
<td><strong>INDIRECT TOTAL</strong></td>
<td><strong>8,209</strong></td>
<td>MWh</td>
<td><strong>8,209 MWh</strong></td>
<td></td>
<td><strong>0 t</strong></td>
<td><strong>0 t</strong></td>
</tr>
<tr>
<td>Diesel</td>
<td>60,430</td>
<td>l</td>
<td>832 MWh</td>
<td></td>
<td>0.002443 t/l **</td>
<td>196 t</td>
</tr>
<tr>
<td>Petrol</td>
<td>8,549</td>
<td>l</td>
<td>79 MWh</td>
<td></td>
<td>0.002144 t/l **</td>
<td>18 t</td>
</tr>
<tr>
<td>Heating: district heating</td>
<td>4,207</td>
<td>MWh</td>
<td>4,207 MWh</td>
<td></td>
<td>0 t/MWh (CO₂-neutral biomass)</td>
<td>0 t</td>
</tr>
<tr>
<td>Heating: natural gas</td>
<td>113,504</td>
<td>Nm³</td>
<td>1,264 MWh</td>
<td></td>
<td>0.002028 t/Nm³ **</td>
<td>230 t</td>
</tr>
<tr>
<td>Process gas: natural gas</td>
<td>87,000</td>
<td>Nm³</td>
<td>969 MWh</td>
<td></td>
<td>0.002028 t/Nm³ **</td>
<td>176 t</td>
</tr>
<tr>
<td>Process gas: natural gas stackers</td>
<td>40,728</td>
<td>Nm³</td>
<td>454 MWh</td>
<td></td>
<td>0.002028 t/Nm³ **</td>
<td>83 t</td>
</tr>
<tr>
<td>Process gas: propane</td>
<td>23,898</td>
<td>kg</td>
<td>308 MWh</td>
<td></td>
<td>0.001597 t/Nm³ **</td>
<td>38 t</td>
</tr>
<tr>
<td>Process gas: acetylene</td>
<td>1,154</td>
<td>kg</td>
<td>15 MWh</td>
<td></td>
<td>0.00345 t/kg</td>
<td>4 t</td>
</tr>
<tr>
<td><strong>DIRECT TOTAL</strong></td>
<td><strong>8,128</strong></td>
<td>MWh</td>
<td><strong>8,128 MWh</strong></td>
<td></td>
<td><em><em>0.525 t/MWh (ENTSO-E-Mix</em>)</em>*</td>
<td><strong>-2,321 t</strong></td>
</tr>
<tr>
<td>Total Zeltweg location</td>
<td></td>
<td></td>
<td>16,336 MWh</td>
<td></td>
<td></td>
<td>746 t</td>
</tr>
<tr>
<td>EFEED INTO THE NATIONAL GRID</td>
<td>4,424</td>
<td>MWh</td>
<td>4,424 MWh</td>
<td></td>
<td>0.525 t/MWh (ENTSO-E-Mix*)</td>
<td>-2,321 t</td>
</tr>
<tr>
<td>Credit difference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-1,575 t</td>
</tr>
</tbody>
</table>

* An extrapolated value calculated by voestalpine Weichensysteme on the basis of Entso-E-Mix mean value 2015-17 in line with the Austrian Power Labelling Directive.
** On the basis of the Federal Environmental Ministry’s CO₂ computer - direct greenhouse gas emissions 2018.
6.3.3 CHANGES TO THE HEATING SYSTEM AT THE ZELTWEG LOCATION

Until 1998, the heat for offices and halls was obtained in the form of hot water from the central boiler house (large, natural gas fired boiler) of a neighbouring company. The heating system was then optimised in several partial steps during the years up to 2009, when 75% of requirements were switched to district heating obtained from biomass and the regional heating network fed from pulp production in Pöls. Consequently, while in 1998 62% of energy consumption at the location related to heating, today it only amounts to 34%.

The following diagram shows heat consumption in terms of the heating degree days and the heated buildings, i.e. the outdoor temperatures of the respective comparative years and the changes in heated volume are taken into account.

As a result of numerous measures (improved heating systems, thermal renovation, optimised control through a central energy control system) between 1998 and 2018/19 heating consumption per heating degree day and cubic metre of heated building volume was slashed by approximately 50%.
6.3.4 GENERAL INFORMATION

Following the achievement of the first CO₂-neutral balance in the 2010 financial year, the energy mix at the location was subject to further positive ecological changes brought about by subsequent investments and the gradual transition to an inductive heating system using electricity, which replaced the gas-fired furnace employed previously. As a result, approximately 320 t/y of CO₂ emanating from natural gas firing were avoided through the utilisation of clean water from the hydropower plant. Naturally, electricity sales were reduced, which in turn lowered the “surplus” in the CO₂-balance, but nevertheless in terms of average electricity production over a number of years (dependent upon the slight fluctuations in water levels in the River Pöls), as well as current production volumes, a retention of a CO₂-neutral location balance is anticipated.

The office in Vienna uses around 100 MWh of electricity annually (corresponds with approx. 18.8 t CO₂) and roughly 150 MWh of district heating.

6.3.5 COMPANIES IN THE CLIMATE ALLIANCE

The voestalpine location Zeltweg has been a Climate Alliance company since April 2001 and was the first industrial company in Styria to join the Corporate Climate Alliance.

Examples of successful measures from HSEE programmes implemented to date:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result/Success</th>
<th>Realisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENERGY/CO₂</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energetically optimised choice of construction materials and building technology for Newly built production hall and office block (vaSZ) Extension of the production hall (vaSZ) Modification and extension of the BG8 office block (vaW)</td>
<td>Facades, windows, roofs and floor insulation of a high heat insulating technical quality Halogen-free insulation materials Energy control system for building lighting and heating Minimum air conditioning energy requirement due to concrete core activation in the BG2 and BG3 office buildings with free cooling unit and optimised ergonomics (no draughts, contamination, etc.) Quick closing doors in the halls, insulated section doors with cold air curtains</td>
<td>2003 2007 2004</td>
</tr>
<tr>
<td>Installation of a hall ventilation system with heat recovery in the mechanical production area in BG25 (vaSZ)</td>
<td>Installation of a central ventilation system with a capacity of 15,000 m³/h including a cross-flow heat exchanger with an efficiency level of approx. 66% Heat savings of approx. 130 MWh/y, which corresponds with a 56t reduction in annual CO₂ emissions Ergonomic improvements in the atmospheric conditions (draughts, temperature, damp and odours) through the optimised ventilation concept with air intake fans and local and hall waste air extractors Noise minimisation through a design incorporating internal and external control (Automatic control) Integrated possibility for the cooling of intake air through the use of water from the extinguishing water line (without pumps or electricity for a cooling system and thus the avoidance of power consumption totalling approx. 44 MWh/y; which corresponds with approx. 23.4t of CO₂/y)</td>
<td>2012</td>
</tr>
<tr>
<td>Technical heating renovation of the 11-storey office block (BG1) (Zl)</td>
<td>Renewal of the windows and facade insulation with an improvement in the kf-values Reduction in the heating characteristic by approx. 65% and real savings relating to heating and air conditioning of 230 MWh, which corresponds with the prevention of 42t CO₂/y (related to aliquot volume of natural gas) Halogen-free insulation/building materials</td>
<td>2003</td>
</tr>
<tr>
<td>Complete renewal of the electricity supply system at the location (Zl)</td>
<td>175 MWh annual loss savings (= approx. 3% of electricity consumption) Prevention of 7.7t of CO₂ annually (pursuant to UCTE Index 2006) All plants PCB-free and all transformers with sumps</td>
<td>2007</td>
</tr>
</tbody>
</table>
| Completion of the small-scale hydropower plant (PenzVAEE GmbH) on the River Pöls (Zl) | Annual operating capacity of the power plant of over 12,000 MWh. 
Over 90% own supply of the voestalpine location in Zeltweg with the electricity thus generated. 
Cost savings and prevention of approx. 2,600t of CO₂ emissions from the electricity mix of otherwise essential electricity purchases (UCTE/ENTSO-E Index 2009) | 2009 |
| --- | --- | --- |
| Installation of a hydropower screw in the area of the residual water discharge on the power plant weir (Zl) | Generation of another approx. 200 MWh electricity/year (corresponds with the prevention of approx. 84t CO₂/year pursuant to UCTE/ENTSO-E Index 2009) and fishway. 
Installation of the electronic regulation of the residual water in the River Pöls. | 2010 |
| Conversion of a large part of the heating system (BG1, 7, 10-14, 24, 25) from natural gas fired boilers to biomass-fired district heating in cooperation with Bioenergie GmbH (Zl) | Conversion of 75% of the heating requirement from natural gas to CO₂-neutral, biomass and waste heat fired district heating; resultant prevention of approx. 1,400t of CO₂ emissions per year. 
Ergonomic improvements in the halls through the renewal of hot air blowers (uniform warmth, removal of cold poles, fewer draughts). | 2009 |
| Renovation of the skylights in BG 3, 4, 6, 7 and 11 (vaW) | Replacement of approx. 3,300 m² of armoured glass with an U-value of 5.6 W/m²K by polycarbonate sheets with U-values of 1.38-1.82 W/m²K. 
Heating savings of approx. 300 MWh/y, which corresponds with the prevention of approx. 60 t CO₂/y (related to aliquot volume of natural gas). | 2009 |
| Renovation of the roofs on BG6 South and BG7 (vaW) | Thermal renovation of approx. 3,100 m² of roofing, as well as 520 m² of skylights and 130 m² of gables. 
Installation of 18cm rock wool insulation with heat conductivity of 0.035 W/(m²K). 
Improvement in the U-value of the new roof from 0.59 to 0.19 W/m²K. 
Reduction in heat consumption of approx. 160 MWh/y, which corresponds with the avoidance of approx. 32 t CO₂ emissions/y. 
Technical optimisation of the fire protection system. 
Noise-absorbent inner side with an absorption rate of (αs > 0.60). | 2012 |
| Use of circulatory air in the frog and tongue grinding cabins, as well as other extractor/filter systems | The energy content in the recirculation of approx. 100,000 m³/h of air corresponds with heating savings of approx. 1,100 MWh/y. 
In terms of an aliquot value of natural gas, as a comparative value this equals the prevention of approx. 210 t CO₂/y. | 2011 |
| Renovation of the social and hygiene amenities in BG11 for approx. 150 employees (vaW) | Thermal renovation of the floors, walls, windows and ceilings. 
Mechanical ventilation concept with cross-flow heat exchanger (61.4% efficiency level), which saves 53 MWh of heating energy and 10.5t of CO₂ emissions annually, as well as ensuring an excellent room atmosphere with regard to damp, odour and freedom from draughts. 
Water-saving armatures and energy-saving lighting. 
Modern interior fittings from an optical, hygienic and safety perspective (fire alarm system, escape route lighting, etc.). | 2012 |
| Use of the waste heat from compressed air compressors for the sanitation water in the changing rooms in BG3+4 and BG11 (vaW) | Use of the waste heat from compressed air compressors in BG11 (approx. 150 changing room places) and BG3+4 (approx. 220 changing room places) for sanitary water (for roughly 75% of the workforce at the location). 
In winter, surplus waste heat is also used for the heating system in BG10/11. 
The waste heat from the compressors amounts to approx. 120 kW, the savings in energy purchases total approx. 450 MWh per year (corresponds with approx. 165t CO₂/y). | 2012 (BG11) 
2014 (BG3+4) |
<table>
<thead>
<tr>
<th>Project Description</th>
<th>Details</th>
<th>Year</th>
</tr>
</thead>
</table>
| Renovation of the facades and roof of BG8 (vaW)                                    | Renovation of a hall with a floor area of approx. 1,700 m² and a spatial volume of some 19,000 m³  
|                                                                                   | Improvement in the U-value of the roof from 0.43 to 0.20 W/m²K by means of the installation of the Domico prefabricated roof system with approx. 22 cm of rock wool insulation  
|                                                                                   | Improvement of the U-value of the outer walls from 2.6 to 0.17 to 0.30 W/m²K though the mounting of PUR concrete sandwich components and cassette elements with 16 cm rock wool insulation  
|                                                                                   | Improvement in the U-value of the windows from 5.7 to 1.23 W/m²K through the installation of two-pane thermal insulation glazing  
|                                                                                   | A 34% reduction in the heating requirement, which corresponds with approx. 220 MWh/y and the prevention of approx. 40 t CO₂ annually  
|                                                                                   | Roof with an internal acoustic ceiling offering 90% sound absorption  
|                                                                                   | Improvement in the exterior sound insulation from approx. 35 dB(A) to 52 (roof), from approx. 30 dB(A) to 36-39 (windows), as well as from 30 dB(A) to 44 (facade)  
|                                                                                   | A more than quadrupling of the effective natural lighting area  
|                                                                                   | Integration of lighting and heating into the central energy control system  
|                                                                                   | Non-inflammable roof construction and an increase in snow bearing capacity from 90 auf 192 kg/m²  
|                                                                                   | Integrated fire alarm and smoke heat extractor system  
|                                                                                   | Integrated LED lighting including safety and escape route orientation lighting | 2014 |
| LED lighting pilot project in BG8 (vaW)                                           | Reduction in the integrated power requirement by approx. 20%  
|                                                                                   | Automatic dimming in line with external/daylight levels and integration into the central energy control system  
|                                                                                   | Integrated safety lighting  
|                                                                                   | A positive ergonomic effect and electricity savings of approx. 14 MWh/y, which corresponds with the prevention of approx. 4.8 t of CO₂ emissions (on the basis of the ENTSO-E average 2015) | 2014 |
| Energy-efficient extension to mechanical production in BG25 (vaSZ)                | Energy-conscious construction material selection:  
|                                                                                   | XPS insulated flooring with an U-value of 0.34 W/m²K  
|                                                                                   | PUR sandwich elements for facades with an U-value of 0.20-0.31 W/m²K  
|                                                                                   | Domico roof system with approx. 22 cm of mineral wool insulation, U-value 0.20 W/m²K  
|                                                                                   | 2-pane thermal insulation glazing U-value = 1.23 W/m²K  
|                                                                                   | Roof with an internal acoustic ceiling offering 90% sound absorption  
|                                                                                   | Integration of lighting and heating lighting into the central energy control system | 2014 |
| Loading gear for narrow gauge turnouts (vaW)                                      | Special device for the delivery of pre-assembled turnouts (JIT switches); also suitable for narrow gauge railways instead of truck transports  
|                                                                                   | A 229 MWh reduction in fuel-related energy consumption and the prevention of 56 t CO₂ emissions annually | 2015 |
| Renovation of the northern facades of BG3 + 5 and the eastern facades of BG5+6+7 (vaW) | Renovation of facades with a length of approx. 360 m and an area of approx. 4,100 m²  
|                                                                                   | Outer wall U-value improvements:  
|                                                                                   | From 3.20 to 0.34 W/m²K through the replacement of reinforced concrete elements with PUR sandwich concrete elements in the lower facade area  
|                                                                                   | From 2.26 to 0.25 W/m²K through the replacement of concrete wall blocks by cassette elements with 16 cm rock wool insulation  
|                                                                                   | Improvement in the U-value of the windows from 5.7 to 1.11 W/m²K through the installation of two-pane thermal insulation glazing  
|                                                                                   | New insulation of over 200 m of heating pipes  
|                                                                                   | Reduction in heating consumption by around 16.4% in line with the energy certificate, which corresponds with approx. 438 MWh/y and the prevention of approx. 86 t CO₂/y*  
|                                                                                   | Installation of a noise insulation facade: improvement in the Rw value regarding average sound insulation from approx. 31 dB(A) to 43 (windows), as well as from 34 dB(A) to 50 (walls)  
<p>|                                                                                   | Improved lighting and above all visual linkage through clear (due to glare prevention) lightly coloured glass instead of wired glass | 2016 |</p>
<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renovation of the BG6 North roof (vaW)</td>
<td>Renovation of the remainder of the roof on BG6 (first section renovated in 2010) with an area of approx. 1,300 m². Improvement in the U-value of the roof from 0.59 to 0.20 W/m²K through the installation of 20 cm rock wool insulation. A reduction in the heating requirement of approx. 20%, which corresponds with approx. 67 MWh/y and the prevention of approx. 13.3 t CO₂ annually. Roof with an internal acoustic ceiling offering approx. 60% sound absorption. Improvement in average sound insulation of approx. 6 dB to 41 dB(A). Non-inflammable roof construction and an increase in snow bearing capacity from 140 auf 192 kg/m².</td>
<td>2016</td>
</tr>
<tr>
<td>Note regarding CO₂ savings.</td>
<td>Owing to the fact that in December 2009 the heating of the bulk of the Zeltweg location (all buildings except BG8+9) was switched from natural gas to CO₂-neutral district heating (based on biomass and regional waste heat use), we do not include the projects marked with &quot;**&quot; in further CO₂ savings. However, we do enable the district heating operators to employ the heat savings for further subsequent projects. Therefore, where natural gas heating has been replaced, the listed annual reductions in tonnes of CO₂ emissions were saved for this energy volume.</td>
<td></td>
</tr>
<tr>
<td>LED lighting in BG6 (vaW)</td>
<td>Reduction in the installed capacity of approx. 37%. Automatic dimming in line with external/daylight levels and integration into the central energy control system. Integrated safety and escape route lighting. A positive ergonomic effect and electricity savings of approx. 29 MWh/y, which corresponds with the prevention of approx. 10 t of CO₂ emissions (on the basis of the ENTSO-E average 2015).</td>
<td>2016</td>
</tr>
<tr>
<td>Switch of tongue heating from a natural gas furnace to inductive heating</td>
<td>87% reduction in the energy consumed for each tongue heating. With the changeover level achieved at the end of 2016, energy savings of approx. 1,800 MWh/y, which corresponds with a CO₂ reduction of approx. 323 t, as natural gas has been replaced by electricity from hydropower.</td>
<td>2016</td>
</tr>
</tbody>
</table>

Abbreviations: vaW = voestalpine Weichensysteme GmbH, vaSZ = voestalpine SIGNALING Zeltweg GmbH, VAE = voestalpine VAE GmbH (Holding), ZI = joint, superordinated activities at the Zeltweg location.
6.4 SOIL PROTECTION AND WASTE MANAGEMENT

SOIL PROTECTION AND WASTE PREVENTION CONSTITUTE MAJOR FACTORS FROM BOTH AN ECOLOGICAL AND ECONOMIC PERSPECTIVE. IN ADDITION, RECYCLING OF 90% MEANS THAT MATERIAL CYCLES ARE CLOSED TO THE GREATEST POSSIBLE EXTENT.

6.4.1 CONTAMINATION RESEARCH

In 1996, a research regarding contamination was carried out in the course of the creation of an environmental management system according to EMAS-VO, as the possibility of soil and groundwater pollution in the course of a company history dating back to 1851 could not be excluded. In 2006, the existing data was supplemented and summarised by means of a comprehensive, state-of-the-art location expertise completed by the “Gruppe Wasser” civil engineering office. The results of these investigations confirm that there is no contamination at the voestalpine location in Zeltweg and therefore the company premises do not pose a threat to the environment through soil or groundwater pollution.

6.4.2 MATERIAL AND WASTE STORAGE

A special focus is placed on the prevention of future damage and therefore, especially in the case of material and waste storage, great value is attached to the smallest possible danger potential, above all in connection with soil contamination and/or groundwater and surface water pollution. Where material leakage is possible from new plants, oil-tight foundations are installed and naturally enough chemicals are stored on sumps. Tanks are also placed on sumps or have double walls with leak gauges. In this connection, careful plant testing and maintenance are of major significance, together with employee training regarding correct material handling.

The floor of the waste collection and separation station is impervious and slopes backwards towards a sump with the result that should a leak occur, soil or surface water contamination can be excluded. A covered, wastewater-free storage area has been designed for the cooling lubricant covered swarf emanating from mechanical production. This solves the precipitation problem and prevents cooling lubricants being washed into the soil.
### 6.4.3 WASTE BALANCE

The following table lists the amounts of waste accumulated at the location during the 2018 calendar year.

<table>
<thead>
<tr>
<th>Waste designation</th>
<th>Key number.</th>
<th>Quantity (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scrap</td>
<td>35103</td>
<td>2,584,959.00</td>
</tr>
<tr>
<td>Waste paper</td>
<td>18716</td>
<td>43,336.00</td>
</tr>
<tr>
<td>Treated waste wood</td>
<td>17202</td>
<td>93,680.00</td>
</tr>
<tr>
<td>Aluminium</td>
<td>35304</td>
<td>490.00</td>
</tr>
<tr>
<td>Commercial refuse</td>
<td>91101</td>
<td>112,438.00</td>
</tr>
<tr>
<td>Copper PVC cable</td>
<td>35314</td>
<td>1,644.00</td>
</tr>
<tr>
<td>Used oil for thermal reuse</td>
<td>54102*</td>
<td>6,290.00</td>
</tr>
<tr>
<td>Monitors</td>
<td>35212*</td>
<td>456.00</td>
</tr>
<tr>
<td>Lead-acid batteries</td>
<td>35322*</td>
<td>700.00</td>
</tr>
<tr>
<td>Other electrical devices, hazardous</td>
<td>35201*</td>
<td>2,626.00</td>
</tr>
<tr>
<td>Large electrical devices &gt; 50cm, hazardous</td>
<td>35220*</td>
<td>242.00</td>
</tr>
<tr>
<td>Refrigerators (domestic appliances)</td>
<td>35205*</td>
<td>64.00</td>
</tr>
<tr>
<td>Plastic packaging with hazardous residues</td>
<td>57127*</td>
<td>3.00</td>
</tr>
<tr>
<td>Rod-shaped fluorescent tubes</td>
<td>35339*</td>
<td>472.00</td>
</tr>
<tr>
<td>Oil-polluted materials</td>
<td>54930*</td>
<td>6,385.00</td>
</tr>
<tr>
<td>Printing ink residues, copier toner, non-hazardous</td>
<td>55509</td>
<td>152.00</td>
</tr>
<tr>
<td>Used air filters, not oil contaminated</td>
<td>54933</td>
<td>100.00</td>
</tr>
<tr>
<td>Used filters with special non-hazardous content</td>
<td>31434</td>
<td>220.00</td>
</tr>
<tr>
<td>Detergent washing and cleaning agents</td>
<td>59402</td>
<td>80.00</td>
</tr>
<tr>
<td>Aliphatic amines</td>
<td>55352*</td>
<td>698.00</td>
</tr>
<tr>
<td>Used paint and dye solvents in containers</td>
<td>55502*</td>
<td>701.00</td>
</tr>
<tr>
<td>Spray cans containing residues</td>
<td>59803*</td>
<td>772.00</td>
</tr>
<tr>
<td>Ferrous metal packaging with hazardous residues</td>
<td>35106*</td>
<td>5.00</td>
</tr>
<tr>
<td>Fissile emulsions</td>
<td>54402*</td>
<td>55,820.00</td>
</tr>
<tr>
<td>Developed baths</td>
<td>52723*</td>
<td>200.00</td>
</tr>
<tr>
<td>Filters/absorbents with hazardous content</td>
<td>31435*</td>
<td>32.00</td>
</tr>
<tr>
<td>Fixing baths</td>
<td>52707*</td>
<td>275.00</td>
</tr>
<tr>
<td>Non-hardened wood residues</td>
<td>55903*</td>
<td>443.00</td>
</tr>
<tr>
<td>Lab waste/chemical residues (liquid)</td>
<td>17209*</td>
<td>38,880.00</td>
</tr>
<tr>
<td>Oil separator content &gt; 30% solid</td>
<td>59305*</td>
<td>40.00</td>
</tr>
<tr>
<td>Oil sludge</td>
<td>54702*</td>
<td>22,990.00</td>
</tr>
<tr>
<td>Oil-water mixes</td>
<td>54201*</td>
<td>3,580.00</td>
</tr>
<tr>
<td>Sand trap content &gt; 30% solid</td>
<td>54408*</td>
<td>11,620.00</td>
</tr>
<tr>
<td>Ferrous dust without hazardous content (MAD)</td>
<td>54701*</td>
<td>5,460.00</td>
</tr>
<tr>
<td>Abrasives, grinding disks</td>
<td>35101</td>
<td>5,688.00</td>
</tr>
<tr>
<td>Grinding sludge with oil content</td>
<td>31444</td>
<td>6,840.00</td>
</tr>
<tr>
<td>Total without scrap</td>
<td>54710*</td>
<td>287.00</td>
</tr>
<tr>
<td>Total with scrap</td>
<td>423,709.00</td>
<td></td>
</tr>
<tr>
<td>Summe mit Schrott</td>
<td>3,008,668.00</td>
<td></td>
</tr>
</tbody>
</table>

Key number in accordance with the current S 2100 standard

* Hazardous waste according to S 2100

| Material and thermal reuse | 94.9% | 2,872,423 |
| Disposal and thermal disposal | 4.7%  | 142,068   |
| Landfill 0.4%               |       | 12,815    |
In addition to the fractions listed in the table, organic waste (approx. 1,000 kg/y), white and coloured glass (approx. 1,300 kg/y), metal packaging (“blue bin”, approx. 500 kg/y) and plastic packaging (“yellow bin”, approx. 16,500 kg/y) are collected separately by our workforce and subsequently transferred to treatment. As a result of the large percentages of metals and paper in our waste, the recycling share remains high at around 90%. Scrap is largely transported to external recycling by the regional disposal companies, Trügler GmbH and Kuttin GmbH. All the on-site construction measures are accompanied by soil analyses and excavated materials are disposed of correctly in line with the Landfill Directive.

The volume of waste generated annually, and hence the waste trend, is highly dependent upon the order situation and is also influenced by special activities such as interior renovation, demolition work, cleaning, etc.

**Packaging:**
The packaging that we deliver largely consists of non-impregnated wood (crates, boards, packing), metal strip and a small amount of plastic. Domestic deliveries are withdrawn via an ARA licensing agreement (no. 10527) and are intended for material and energy use.

Examples of successful measures from HSEE programmes implemented to date:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result/Success</th>
<th>Realisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SOIL AND WASTE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creation of a storage area for cooling lubricant-covered swarf (Zl)</td>
<td>Covered and thus wastewater-free Oil/liquid impermeable floor plate angled towards the rear with a collecting gutter for drops of cooling lubricant</td>
<td>2002</td>
</tr>
<tr>
<td>Building of a new store for flammable liquids (VbF-store) at the Zeltweg location (Zl)</td>
<td>Store for 5,000l of flammable liquids (flash point &lt; 100 °C) Explosion protection including extraction near to floor level Sump with a retention capacity of 9,700l for stored volumes and extinguishing agents in an emergency pursuant to TRVB C 145</td>
<td>2003</td>
</tr>
<tr>
<td>Building of a waste store for the collection and separation of hazardous wastes (Zl)</td>
<td>Waste store with an area of 125 m² Oil/liquid impermeable floor plate angled towards the rear with a collecting gutter for 500l in the case of leaks</td>
<td>2004</td>
</tr>
<tr>
<td>Uniform design of waste islands and collection bins (StZ)</td>
<td>Definition of optimum locations and design of waste islands</td>
<td>2015</td>
</tr>
<tr>
<td>Switching of emptying to the logistics train system (StZ)</td>
<td>Bin emptying using the logistics train system instead of single stacker trips (reduced driving) Further improvement in separation quality through the prevention of overfilled bins by means of adjusted emptying routes/cycles</td>
<td>2015</td>
</tr>
<tr>
<td>Pilot project in five machining centres in BG7 for the prolongation of coolant life (vaW)</td>
<td>Use of belt skimmers, circulatory pumps and new mixing devices for coolant preparation Prolongation of coolant life from four to 12 months Reduction in annual coolant consumption by approx. 56% and cost savings of approx. 57%</td>
<td>2016</td>
</tr>
</tbody>
</table>
6.5 NOISE AND RADIATION PROTECTION

FOLLOWING THE FOUNDATION OF THE LOCATION IN 1851, HOUSING AND THE TOWN ITSELF GREW UP AROUND THE WORKS, WHICH WAS THEN A HIGHLY PRACTICAL SITUATION. ACCORDINGLY, IN VIEW OF THE FACT THAT RESIDENTIAL AREAS SURROUND THE LOCATION, VOESTALPINE PAYS SPECIAL ATTENTION TO THE AVOIDANCE OF NOISE IMPACT.

6.5.1 NOISE

The main aspects of noise avoidance are

1. Measures at the noise source involving the selection and design of tools and machinery
2. Noise insulation measures such as the encapsulation of plant units (e.g. motors) and working areas (e.g. through grinding cabins) or extractor silencers
3. Structural noise protection where possible through the layout of processes and buildings, and the selection of construction materials

In particular, the company noise register lists in-house noise sources, which from an employee protection standpoint, must be kept below a defined limit of 85 dB(A) by means of safeguards. In these noise zones, our employees are supplied with especially efficient, individually fitted hearing protection and from 80 dB(A) upwards, industrial medicine examinations are offered. The measurement technology monitoring of the workplaces benefit employees, the environment and neighbours to an equal extent.

In 2005, a notable improvement with regard to the main noise impact on the closest neighbours was achieved by means of an optimised cooling system concept for the computer rooms, which provided a marked reduction in impact (22 dB(A) at 1m distance and of approx. 9 dB(A) on the site perimeter as compared to the old system).

Noise insulation was also taken into account during the initial planning phase of the installation of the hall ventilation system in BG25, as well as other structural projects such as the renovation of the skylights in BG7, the BG6+7 roof, the BG8 hall and the extension of mechanical production in BG25.

The installation of a noise insulation facade (including noise insulation windows) on the northern side of BG 3+5 and the eastern side of BG5-7 represent the latest, comprehensive measures in this connection. Moreover, a heat and noise insulation housing was used for the filter system in the northern section of BG3.
6.5.2 RADIATION PROTECTION

X-ray and radiography testing serve the identification of internal workpiece defects and take place in the company’s own radiation bunker. Once the activity required for testing technology has subsided, the cobalt 60 radiation source is re-enriched by the Seibersdorf Research Centre near Vienna and then used again.

Employees working in this area are monitored by means of person-related dosimeter. Statutory limits are clearly undercut and there is no external radiation of relevance. In addition, the facility is subject to regular official inspections by the authorities.

Examples of successful measures from HSEE programmes implemented to date:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result/Success</th>
<th>Realisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase of fitted hearing protection for employees (according to noise impact priority) (Zi)</td>
<td>Approx. 250 employees in line with the priorities established by noise measurements in the work station have already been equipped with fitted hearing protection</td>
<td>Laufend ab 2006</td>
</tr>
<tr>
<td>Refurbishing of the company locomotive (with the target of reduced noise and ergonomic improvements) (vaW)</td>
<td>Statutory noise limits in the driver’s cab and the directly surrounding area undercut by 10 dB, 70-80 % reduction in contaminants through the new EURO IIIA standard engine, as compared to the old locomotive with regard to CO, NOx, soot and unburned fuel Ergonomic improvements in the driver’s cab (heating, cooling, vibration reduction)</td>
<td>2008</td>
</tr>
<tr>
<td>Testing for noise reduction during rail turning (vaW)</td>
<td>The turning crossheads have proved to be an effective means of not only reducing noise, but also creating greater safety</td>
<td>2006</td>
</tr>
<tr>
<td>Cooling unit concept for the computing room (VAE)</td>
<td>Approx. 9 DB(A) reduction for the closest neighbours on the property limits</td>
<td>2005</td>
</tr>
<tr>
<td>Renewal of the skylights in BG 7 (vaW)</td>
<td>Double glazing of approx.900 m² of skylights providing an additional noise reduction of 4 dB (Rw)</td>
<td>2009</td>
</tr>
<tr>
<td>Renovation of the BG6/7 roof (vaW) Renovation of the BG6 southern and northern roofs (vaW)</td>
<td>Technical noise insulation optimisation: improvement in the noise insulation of the roof by 6 dB(A) to Rw = 41 dB(A)</td>
<td>2012 2016</td>
</tr>
<tr>
<td>Hall ventilation/heat recovery in the mechanical production in BG25 (vaSZ)</td>
<td>Technical minimisation of the noise impact on neighbours (assembly area, noise insulation housing, high-quality blow-out sound absorbers)</td>
<td>2012</td>
</tr>
<tr>
<td>Hall renovation in BG8</td>
<td>Provision of the roof with an inner acoustic ceiling with 90% sound absorption Improvement in the external sound insulation from approx. 35 dB(A) to 52 (roof), from approx. 30 dB(A) to 36-39 (windows) and from 30 dB(A) to 44 (facade cassettes)</td>
<td>2014</td>
</tr>
<tr>
<td>Renovation of the northern facades of BG3 + 5 and the eastern facades of BG5+6+7 (vaW)</td>
<td>Installation of a noise insulation facade with a resultant improvement in the Rw value and through noise insulation from approx.31 dB(A) to 43 (windows) and from 34 dB(A) to 50 (walls)</td>
<td>2016</td>
</tr>
<tr>
<td>Noise and heat insulation housing for BG3’s external filter system during the facade renovation (vaW)</td>
<td>Reduction in noise for the closest neighbours by means of a filter housing with through noise insulation of 43 dB (A) for the roof and 50 dB (A) for the walls</td>
<td>2016</td>
</tr>
</tbody>
</table>
6.6 TECHNICAL SAFETY IMPROVEMENTS FOR EMPLOYEES AND THE ENVIRONMENT

IN ADDITION TO THE TECHNICAL SAFETY AND HEALTH FACTORS MENTIONED IN THE PRECEDING SECTIONS, E.G. DUSTS, CHEMICALS, STORAGE, NOISE, ETC. IN PARTICULAR THE FOLLOWING ASPECTS MUST BE SEPARATELY MENTIONED WITH REGARD TO MECHANICAL DANGERS AT THE LOCATION:

6.6.1 MACHINE SAFETY CONCEPTS, ABOVE ALL THE SECURING OF AUTOMATICALLY RUNNING UNITS

In particular, automatically running units require appropriate safety measures in order to prevent entry by unauthorised persons, protect the operating personnel and provide a safeguard against malfunctions. From the outset, the planning of new plant and alterations to existing systems involves related statutory requirements (including the CE conformity stipulations), as well as the state-of-the-art. Competent planning partners from the plant manufacturers, civil engineers commissioned by the company and in particular the TÜV Austria, are of special importance for the attainment of objectives in this connection and also help to prevent planning errors and subsequent costs in advance (e.g. modification or accident-related).

6.6.2 INTERNAL COMPANY TRANSPORT

The transport of our long and heavy workpieces represents a technical safety challenge. Every effort must be made to achieve the optimum design of the means of transport (e.g. cranes with electronic overload safety devices, collision prevention devices, tandem running controls, infra-key identification systems for the prevention of confusion when using remote controls, heating of the cross travel rails during winter operations, insulated conductor lines, and the selection and design of optimised lifting gear such as multiple rail and special tongs, etc.). In addition the entire vehicle fleet (over 80 cranes alone) has to be maintained in a reliable condition from a technical safety standpoint by employing the appropriate maintenance and checks.

Unnecessary transport and lifting procedures can be avoided in advance by means of the logistical planning of the works layout and corresponding storage design. In this regard, mention should be made of the purchase of long goods trailers (rail transport wagons) for stackers, the use of which allows crane lifting to be avoided and the completion of difficult crane or works railway transports at shop floor level.
6.6.3 INSTRUCTIONS/INFORMATION

The preparation and communication of appropriate working and operational instructions of relevance to health and safety in relation to machines and processes constitute an important management system instrument. However, special value is also attached to individual and personal discussions.

6.6.4 ERGONOMICS AND WELL-BEING IN THE WORKPLACE

Who does not wish to have an orderly working environment? On the one hand, employees have to secure this themselves through the appropriate order and cleanliness in the workplace and the careful use of equipment, but on the other, measures are also required on the part of the management such as optimised illumination and lighting, sun protection, ventilation, heating and, if needed, heating, noise protection and absorption, as well as suitable room design, fixtures and fittings.

6.6.5 SELECTION AND USE OF PERSONAL PROTECTION EQUIPMENT

Especially with regard to personal protective clothing, we not only regard adherence to mandatory regulations and inclusion of economic aspects as important, but also testing and subsequent selection in teamwork with the workforce in the course of pilot projects.

As a final result, protective articles can be introduced, which not only fulfil technical safety requirements (CE/design tests, etc.), but also offer wearer comfort and are economically viable. In addition, during the selection process importance is attached to the fact that the protective equipment is manufactured using health and environmentally compatible materials.

A comprehensive roof safety system and the purchase of a telescopic lifting platform prevent dangerous situations during working at heights.
### TECHNICAL SAFETY IMPROVEMENTS FOR EMPLOYEES AND THE ENVIRONMENT

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result/Success</th>
<th>Realisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior hall and office block renovation (Zl)</td>
<td>Interior renovation of over 29,000 m² of hall area Paints and coatings with low solvent content, as well as carbon-free cleaning agents used wherever possible Project completion with SiGe-Plan pursuant to BauKG</td>
<td>2001 - 2004</td>
</tr>
<tr>
<td>Ergonomic measures (Zl)</td>
<td>New lighting concept with 30% more light output and electricity savings of 55,000 kWh/y Optimised heating and the related controls Optimised ventilation and glare/radiated heat protection on skylights Draught-free, office air conditioning in BG 2+8 with concrete core activation Noise-absorbent dividing wall in BG6/7, as well as noise-absorbent roof soffits on BG 6,7,8,11 North Installation of cabins of perforated sheet design for frog, tongue and ribbed plate grinding 10 dB reduction in the noise level Equipping of the cabins with Ergo safety mats Purchase of numerous lifting tables with a height-adjustable working surface</td>
<td>From 2000</td>
</tr>
<tr>
<td>Integrated planning of safety concepts on over 50 new and modified milling and planning machines, machining centres, saws, welding units and presses (Zl)</td>
<td>Optimised concepts through TÜV support from the planning phase, thus avoiding problems in advance Safety integrated controls (where necessary) Installation of light barriers, safety contact switch strip, safety mats, closing/locking of entries, etc.</td>
<td>From 2000</td>
</tr>
<tr>
<td>Interior surveillance systems for the feeding area of drilling/sawing centres in the course of extension for 60m rails (vaW)</td>
<td>Logic system for presence recognition in the feeding area and thus correct plant control from a safety technology viewpoint Lock system for entry/exit counts No weather dependence, as in the case of light barriers Separate safety level for the roller conveyor increases line availability with for feeding Installation of scrap removal, camera systems and noise reduction in the hall</td>
<td>2005</td>
</tr>
<tr>
<td>Securing of blind spots in the plant area (Zl)</td>
<td>Installation of traffic mirrors – also heated Warning lights at crossings during crane transports Entirely uniform signage and traffic route markings</td>
<td>From 2005</td>
</tr>
<tr>
<td>Renovation of the changing rooms and social amenities (vaW)</td>
<td>New buildings or the renovation of social amenities and hygiene facilities for all employees</td>
<td>2006 2008 2012 2014</td>
</tr>
<tr>
<td>Replacement of all open (non-insulated) contact lines on the cranes (vaW)</td>
<td>Replacement of all open contact lines (approx. 720m) with insulated safety versions for the prevention of electrical accidents (above all danger during work in the hall by external companies)</td>
<td>2011</td>
</tr>
<tr>
<td>Apprentice amenities (Zl)</td>
<td>New social and break room for apprentices Design and completion by voestalpine apprentices</td>
<td>2013</td>
</tr>
<tr>
<td>Renewal of the half-portal crane in BG5, the bridge crane in the outdoor storage area and other cranes (vaW)</td>
<td>Enhanced safety due to improved lifting height, increased load capacity, stay cable system and all-wheel trolley drive Overall optimum controllability and load stabilisation</td>
<td>2011 ff 2013</td>
</tr>
<tr>
<td>Retrofit of the 1,000t press (vaW)</td>
<td>Increase in technical safety during operations and maintenance, in particular due to the installation of a retention system on the pressing head to prevent it dropping unintentionally</td>
<td>2013</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Implementation of measures derived from employee suggestions (Zl)</td>
<td>From monthly team meetings in the modules From HSEE-related operational improvement suggestions From ongoing evaluation updates</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Safety and health management with AUVA (Zl)</td>
<td>Focused training for the entire workforce with video material within the scope of the Life Program Special, company-related, basic/further SVP training</td>
<td>2008 and ongoing</td>
</tr>
<tr>
<td>Training and employing motivation</td>
<td>Introduction of the 5-S Programme for both turnout and signalling products (vaW) Positive effects on safety, health and the environment through the central aspects of cleanliness/order, as well as the desired strengthening of self-discipline</td>
<td>Since 2011</td>
</tr>
<tr>
<td>Evaluation of psycho-social factors in the workplace and Employee job satisfaction survey (Zl)</td>
<td>Completion of anonymous data gathering using the “KFZA questionnaire” in an inter-divisional project Project completion in cooperation with work psychology experts Subsequent evaluation and analysis of possible improvement measures Employee job satisfaction analysis every three years</td>
<td>2013 - 2014 2016</td>
</tr>
<tr>
<td>Merger of the HSEE databases (Zl)</td>
<td>Integration of the various databases/administrative systems for plant, materials, evaluations, etc. into gutwin plant and assignment management software</td>
<td>2014</td>
</tr>
<tr>
<td>Use of electrical sweeping machines and central dust suction system in the frog grinding area (Zl)</td>
<td>Two electrically powered sweeping machines for the improved cleaning of the hall floor and thus a reduction in hall background impact Suction instead of sweeping principle</td>
<td>2014</td>
</tr>
<tr>
<td>Use of crush-free lifting tongs (vaW)</td>
<td>Switch to rail tongs with crush-free design lever arms at ten operational points</td>
<td>2014</td>
</tr>
<tr>
<td>Heating system improvements (vaW)</td>
<td>Additional 68 kW fan system for BG11 Heating of the BG14 West storage area for commissioning with a total of 210 kW blowers (improved working conditions; heat from CO2-neutral district heating system)</td>
<td>2014</td>
</tr>
<tr>
<td>Use of a lifting table for the tack welding robot (vaW)</td>
<td>Easing of the physical strain on employees</td>
<td>2014</td>
</tr>
<tr>
<td>Technical plant safety optimisation (vaW)</td>
<td>Control retrofit and optimisation of the technical safety concept for three milling and two planing machines</td>
<td>2014</td>
</tr>
<tr>
<td>Load manipulators for two machining centres (vaW)</td>
<td>Easing of the physical strain on employees</td>
<td>2015</td>
</tr>
<tr>
<td>WiT fitness training (vaW)</td>
<td>Creation of a targeted training programme (gymnastic exercises) with a physiotherapist for the frog grinding cabin personnel The exercises should become routine for many of the employees and thus improve their well-being in the workplace</td>
<td>2016</td>
</tr>
<tr>
<td>HSEE Strategy Workshop (vaW)</td>
<td>One-day workshop with twelve participants from differing areas Presentation of HSEE statistics and ongoing initiatives Analysis of the main accident causes and determination of measures to reduce work accidents in groups</td>
<td>2016</td>
</tr>
<tr>
<td>“Safety in a Nutshell” employee manual (Zl)</td>
<td>Reference work with important HSEE information for everyday working, e.g. proper use of personal protection equipment, appropriate conduct in the case of emergencies, accidents and leaks, the meaning of signs and pictograms, correct waste separation, etc.</td>
<td>2016</td>
</tr>
<tr>
<td>Safety calendar design (Zl)</td>
<td>Design of a picture calendar in order to increase awareness of the safety topic (at work and in the home)</td>
<td>2016</td>
</tr>
</tbody>
</table>
NO EMERGENCIES OF ENVIRONMENTAL RELEVANCE HAVE OCCURRED AT THE ZELTWEG PLANT. THE FIRE AND DISASTER PROTECTION PLAN REGULATES THE RELATED RESPONSIBILITIES AND MEASURES FOR POSSIBLE EMERGENCIES OR ACCIDENTS. INCIDENTS, WHICH CANNOT BE AVOIDED IN A PRODUCTION COMPANY, SUCH AS THE SPILLING OF SMALL AMOUNTS OF OIL, ARE HANDLED WITH APPROPRIATE CARE.

In addition to the appropriate staff training and events, as well as exercises involving the Zeltweg Volunteer Fire Service, the following technical measures are used for prevention purposes:

» The purchase of emergency kits for leaks, consisting of portable containers with binders, sealing mats and booms for sewer entries and gutters, which in the case of accidents, can be used to prevent the entry of pollutants into the surface water sewers and subsequently the River Mur.

» Installation of automatic fire alarms in line with TRVB S123 in the BG1, BG2, BG8/9, BG10, BG13 and BG 25 office buildings, the electrical switchgear and boiler rooms and in the chemicals storage area in BG11 (in total over 500 optical smoke alarms, 40 fire alarms and 100 push button fire alarms).

» Installation of automatic fire alarms in line with TRVB S123 in the BG8+9 and BG25 production halls, and in the maintenance workshops in BG10 (the latest smoke alarm systems, which due to the possibilities for evaluation and setting can be ideally adjusted to the hall atmosphere resulting from dust loads). In addition, the installation of smoke heat extraction systems in BG3, 4, 6, 7, 11 and 25.

» Installation of safety lighting and escape route lights in the office buildings and in the BG3/4 changing rooms, BG4 (hot parts), BG5,6 and BG8,9.

» Technical measures in the storage area such as a retention reservoir for flammable liquids in the warehouse and the use of collecting basins, etc.

» Technical storage measures such as a reservoir in the flammable liquids store and the use of sumps, etc.

» Equipping of the plant with defibrillators. In line with the concept of extended first aid, the voestalpine companies at the Zeltweg location decided to purchase defibrillators in co-operation with neighbouring companies and locate them at suitable spots throughout the plant site, in order to provide cover for the entire labour force at the Zeltweg location on an inter-company basis.

» Not least, the extensive roof safety systems installed on all buildings ensure emergency assistance should the roofs have to be freed from the weight of very heavy snowfalls.
Examples of successful measures from HSEE programmes implemented to date:

<table>
<thead>
<tr>
<th>Measure</th>
<th>Result/Success</th>
<th>Realisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PREVENTIVE MEASURES FOR ACCIDENT AND EMERGENCY AVOIDANCE (RISK MANAGEMENT)</strong></td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Purchase of emergency sets for leakages (Zl)</td>
<td>Nine portable containers with sewer lid cover mats, booms, barrel bandages and binders for escapes of liquid following vehicle accidents, or problems with barrels, etc.</td>
<td>2005 ff.</td>
</tr>
</tbody>
</table>
| Fire alarms for all office buildings and the production buildings BG 8,9,10 und 25 (Zl) | Fire alarms in accordance with TRVB S123 for approx. 21,000 m² of working area  
Installation of more than 750 smoke alarms, 40 fire alarms and 100 press button alarms  
Installation of a new type of smoke extractor system with calibrated central alarms (instead of single alarm systems) in order to prevent false alarms in the halls BG8,9 and 10 due to basic dust loads | 2003-2010      |
| Improved fall safety systems for the roofs of the company buildings for repair work and clearance in snowy winters (Zl) | Installation of fall safety systems purs. to ÖNORM 795 by specialist companies on 20 buildings with an area of 39,000m²  
System for full roof access along the ropes without re-roping on supports or corners  
Complete system consisting of 2,800 m of fixed ropes, 85 individual anchorage points, 70 safety hooks on steep roofs, 80 m of roof railings  
Employee training  
Improvement of the roof statics in BG6,7, 8 and 11 | 2003-2008      |
| Escape route or safety orientation lighting (vaW)                      | Installation of a new escape route and safety orientation lighting system in BG1, 2, 4, 5, 8, 13 and BG25                                                                                                    | 2009          |
| Personal emergency signal system (Zl)                                  | Purchase of a personal signal system for individual working areas with integrated localisation possibility for the pinpointing of accident victims in an actual emergency                                              | 2011          |
| Revision and optimisation of the fire and disaster planning (Zl)        | Optimisation of the content, sequences and graphic aspects of the fire and disaster protection plans for a further improvement in the safe and rapid handling of a possible emergency  
Exercises (internal and with the Zeitweg Fire Service)                  | 2012 and ongoing |
| New extinguishing water supply concept (StZ)                           | Connection of a roughly 1,000m tap line to the penstock of the company’s small-scale hydropower plant at the location (unique synergetic advantage)  
Pressure-loss optimised design secures full-area extinguishing water coverage in the works with volumes of approx. 3,800 l/min  
Due to own pressure, supply is independent of electrical power and diesel engines and is therefore fail-safe to an extremely high degree | 2012          |
| Fire protection section improvements (vaW)                             | The main danger of an outbreak is posed by old roofs with wood and tar paper on the inside  
Reduction of these areas by approx. 4,400m² through the renovation of the roof on BG6/7, approx. 1,700 m² through the renovation of the roof on BG8 as well as approx. 1,100 m² through the renovation of the roof on BG11 North  
Installation of two additional 5m-wide separating strips for the division of the roofs into the fire sections in BG3/4 and BG11 (installation of approx. 850 m² of roof fire blockers) | 2012 ff.      |
| Complete overhaul of the signs and danger marking at the location (SZ)  | Renewal of the building and gate signs for general orientation and the emergency services  
Renewal of the danger signs, pipeline markings and locks both on the spot and on planning documentation | 2014 and ongoing |
Successful fire service section exercise at the voestalpine location in Zeltweg

In 2013, a large-scale fire service section exercise was held at the voestalpine location in Zeltweg. The underlying hypothesis of the exercise was an outbreak of fire on the roof of BG3/4 and the objectives were the securing of an extinguishing water supply from the newly installed pipeline and fire fighting on the hall roof using heavy breathing apparatus.

The exercise demonstrated that the coordination and communications within the operational command and between the fire service units functioned well. Moreover, valuable experience was gathered that can be used for the extrapolation of future improvement and optimisation measures. All in all, eight fire services took part in the section exercise (the Zeltweg, Farrach, Judenburg, Baierdorf, Weißenkirchen, Obdach and Aichdorf Volunteer Fire Services and the Stahl Judenburg Professional Fire Service) with around 100 fire fighters and fifteen vehicles. The Zeltweg Volunteer Fire Service alone was in operation with five vehicles and at this point, thanks are due to all the participating units.
6.8 EXTERNALLY COMPLETED ACTIVITIES

The most important current activities of HSEE relevance that have been allocated to external companies are:

» The galvanising and hardening of metallic parts
» Sleeper impregnation
» Product painting
» Frog explosion hardening

We also attach great importance to the external transfer of our environmental protection concept. For this reason, wherever possible production steps that cannot be completed at the location are allocated to external companies, which concur with our efforts towards low-environmental impact and safe production. A basis for this judgement is provided by documentation concerning the processes and materials (safety data sheets), company tours/audits by our employees, as well as supplier assessments coordinated by Purchasing. Wherever feasible we attempt to work with companies that have certified environmental and safety management systems.

Part of our supplier qualification and evaluation system is a CSR questionnaire, which makes environmental, safety and social responsibility aspects into topics of decision relevance.

The greatest technical safety challenge in connection with external companies is the appropriate co-ordination of activities on the plant site and the fulfilment of construction co-ordination tasks, especially with regard to the preparation of health and safety schemes during the planning and construction phases.
7. FACTS AND FIGURES FOR THE LOCATION 2019

7.1 INPUT/OUTPUT BALANCE AND CORE INDICATORS

The presented input/output balance covers all the in- and outgoing material flows of the Voestalpine location in Zeltweg. The following data relates to the 2019 financial year (1 April 2018 – 31 March 2019).

The following tables contain the environmental indicators for the location in line with EMAS III-VO for the key areas of material efficiency, energy efficiency, water, waste, emissions and biological diversity. On the one hand, the data for these areas is provided in absolute figures and on the other, in relation to total annual output, for which the volumes delivered are included in kilograms.

The core indicators (CI) are then subsequently calculated on the basis of these measurements and benchmarks:

- **Material efficiency.** The data listed here consists of all goods receipts in terms of weight and the consumables and supplies used.
- **Energy efficiency.** The energy consumption data derives from company maintenance and servicing. The share of renewable energy relates to the respective energy suppliers.
- **Water.** Water consumption is registered in terms of volume.
- **Waste.** The annual volumes of non-hazardous and hazardous waste are listed separately along with the share of scrap, which dominates in terms of volume.
- **Emissions.** Some CO₂ emissions are of relevance and can be measured in terms of volume. In the case of other emissions, e.g. dust NOₓ, etc. discontinuous operation makes it impossible to define large-volume flows and the comparative measurements and limits are contained in the tables in the “Air and Wastewater” section.
- **Biological diversity.** As required, the area consumption of the sealed areas in terms of square metres is used. As this value remains virtually unaltered, the definition of an efficiency figure in this connection lacks any significance.

It must be pointed out that the stating of core indicators as stipulated by EMAS III, which include the receipt of working materials, energy, emissions or waste quantities, etc. with regard to a certain reference quantity of the finished end product (per metric ton, per million euros of sales revenue, etc.), can only be employed to a very limited extent for an assessment concerning the performance pattern at the voestalpine location in Zeltweg.
as the company merely completes single item or small batch production. In addition, we not only offer complete units, but also every type of spare part and individual components, and these various parts are all linked to differing environmental effects. In this connection, neither physical dimensions such as mass, length, etc., nor financial values (e.g. sales revenues, value added) provide a reliable benchmark for the preparation of environmental key figures, the precision of which would also be linked to a control effect. By contrast, the preparation of typical technical safety key figures, their relationship to the number of employees, working hours, etc. is more meaningful and data in this regard is contained in the “Accident Statistics” section.

Notwithstanding the problem of the limited control exactitude of macroscopic key indicators, the juxtaposition of values prior to the introduction of the integrated management system (1966) with current values does allow the recognition of the enormous improvements and increases in efficiency achieved through the efforts and competence of the company’s workforce:

<table>
<thead>
<tr>
<th>Year</th>
<th>Employees</th>
<th>Well water consumption [m³]</th>
<th>Total energy consumption [Mwh]</th>
<th>Delivered product mass [t]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996 (prior to management system introduction)</td>
<td>549</td>
<td>105,187</td>
<td>20,940</td>
<td>19,219</td>
</tr>
<tr>
<td>Financial years 2017 - 2019 (mean value for the 3 financial years)</td>
<td>817</td>
<td>49,764</td>
<td>17,626</td>
<td>41,330</td>
</tr>
<tr>
<td>Changes in absolute values in %</td>
<td>+49%</td>
<td>-53%</td>
<td>-16%</td>
<td>+115%</td>
</tr>
</tbody>
</table>

Consumption per employee

Change in the consumption per employee key figure in %

Consumption per supplied product tonne

Change in the consumption per supplied product tonne key figure in %

The data in the table mean that:

» Although between 1996 and 2017 - 19 (mean value for the three financial years) the size of the workforce at the Zeltweg location increased by 49% and the volume of products delivered doubled, in absolute terms the overall consumption of well water (= drinking and groundwater) and energy did not rise to an equal extent. On the contrary, total well water consumption fell by over 50% and total energy consumption declined by 16%!

Accordingly, as key figures in ratio to the number of employees, the efficiency of well water consumption improved by almost 70% and that relating to energy consumption by over 40%!

» Moreover, as key figures in terms of the mass of products delivered, the efficiency of well water consumption again improved by around 80%, while efficiency in relation to energy use improved by 60%!
### Financial year (April 1 - March 31)

<table>
<thead>
<tr>
<th>Year</th>
<th>2018/19</th>
<th>2017/18</th>
<th>2016/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass delivered in kg (kgAM)</td>
<td>39,700,000</td>
<td>43,800,000</td>
<td>40,500,000</td>
</tr>
</tbody>
</table>

### MATERIAL EFFICIENCY

<table>
<thead>
<tr>
<th>Material</th>
<th>2018/19 (kg/kgAM)</th>
<th>2017/18 (kg/kgAM)</th>
<th>2016/17 (kg/kgAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical materials and supplies (kg)</td>
<td>57,155</td>
<td>0.0014</td>
<td>56,057</td>
</tr>
<tr>
<td>Used chem. materials/supplies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Machine oils and lubricant grease (kg)</td>
<td>19,525</td>
<td>17,163</td>
<td>23,882</td>
</tr>
<tr>
<td>Oil binders</td>
<td>1,080</td>
<td>1,080</td>
<td>1,120</td>
</tr>
<tr>
<td>Cooling lubricants</td>
<td>9,849</td>
<td>9,822</td>
<td>8,883</td>
</tr>
<tr>
<td>Cleaning agents for workpieces and supplies</td>
<td>1,670</td>
<td>1,611</td>
<td>1,482</td>
</tr>
<tr>
<td>Cleaning agents for the hygiene sector</td>
<td>1,163</td>
<td>1,516</td>
<td>1,427</td>
</tr>
<tr>
<td>Adhesives and sealants</td>
<td>2,382</td>
<td>2,652</td>
<td>2,144</td>
</tr>
<tr>
<td>Paints/varnishes</td>
<td>914</td>
<td>1,040</td>
<td>865</td>
</tr>
<tr>
<td>Linseed oil</td>
<td>1,505</td>
<td>1,914</td>
<td>2,828</td>
</tr>
<tr>
<td>Winding bitumen</td>
<td></td>
<td></td>
<td>220</td>
</tr>
<tr>
<td>Specific supplies (anti-freeze agents…)</td>
<td>16</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Penetration agents</td>
<td>2,891</td>
<td>2,905</td>
<td>2,965</td>
</tr>
<tr>
<td>Photographic chemicals (kg)</td>
<td>60</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>Explosives 1)</td>
<td>13,435</td>
<td>13,229</td>
<td>12,452</td>
</tr>
<tr>
<td>De-icing salt</td>
<td>1,950</td>
<td>2,600</td>
<td>1,750</td>
</tr>
<tr>
<td>Other chemical substances</td>
<td>716</td>
<td>445</td>
<td>413</td>
</tr>
</tbody>
</table>

### ENERGY EFFICIENCY

<table>
<thead>
<tr>
<th>Energy supply (MWh)</th>
<th>2018/19 (MWh/kgAM)</th>
<th>2017/18 (MWh/kgAM)</th>
<th>2016/17 (MWh/kgAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total energy consumption (MWh)</td>
<td>16,337</td>
<td>0.00040</td>
<td>18,175</td>
</tr>
<tr>
<td>Total renewable energy consumption (MWh)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from electricity 2) and district heating and the share in %</td>
<td>12,415</td>
<td>76%</td>
<td>13,404</td>
</tr>
<tr>
<td>Energy supplies (MWh) and the share of renewable energy in %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>8,209</td>
<td>100%</td>
<td>8,537</td>
</tr>
<tr>
<td>Petrol/diesel</td>
<td>911</td>
<td>100%</td>
<td>1,021</td>
</tr>
<tr>
<td>Natural gas for processes and gas filling station</td>
<td>1,746</td>
<td>100%</td>
<td>2,147</td>
</tr>
<tr>
<td>Natural gas for heating</td>
<td>1,264</td>
<td>100%</td>
<td>1,765</td>
</tr>
<tr>
<td>Biomass-based district heating</td>
<td>4,207</td>
<td>100%</td>
<td>4,867</td>
</tr>
</tbody>
</table>

### WATER

<table>
<thead>
<tr>
<th>Water consumption (m³)</th>
<th>2018/19 (m³/kgAM)</th>
<th>2017/18 (m³/kgAM)</th>
<th>2016/17 (m³/kgAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>75,400</td>
<td>0.0019</td>
<td>38,400</td>
</tr>
<tr>
<td>Waste non-hazardous (kg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste hazardous (kg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scrap (kg)</td>
<td>2,584,959</td>
<td>0.065</td>
<td>2,833,900</td>
</tr>
</tbody>
</table>

### EMISSIONS (CO₂ EMISSIONS)

<table>
<thead>
<tr>
<th>Emissions (kg)</th>
<th>2018/19 (kg/kgAM)</th>
<th>2017/18 (kg/kgAM)</th>
<th>2016/17 (kg/kgAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂ emissions (kg)</td>
<td>746,000</td>
<td>0.02</td>
<td>855,000</td>
</tr>
<tr>
<td>CO₂-credit from electricity inputs (kg)</td>
<td>2,321,000</td>
<td>2,570,000</td>
<td>2,726,000</td>
</tr>
<tr>
<td>CO₂-balance Zeitweg location (kg)</td>
<td>1,575,000</td>
<td>1,715,000</td>
<td>1,796,000</td>
</tr>
</tbody>
</table>

### BIOLOGICAL DIVERSITY

<table>
<thead>
<tr>
<th>Surfaces areas (m²)</th>
<th>2018/19 (m²/kgAM)</th>
<th>2017/18 (m²/kgAM)</th>
<th>2016/17 (m²/kgAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>73,650</td>
<td>0.002</td>
<td>73,650</td>
</tr>
</tbody>
</table>

1) not directly stored on site, but employed at VA Eisenurst  
2) Electricity from own hydropower plant from 1/2010, district heating from biomass from 12/2009  
3) Calendar Year 2016  
4) The share with regard to cooling agent amounts to < 5kg, which corresponds with less than 10,000 kg of emissions and is thus irrelevant  
With regard to CO₂-neutral location balance, please see the Energy % CO₂ section
7.2 USE OF PLANT AREA

Use of the plant area remained unchanged. The overwhelming majority of the plant is utilised for technical production purposes. Green spaces are found along the bank of the River Mur and the edges of the site.

<table>
<thead>
<tr>
<th>Surfaced areas (halls, asphalted areas)</th>
<th>73,650 m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsurfaced areas (gravelled and green spaces)</td>
<td>90,650 m²</td>
</tr>
<tr>
<td><strong>Total plant area</strong></td>
<td>164,300 m²</td>
</tr>
</tbody>
</table>

The hall areas are concreted or asphalted, which can prevent the penetration of pollutants into the soil. The relevant areas around machine foundations must also be watertight (hydraulics area, cooling lubricant reservoir, etc.). In the storage technology area, appropriate preventive measures with regard to soil and water pollution are taken in the form of pits and double-walled tanks, etc. In line with a water legislation judgement, precipitation from sealed surfaces is no longer regarded as slightly contaminated and is largely discharged into the River Mur via the company’s rainwater drains, while partial seepage takes place where the soil allows. In areas such as asphalted wood sleeper storage facilities where pollution is possible, seepage takes place with the help of state-of-the-art basins with a humus cover. This means that should any hydrocarbons penetrate this bioactive layer, they are captured and then degraded. The humus is also subject to regular chemical examinations. The precipitation on the unsurfaced areas is also free of contamination due to bedding, etc. and the water is permitted to seep away.

7.3 TRANSPORT

The share of the freight volume transported from the plant by rail during the 2019 financial year amounted to approximately 70%. The remaining transport traffic related to trucks, road transport being required owing to the urgency of deliveries and destinations that could only be reached by road. 14% of outgoing freight is transferred from road and rail to shipping for delivery to global destinations.

2 diesel locomotives, numerous electric cranes, diesel, natural gas and electric loaders carry out transport within the works.

![Transport balance - % in terms of tonnage](image-url)
7.4 ACCIDENT STATISTICS

The following diagrams show the trend with regard to accidents at the voestalpine location in Zeltweg and are prepared on the basis of the following key figures, which also permit a branch comparison:

- **Accident rate** (accidents per 1,000 employees)
- **Accident frequency** – **Lost Time Injury Frequency Rate** (accidents per 1 million working hours)
- **Accident severity** (time lost per accident in days)

In accordance with the regulations of the Austrian Safety Act and the statistical gathering criteria of the Austrian Allgemeinen Unfallversicherungsanstalt (AUVA – General Accident Insurance Fund) for so-called “notifiable occupational accidents”, these are accidents, which result in sick leave of more than three days. The following data relates to the total of accidents involving blue- and white-collar workers, apprentices, trainees and leasing staff, excluding accidents during travel to and from work. Within voestalpine the LTIFR is used as a key figure for work safety.

The accident statistics of voestalpine Weichensysteme GmbH tend to be above the branch average. This is due to the fact that turnout manufacturing is characterised by relatively limited possibilities for automation and the resultant necessity for manual production and transport steps involving components that are difficult to handle naturally entails major accident risks, particularly with regard to hand and arm injuries. By contrast, the accident statistics for voestalpine SIGNALING Zeltweg GmbH are below the branch average.

Since the middle of the 1990s, a continuous and sizeable reduction in the accident figures and the costs related to lost working hours has been achieved by means of numerous technical and organisational measures. Examples of special milestones in this regard include the “Reflections on Safety” promotion with the Graz branch of the AUVA. Nonetheless, in recent years the LTIFR stood at around the 40 mark.

Analyses have shown that only in exceptional cases accidents are caused by technical factors and that first and foremost, it is unsafe conduct (either conscious or unconscious). Accordingly, primarily organisational measures, that include the supply of information and training, as well as the visualisation of correct conduct, have been initiated in order to raise danger awareness levels.

From the 2016/17 financial year, voestalpine Weichensysteme GmbH showed a satisfactory trend. As a result of the measures adopted as part of the “Synchronised Turnout” production system such as the weekly module and team meetings, the evaluation of work accidents and critical situations as well as the training of the employees in the safety course the LTIFR was reduced by 60%.

However, our LTIFR target of ≤12 was not achieved and in the past year stood at 21.

Nonetheless, voestalpine Weichensysteme GmbH’s aim of reducing LTIFR to ≤12 remains unchanged.

The voestalpine SIGNALING Zeltweg GmbH LTIFR amounted to around 9.5 and therefore the <10 target was achieved.

As a holding company, voestalpine VAE GmbH has no production facilities and is very rarely affected by accidents (accident-free for more than ten years).

As from the 2020 financial year, the safety officers will play a special role with regard to the targets for accident and unsafe handling reduction. Quarterly focal points will be established, which will be dealt with during the monthly meetings.

The following diagrams show the accident rate, frequency (LTIFR) and severity patterns at the voestalpine location in Zeltweg beginning in 1997, and in separate form for voestalpine Weichensysteme GmbH and voestalpine SIGNALING Zeltweg GmbH from 2005 onwards. The figures show notifiable accidents of the permanent staff (blue- and white-collar workers, apprentices) excluding accidents during travel to and from work and of the total staff (blue- and white-collar workers, apprentices, trainees, leasing personnel) from 2016 onwards marked with *. The data are also shown in relation to the average in the metallurgical industry branch in Austria (on the basis of AUVA data).
voestalpine Weichensysteme GmbH (vaW), voestalpine SIGNALING Zeltweg GmbH (vaSZ);
8. HSEE ASPECTS AT VOESTALPINE VAE GMBH AND SUBSIDIARIES

As a holding company, VOESTALPINE VAE GMBH sees its possibilities to influence environmental and safety issues as not being limited to standard topics such as energy saving measures, waste separation and the ergonomic design of work stations in its own office activities, but rather in line with HSEE policy, through the information, motivation, consulting and control of the subsidiaries with regard to their business activities.

8.1 THE MAIN VAE-HSEE MANAGEMENT ELEMENTS

The VAE-HSEE management “house” consists of 7 main elements:

- **VAE-HSEE-Software (Gutwin Software) (o)** provides all the tools necessary for task and record management; can also be used for creation and maintenance of the register of compliance obligations and consequent compliance assessment.

- **VAE-HSEE-Reporting (m)** see form OF-O-017 for annual HSEE reporting at Supervisory Board meetings (including legal compliance assessment) as well as mandatory EQPR-reporting of Lost Time Injury Frequency Rate (LTIFR) and Health Rate (HR) as defined by form OP-O-025.

- **VAE-HSEE-Guidebook (o)**
  - **VAE-HSEE-Minimum-Standards (m)**
  - Present typical HSEE-related issues + possible turnarounds business solutions aimed at avoiding major occupational accidents and environmental impacts as well as resolution costs and liabilities.

- **VAE-HSEE-Newsletter (o/m as defined in letter)**
  - Present information about upcoming or current topics (legislation, technology, organizational matters etc.)

- **VAE-HSEE-Model-Manual + VAE-HSEE-ISO-Assignment-Table (o)**
  - Provide templates for typical HSEE-relevant procedures and checklists in turnarounds business assignment table (fulfills correlation of these templates to the chapters in 14/18/45/50001 in order to cover the content required for management systems).

- **VAE-HSEE-Management-Training (m)**
  - Provides overall information regarding the implementation and continuous improvement of management systems in line with 14/16/45/50001.

- **VAE’s HSEE-Experts and Directors (competence and responsibility structures for each location) (m)**
  - See list form OF-O-027; these persons provide the driving force and acceleration essential to HSEE-management, performance and compliance.

(m) = mandatory content
(o) = optional content
Naturally enough, the persons serving as the directors responsible for HSEE and the HSEE experts working at the locations form the basis of the entire system. Without them, all the other elements would be valueless, as through their competence and commitment they represent the driving force behind the system.

It is also clear that without training and information nothing would function. Therefore, in order to generate and support the necessary competences and motivation the “VAE HSEE Management Training” has been introduced. This information and coaching package contains:

- 17 sections with a total of 8.5 hours of video training, which demonstrate the most important aspects of the creation of new managerial systems and the continual improvement of existing structures in accordance with ISO 14001, OHSAS 18001 / ISO 45001 and ISO 50001, and thus create a common thread running through the material. In this way, the reasons for and motivation factors relating to an integrated HSEE management system are described, and the main elements in both the development and subsequent phases of the system consisting of “legal, technical and organisational work packages” are dealt with.

- The current issues of specifications and document templates, which as a matter of course, must be adapted by the locations to their specific circumstances.

voestalpine VAE GmbH has drawn up these points in the “VAE HSEE Guidebook”, which is globally valid throughout the VAE Group and portrays typical safety, health, environmental and energy-related problems that occur during “turnout business”, and naturally enough offers technical and organisational suggestions for solutions. In addition to its informative aspects, the Guidebook also contains some 200 VAE HSEE minimum standards with the aim of contributing to the prevention of serious personal injury, environmental damage and the related (subsequent) costs.

Furthermore, the “VAE HSEE Newsletter” is published, which covers current topics (e.g. legal or technical developments) and is sent to the locations in order to create awareness in this connection and aid the efficient handling of the main aspects.

A VAE HSEE Model Manual has also been prepared, which especially in the case of new company foundations is also intended to serve as a basis and source of ideas for subsidiaries for the design of organisational, operational procedures, as well as the coverage of the requirements of ISO 9001, ISO 14001 and OHSAS 18001 in line with the concept of an integrated management system. These templates incorporate instructions and checklists, which greatly facilitate the integration of aspects of HSEE relevance into the following important processes:

- **Purchasing** – in particular:
  - The integration of HSEE aspects during the specification and sourcing of machinery and buildings with the clear objective of HSEE-integrated planning from the initial steps onward (also with the aid of clear, HSEE-integrated specifications) instead of subsequent laborious and expensive modifications
  - The assessment of chemical materials and supplies prior to purchase (using safety data sheets, etc.)
  - The inclusion of HSEE+CSR aspects in supplier qualification and assessments

- **Maintenance process** – in particular:
  - Integration of HSEE Aspects in maintenance procedures (e.g. the organisation of work involving the danger of fire)
  - Determination of the necessary acceptance tests and periodic checks (with the appropriate regulation of the required documentation)

- **HSEE-related training/instruction, e.g.**:
  - General employee coaching
  - The correct use of personal safety equipment (PSE)
  - Training with regard to specific assignments (e.g. crane and stacker transports, the use of technical gases, especially during welding, the handling of special materials such as impregnated, wooden sleepers or cooling lubricants)
  - The drawing up of specific working instructions for procedures and operating instructions for machinery
  - Special instructions for visitors, external companies operating at the location, track working for customer companies, etc.
  - Including the respective appropriate collation of documentation

- **HSEE-related accidents and incidents** – in particular:
  - The obligatory notification of accidents and incidents (near misses)
  - Cause evaluation and the extrapolation of improvement/corrective measures
  - **HSEE-related determination of dangers and risk evaluation** – in particular:
    - Determination and evaluation of risks of environmental...
relevance in our field of activities
- Determination and evaluation of safety and health hazards in the workplace
- Drawing up of emission monitoring programmes
- Drawing up of monitoring programmes regarding influence in the workplace of relevance to health
- Drawing up of programmes for the monitoring of employee medical health
- Including the respective appropriate collation of documentation

- **HSEE-related procedures** – in particular:
  - Waste management (prevention, separation, correct disposal and documentation)
  - Emergency precautions (fire protection, leaks, forces of nature...)
  - Input-output statistics (resources)
  - Accident statistics (LTIFR/HR)

- **Energy-related aspects** (above all in connection with ISO 50001) – in particular:
  - Templates from vaVAE Riga (for data gathering/evaluation, extrapolation from improvement programmes, completion of Reviews)
  - Templates from vaW Zeltweg (Energy audit in line with the points contained EN 16247)

- **Superordinated documents of HSEE relevance**, e.g.:
  - Gap-analysis (weak point analysis)
  - List of interested parties and the resultant obligations
  - Tables differentiating between the demands of standards and the aforementioned system elements/template documents (what covers which demand)

- **A functional reporting system within the VAE Group** is naturally also important. Of special significance are:
  - The CF-O-17 form with which the subsidiaries report on their status with regard to HSEE-related compliance (i.e. adherence to HSEE-related statutes, directives, contracts and the minimum HSEE stipulations of VAE and voestalpine AG) in the course of the autumn advisory committee meetings. Reports of successes are just as important as identified deviations and the related corrective/improvement measures.
  - The CF-O-026 form, which is employed for the definition of the identical, inter-group statistics concerning work accidents (Lost Time Injury Frequency Rate – LTIFR) and sick leave (Health Rate – HR).

  Equally, voestalpine VAE GmbH provides its subsidiaries with assistance for the organisation of the realisation of assignments and the related documentation in the form of **VAE HSEE software (Gutwin software)**. This software from the Gutwinski company enables:
  - The drawing up of legal registers and legal obligation registers
  - The provision of assignment management (this defines individual obligations and thus the legally responsible persons, the persons carrying out the assignments, as well as the timescale (deadline for one-off tasks, deadline for initial checks and intervals for repeated checks))
  - The supply of document management (i.e. the filing of source documents, e.g. official notices or contracts and in particular evidence of the fulfilment of obligations, e.g. trade fair and inspection reports, photos) with the respective direct allocation to assignments, as well as the asset affected. As a result, both types of practice-relevant enquiries are covered:
    - What is the situation with regard to the fulfilment of the requirements emanating from a certain source document (e.g. law, official notice, contract...)?
    - What obligations and documents relate to a certain asset (Machine, building, etc.) and what is their realisation status?

The **VAE HSEE Cornerstone Directive C-P 12.02.00** establishes the elements described previously as cornerstones for the VAE Group subsidiaries and in addition states explicitly that:
  - Conformity to HSEE-related, legal obligations (laws, directives, contracts) is required
  - In line with this stipulation that the certificated management system pursuant to ISO 14001 and OHSAS 18001 (consequently ISO 45001) is to be introduced at all production locations with more than twenty employees.
7. **Guarding of V-belts, gear wheels or similar rotating parts of machinery:** guards shall cover such parts in any case [by 31.12.2008]. See for example V-belt and wheels at press in figure 4.8.

Figure 4.8a: Unprotected belt and wheels – beyond 2.5 m height it is dangerous for employees in direct way, but above 2.5 m e.g. the chain or hook of crane can be caught and a catastrophe initiated...

Figure 4.8b: Simple cover for dangerous parts.

8. **Housekeeping:** Very easy but efficient: Keep the site and working-places clean. Accidents due to falls because of unnecessary parts lying on the floor are the most common reason for injuries and days of loss! [by immediate effect]

9. **Some examples of safety-devices:**

Figure 4.9a: Safety light bars: Can be used in vertical position for avoidance of entry....

Figure 4.9b: ....and in horizontal position additionally for surveillance that nobody is staying within an area – see example automatic conveyor area of sawing-drilling unit. There are different classes of light/leasers (different range in covered distance and number of rays per meter (for different stages of safety like “finger-proof”, “arm-proof” or “body-proof”)); outdoor and especially above 30m distance light bars will be problematic due to false signals (rain/fog/birds...)

Light bar avoids entry to milling zone

Sender/Detector and Reflector of light-safety-bar field
Examples of successfully introduced HSEE programme measures:

<table>
<thead>
<tr>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VAE HSEE MANAGEMENT</strong></td>
</tr>
<tr>
<td>VAE HSEE Newsletter (VAE)</td>
</tr>
<tr>
<td>» February 2014: energy management</td>
</tr>
<tr>
<td>» June 2014: coolants</td>
</tr>
<tr>
<td>» August 2014: template documentation from voestalpine VAE RIGA SIA (Latvia) for an energy management system pursuant to ISO 50001</td>
</tr>
<tr>
<td>» March 2015: CE guidelines for the purchase and modification of machinery</td>
</tr>
<tr>
<td>» April 2016: issue of the VAE-HSEE Management Training Package</td>
</tr>
<tr>
<td>» July + October 2016: CF-O-026 form for the collation of accident statistics LTIFR and HR at all locations</td>
</tr>
<tr>
<td>» October 2016: information and questionnaire regarding the installation of HSEE Legal Compliance Management at the locations</td>
</tr>
<tr>
<td>» June 2017: Substance Directive regarding legal requirements and customer stipulations (in particular in connection with the topics of Cr-VI and conflict minerals)</td>
</tr>
<tr>
<td>» June 2017: VAE HSEE Cornerstone Directive and update of the CF-O-017 report form with regard to HSEE compliance at the subsidiaries</td>
</tr>
<tr>
<td>» September 2017: workshop and resultant guidelines for the implementation of the amendment to the Austrian Trade Code in connection with the approval of alterations to company plant (participation of all voestalpine divisions)</td>
</tr>
<tr>
<td>» May 2018: Opening of the VAE-HSEE-SharePoint with all relevant HSEE documents and training documents including user guide for the subsidiaries.</td>
</tr>
<tr>
<td>» June 2018: Efficient reorganization of the internal process for HSEE-customer questions.</td>
</tr>
<tr>
<td>» July 2018: Updating the requirements regarding the handling of hazardous substances (especially CMR-T substances) as well as regarding work clothing (Annex 4.4 Guidebook).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Result/Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous since 2006</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 + continuous</td>
</tr>
</tbody>
</table>

| VAE HSEE Model Manual (VAE) | Template and idea source for the preparation and further development of manuals, processes/procedures and checklists for integrated management systems in line with ISO 9001, ISO 14001, ISO 50001 and OHSAS 18001/ISO 45001 at subsidiaries |
| Ongoing updates of the template in accordance with new requirements and values derived from experience emanating from the subsidiaries. |
| April 2016 |

| VAE HSEE Management Training Package (VAE) | Fundamental information concerning major aspects of the creation of new managerial systems and the continual improvement of existing structures in accordance with ISO 14001, OHSAS 18001 / ISO 45001 and ISO 50001 |
| 17 sections with a total of 8.5h of video training |
| Accessibility via VAE-HSEE-SharePoint |
| May 2018 |

| HSEE Contents CEO Conference 2016 (VAE) | Keynote address regarding “HSEE-related Legal Compliance Management” (“Legal Compliance Assessment” and “Compliance Obligations” sections of the new ISOs). The contentual requirements and approaches for optimum implementation (identical presentation to that given at the global voestalpine Environment Conference in September 2016). |
| Workshop concerning the identification of improvement potential with regard to a reduction in the number of accidents (LTIFR improvement) |
| June 2016 |

| HSEE Contents CEO Conference 2017 (VAE) | LTIFR and HR: report regarding progress and future targets |
| Presentation of the VAE HSEE Cornerstone Directive |
| Presentation of the VAE HSEE Substance Directive |
| June 2017 |

| OHSAS 18001 + ISO 14001 + ISO 50001 Implementation/Certification Management System at voestalpine BWG GmbH (VAE) | Consultative support of voestalpine BWG GmbH (5 locations, over 600 employees) during the creation and certification of an integrated management system pursuant to OHSAS 18001, ISO 14001 and ISO 50001. |
| Conclusion with successful, initial certification in May 2016 |
| May 2016 |

| Support of subsidiaries with regard to HSEE-related issues (VAE) | In connection with investments /technical issues, as well as organisational developments |
| (in particular legal compliance checks, development of integrated management systems) |
| Continuous |
Two uniformly defined Key Performance Indicators (KPI) have been established throughout voestalpine, namely:

» The Lost Time Injury Frequency Rate (LTIFR = Number of accidents per 1 million working hours) and

» The Health Rate (HR = the percentage of time that employees are fit enough to work).

(At the end of the section there are definitions for the recording and calculation of the LTIFR and HR at voestalpine)

The following tables show the related initial values in the 2015/16 financial year, the values for the past three financial years (2016/17, 2017/18 and the 2018/19 year expired), as well as the developments regarding the initial values in terms of the preceding financial year.

As a result, the figures for the group overall indicate the following pleasing reductions in the lost time injury frequency rate (LTIFR):

» Reduction of 40% (from an initial value of 24.8 to the target value of < 15.0) for the 2016/17 financial year (result = 14.8)

» Reduction of 50% (from an initial value of 24.8 to the target value of < 12.0) for the 2017/18 financial year (result = 10.5)

» Reduction of 60% (from an initial value of 24.8 to the target value of < 10.0) for the 2018/19 financial year (result = 9.2)

Equally, the health rate (HR) was maintained at the already high rate of approx. 96%:

» initial value 2015/16 financial year = 96.4%

» result 2016/17 financial year = 96.5%

» result 2017/18 financial year = 96.7%

» result 2018/19 financial year = 96.9%

Nonetheless, we do not wish to rest on our laurels with respect to this status and instead, true to the principle that any work accident is one too many, have established ambitious targets in line with the aim of continuous further improvement:

» establishing of the LTIFR at a level of < 10.0 for the entire group and the steering of all individual locations to a level of < 15.0.

» further improvement in the HR level to 97%.

The significance and importance of the LTIFR and HR are underpinned by the fact that both KPIs must be reported on every board meeting, whereby related measures for improvements must also be included. Extracts in this connection are included in the respective location articles in Section 8.3 and we thus hope to further ideas and contribute to an exchange of experience.
### LTIFR trend within the VAE Group

<table>
<thead>
<tr>
<th>Company</th>
<th>Development in % (FY15/16 to FY18/19)</th>
<th>FY 2015/16</th>
<th>FY 2016/17</th>
<th>FY 2017/18</th>
<th>FY 2018/19</th>
<th>Development in % since last FY (17/18 bis 18/19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BU Turnout Systems</td>
<td>-63%</td>
<td>24.8</td>
<td>14.6</td>
<td>0.5</td>
<td>9.2</td>
<td>12%</td>
</tr>
<tr>
<td>EUROPE-MENA Group</td>
<td>-50%</td>
<td>31.5</td>
<td>22.6</td>
<td>18.0</td>
<td>15.6</td>
<td>-13%</td>
</tr>
<tr>
<td>voestalpine Weichensysteme GmbH (Austria)</td>
<td>-55%</td>
<td>47.1</td>
<td>27.8</td>
<td>19.0</td>
<td>21.0</td>
<td>11%</td>
</tr>
<tr>
<td>Weichenwerk Wörth GmbH (Austria)</td>
<td>-73%</td>
<td>69.6</td>
<td>48.7</td>
<td>32.9</td>
<td>18.8</td>
<td>-43%</td>
</tr>
<tr>
<td>TSF-A GmbH (Austria)</td>
<td>-37%</td>
<td>105.4</td>
<td>40.4</td>
<td>0.0</td>
<td>66.2</td>
<td>++</td>
</tr>
<tr>
<td>voestalpine Kardemir Demiryolu Sistemleri Sanayi ve Ticaret Anonim Sirketi (Turkey)</td>
<td>61%</td>
<td>6.2</td>
<td>5.9</td>
<td>6.0</td>
<td>10.0</td>
<td>67%</td>
</tr>
<tr>
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<td>Zero Level</td>
<td>0.0</td>
<td>65.9</td>
<td>17.6</td>
<td>0.0</td>
<td>-100%</td>
</tr>
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<td>VAMAV Vasúti Berendezések Kft. (Hungary)</td>
<td>89%</td>
<td>10.6</td>
<td>5.3</td>
<td>8.3</td>
<td>20.0</td>
<td>141%</td>
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<td>voestalpine BWG GmbH (Germany)</td>
<td>-58%</td>
<td>48.8</td>
<td>34.0</td>
<td>34.5</td>
<td>20.3</td>
<td>-41%</td>
</tr>
<tr>
<td>LASA Schienentechnik GmbH (Germany)</td>
<td>++</td>
<td>0.0</td>
<td>26.9</td>
<td>0.0</td>
<td>16.7</td>
<td>++</td>
</tr>
<tr>
<td>voestalpine WBN B.V. (Netherlands)</td>
<td>-46%</td>
<td>14.1</td>
<td>25.0</td>
<td>14.2</td>
<td>7.6</td>
<td>-46%</td>
</tr>
<tr>
<td>voestalpine VAE Riga SIA (Latvia)</td>
<td>-100%</td>
<td>12.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>Zero Level</td>
</tr>
<tr>
<td>voestalpine VAE Legetechna UAB (Lithuania)</td>
<td>310%</td>
<td>8.3</td>
<td>0.0</td>
<td>8.5</td>
<td>34.0</td>
<td>300%</td>
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<td>-13%</td>
<td>14.4</td>
<td>0.0</td>
<td>0.0</td>
<td>12.6</td>
<td>++</td>
</tr>
<tr>
<td>voestalpine VAE Apcarom SA (Romania)</td>
<td>++</td>
<td>0.0</td>
<td>1.8</td>
<td>1.7</td>
<td>3.1</td>
<td>82%</td>
</tr>
<tr>
<td>Travertec S.R.L. (Romania)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>3.1</td>
<td>---</td>
</tr>
<tr>
<td>voestalpine VAE Sofia OOD (Bulgaria)</td>
<td>-100%</td>
<td>5.1</td>
<td>4.9</td>
<td>4.8</td>
<td>0.0</td>
<td>-100%</td>
</tr>
<tr>
<td>North America Group</td>
<td>-64%</td>
<td>8.5</td>
<td>5.6</td>
<td>4.1</td>
<td>3.1</td>
<td>-24%</td>
</tr>
<tr>
<td>voestalpine Nortrak Inc. (USA/Canada)</td>
<td>-61%</td>
<td>6.4</td>
<td>5.8</td>
<td>3.5</td>
<td>2.5</td>
<td>-29%</td>
</tr>
<tr>
<td>Nortrak-Damy, Cambios de Vía, S.A.P.L de C.V. (Mexico)</td>
<td>-64%</td>
<td>24.0</td>
<td>4.0</td>
<td>8.5</td>
<td>8.7</td>
<td>2%</td>
</tr>
<tr>
<td>South America Group</td>
<td>-65%</td>
<td>31.3</td>
<td>16.8</td>
<td>12.8</td>
<td>10.8</td>
<td>-16%</td>
</tr>
<tr>
<td>voestalpine VAE Brasil Produtos Ferroviários Ltda. (Brasil)</td>
<td>-65%</td>
<td>31.3</td>
<td>16.8</td>
<td>12.8</td>
<td>10.8</td>
<td>-16%</td>
</tr>
<tr>
<td>Africa Group</td>
<td>-76%</td>
<td>9.5</td>
<td>0.0</td>
<td>0.0</td>
<td>2.3</td>
<td>++</td>
</tr>
<tr>
<td>voestalpine VAE SA (Pty) Ltd. (Sudafrika)</td>
<td>-76%</td>
<td>9.5</td>
<td>0.0</td>
<td>0.0</td>
<td>2.3</td>
<td>++</td>
</tr>
<tr>
<td>Australia Asia Group</td>
<td>++</td>
<td>0.0</td>
<td>2.9</td>
<td>1.8</td>
<td>1.6</td>
<td>-11%</td>
</tr>
<tr>
<td>CNTT Chinese New Turnout Technologies Co., Ltd. (China)</td>
<td>++</td>
<td>0.0</td>
<td>4.8</td>
<td>0.0</td>
<td>4.4</td>
<td>++</td>
</tr>
<tr>
<td>voestalpine Railway Systems (Beijing) Co. Ltd.</td>
<td>Zero Level</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>Zero Level</td>
</tr>
<tr>
<td>voestalpine VAE VKN India Private Limited (India)</td>
<td>Zero Level</td>
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<td>0.0</td>
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<td>Zero Level</td>
</tr>
<tr>
<td>voestalpine Railway Systems Pty.Ltd. (Australia)</td>
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<td>0.0</td>
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<td>14.5</td>
<td>4.4</td>
<td>-70%</td>
</tr>
<tr>
<td>voestalpine Railway Systems (Thailand) Co. Ltd. (Thailand)</td>
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<td>---</td>
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<td>0.0</td>
<td>Zero Level</td>
</tr>
</tbody>
</table>
The entire workforce is involved (blue- and white-collar workers, apprentices, leasing personnel, as well as interns and work students). External firms (e.g., construction and cleaning companies, etc., which are active at the locations) are excluded for reasons of administrative complexity.

Occupational accidents are notifiable, when they cause sick leave of more than three calendar days (whereby the accident day is excluded). Accidents en route to and from work are not included, but are counted separately. As far as the cause is concerned, actual accidents and not illnesses must be involved (occupation-related illnesses are incorporated into the Health Rate).

Total actual working hours consist of disposable working time less every type of absence and in particular sick leave and holidays, but incorporating overtime (accordingly all working hours are included in which the employee is actually working and could in theory suffer an accident).

Should an employee be incapable of continuing his or her original activities as a consequence of an accident and only be able to assume a substitute assignment, this is handled in the statistics as a loss (which means the possibility for a related massage of the statistics is excluded). Equally, it is not permitted to send accident victims on leave.

### Definition of LTIFR (Lost Time Injury Frequency Rate / Accident frequency)

= Number of notifiable occupational accidents in terms of 1 million actual working hours

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Change</th>
<th>2018</th>
<th>2017</th>
<th>2016</th>
<th>2015</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>voestalpine SIGNALING Group</td>
<td>-72%</td>
<td>17.1</td>
<td>17.2</td>
<td>6.2</td>
<td>4.8</td>
<td>-23%</td>
</tr>
<tr>
<td>voestalpine SIGNALING Zeltweg GmbH (Austria)</td>
<td>-34%</td>
<td>14.4</td>
<td>15.1</td>
<td>5.1</td>
<td>9.5</td>
<td>86%</td>
</tr>
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<tr>
<td>voestalpine SIGNALING Siershahn GmbH (Germany)</td>
<td>-100%</td>
<td>12.8</td>
<td>3.4</td>
<td>0.0</td>
<td>0.0</td>
<td>Zero Level</td>
</tr>
<tr>
<td>voestalpine SIGNALING Sainerholz GmbH (Germany)</td>
<td>-68%</td>
<td>34.8</td>
<td>46.0</td>
<td>18.9</td>
<td>11.1</td>
<td>-41%</td>
</tr>
<tr>
<td>voestalpine SIGNALING Sopot Sp. z o.o. (Poland)</td>
<td>Zero Level</td>
<td>0.0</td>
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<td>0.0</td>
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<td>Zero Level</td>
</tr>
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<td>Zero Level</td>
<td>---</td>
<td>0.0</td>
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<td>0.0</td>
<td>Zero Level</td>
</tr>
<tr>
<td>JEZ-MFA</td>
<td>-82%</td>
<td>148.9</td>
<td>40.3</td>
<td>21.1</td>
<td>26.4</td>
<td>25%</td>
</tr>
<tr>
<td>JEZ Sistemas Ferroviarios S.L. (Spain)</td>
<td>-92%</td>
<td>174.6</td>
<td>32.6</td>
<td>12.8</td>
<td>13.4</td>
<td>5%</td>
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### Number of notifiable occupational accidents/injuries * 1.000.000

Total actual working hours
## HR trend within the VAE Group

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<tr>
<th>Company</th>
<th>Development Total</th>
<th>Development last FY</th>
<th>Development in % (FY15/16 to FY18/19)</th>
<th>FY 2015/16</th>
<th>FY 2016/17</th>
<th>FY 2017/18</th>
<th>FY 2018/19</th>
<th>Development in % since last FY (17/18 bis 18/19)</th>
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<td>95.2</td>
<td>1.8</td>
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</table>
| TSF-A GmbH (Austria) | --- | * | * | * | --- | ...
| voestalpine Kardemir Demiryolu Sistemleri Sanayi ve Ticaret Anonim Sirketi (Turkey) | 0.3 | 98.7 | 98.8 | 98.3 | 99.0 | 0.7 |
| voestalpine Track Solutions Saudi Arabia Limited (Saudi Arabia) | -0.9 | 100.0 | 99.6 | 99.6 | 99.1 | -0.5 |
| VAMAV Vasút Berendezések Kft. (Hungary) | -0.2 | 95.2 | 95.8 | 96.5 | 95.0 | -1.5 |
| voestalpine BWG GmbH (Germany) | -0.9 | 94.5 | 93.7 | 93.4 | 93.6 | 0.2 |
| LASA Schienentechnik GmbH (Germany) | 0.5 | 95.6 | 92.9 | 94.1 | 96.1 | 2.0 |
| voestalpine WBN B.V. (Netherlands) | -2.1 | 97.0 | 95.6 | 95.9 | 94.9 | -1.0 |
| voestalpine VAE Riga SIA (Latvia) | 4.9 | 93.1 | 87.4 | 96.6 | 98.0 | 1.4 |
| voestalpine VAE Legetecha UAB (Lithuania) | 1.8 | 93.1 | 95.3 | 93.8 | 94.9 | 1.1 |
| voestalpine VAE UK Ltd. (UK) | 2.7 | 96.3 | 97.1 | 95.4 | 99.0 | 3.6 |
| voestalpine VAE Apcarom SA (Romania) | -0.5 | 98.2 | 98.1 | 98.0 | 97.7 | -0.3 |
| Travertec S.R.L. (Romania) | first year | first year |
| voestalpine VAE Sofia OOD (Bulgaria) | -1.6 | 94.8 | 91.6 | 94.2 | 93.2 | -1.0 |
| North America Group | 0.4 | 98.8 | 99.1 | 99.2 | 99.2 | 0.0 |
| voestalpine Nortrak Inc. (USA/Canada) | 0.3 | 98.9 | 99.0 | 99.2 | 99.2 | 0.0 |
| Nortrak-Damy, Cambios de Via, S.A.P.I de C.V. (Mexico) | 1.0 | 98.0 | 99.5 | 99.0 | 99.0 | 0.0 |
| South America Group | 2.5 | 95.7 | 97.2 | 98.3 | 98.2 | 0.1 |
| voestalpine VAE Brasil Produtos Ferroviários Ltda. (Brasil) | 2.5 | 95.7 | 97.2 | 98.3 | 98.2 | -0.1 |
| Africa Group | 2.5 | 95.2 | 97.3 | 97.8 | 97.7 | -0.1 |
| voestalpine VAE SA (Pty) Ltd. (Südafrika) | 2.5 | 95.2 | 97.3 | 97.8 | 97.7 | -0.1 |
| Australia Asia Group | 0.4 | 98.8 | 99.1 | 99.3 | 99.2 | -0.1 |
| CNTT Chinese New Turnout Technologies Co., Ltd. (China) | 0.0 | 99.4 | 99.5 | 99.6 | 99.4 | -0.2 |
| voestalpine Railway Systems (Beijing) Co. Ltd. | --- | * | * | * | --- | ...
| voestalpine VAE VKN India Private Limited (India) | 0.5 | 99.1 | 99.5 | 99.7 | 99.6 | -0.1 |
| voestalpine VAE Railway Systems Pty.Ltd. (Australia) | 1.3 | 96.1 | 96.4 | 96.8 | 97.4 | 0.6 |
| voestalpine Railway Systems (Thailand) Co. Ltd. (Thailand) | --- | --- | --- | 99.4 | 99.1 | -0.3 |
For reasons of data protection, no HR data is published for companies with fewer than twenty employees.

Definition HR (Health Rate)

HR = \frac{\text{Total disposable working time} - \text{hours lost due to illness} \times 100}{\text{Total disposable working time}}

- The health rate is the percentage of time that an employee is fit to work.

- The entire workforce is again included (blue- and white-collar workers, apprentices, Leasing personnel, as well as interns and work students), but external firms are excluded.

- The hours lost due to illness relate to both private and work-related illness, as well as absences caused by private and occupational accidents that are not notifiable (therefore up to and including absence of three calendar days).

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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<td>---</td>
</tr>
</tbody>
</table>

* For reasons of data protection, no HR data is published for companies with fewer than twenty employees.
8.3 ACTIVITIES OF VOESTALPINE VAE GMBH SUBSIDIARIES

The subsidiaries at the Zeltweg location are not the only ones to successfully implement HSEE projects. voestalpine VAE GmbH takes pride in the ability of its subsidiaries on every continent to attain special HSEE goals, especially when one considers the fact that in some countries the related general situation and preconditions are anything but straightforward. Therefore, the local managements, HSEE experts and employees are all due appropriate recognition.

For example, particularly within the course of acquisitions (during the takeover of locations and premises) or the construction of new production halls, a total of more than 95,000t of contaminated soil has been dealt with (pollution above all due to oil, coolants, ash/slag, or rubble dating respectively from the historic prior use of the locations) at voestalpine VAE Group locations, which adds up to over 4,000 truck loads! These activities were completed in line with our basic principle that in order to avoid risks, voestalpine VAE plants may only be built and operated on clean ground.

The following are some additional examples derived from other topic areas!

Turkey – VADEMSAS: integrated HSEE design at the new location that also includes ISO 14001 and OHSAS 18001 certification

VADEMSAS became operational in May 2011. This joint venture with TCDD, Turkish State Railways, and Kardemir, an industrial partner, is located in the city of Cankiri some 150km north of Ankara.

During the design of the new plant with a covered area of over 5,500 m², from the very first planning phase the project team took health, safety, environmental and energy factors into consideration in a fully integrated manner.

For example, technical measures included:
» The careful selection of construction materials with regard to freedom from pollutants and optimum heat insulation for the facades, roofing and windows.
» Technical safety optimisation in connection with accident prevention through a correct procedural layout, the material flow concept and plant design.
» Efficient lighting and heat reduction in summer by means of sun protection and ventilation concepts.
» Clean natural gas heating systems, above all using a highly efficient dark radiator system in the production hall.
» Modern fire alarm systems in the halls and offices, as well as emergency power supply systems/batteries and emergency lighting systems.
» A secure extinguishing water supply with storage tanks, hydrants and pressure increase system.
» Ergonomic office fixtures and fittings.
» Employee-friendly design of the social and hygiene amenities.
» Fix-mounted roof safety system for maintenance purposes.
» Low environmental impact, separate drainage system for precipitation and wastewater from the hygiene amenities.

This created an excellent basis for the creation and certification of an environmental management system pursuant to ISO 14001 and a health and safety management system in accordance with OHSAS 18001. However, naturally enough numerous measures, especially on an organisational level, still required preparation and implementation, e.g.

» The definition of the processes and procedures of environmental and health/safety relevance
» The drawing up of useful checklists
» The completion and documentation of the initial environmental/safety examinations, particularly with regard to legal conformity, as well as data of environmental and safety relevance
» Most importantly, the training of the employees with respect to the health, safety and environmental aspects of their activities.

Apart from this achievement, in the course of the project a VAE Model Manual was drawn up in teamwork with the Zeltweg location, which will also assist other VAE Group subsidiaries during the creation of environmental and safety management systems.

The VADEMSAS management and staff perceive the issues of safety, health, environmental protection and quality as core values within their range of activities, which correspond with the following guiding principles:

» Safety and health protection are allotted maximum priority (especially in connection with employee training and practical exercises aimed at raising day-to-day handling safety, as well as emergency action, e.g. correct fire extinguisher use).
» Adherence to statutory and company regulations
» Sustained development (including issues such as employee job satisfaction and social aspects)
» Danger prevention and thus the avoidance of workplace injuries (definition of internal standards!)
» Definition and fulfilment of internal company targets
» Improved waste separation with the involvement of the entire workforce

The latest focal point involved the improvement and updating of managerial documentation, especially in the areas of design, purchasing, maintenance and services (also in connection with the switch to ISO 9001:2015 and ISO 14001:2015).
Saudi Arabia – voestalpine TSSA: integrated HSEE design at the new location including ISO 14001 and OHSAS 18001 certification

voestalpine Track Solutions Saudi Arabia (vaTSSA) became operational in October 2012. This joint venture with the Al-Mobty company is located in the Industrial Area 2 in Riyadh and is the first turnout plant in the region.

From the very start of planning of this new facility, the project team took the integration of health, safety, environment and energy issues into close consideration.

Among the technical measures adopted were:

» The careful selection of construction materials with regard to their freedom from pollutants and the optimum heat insulation of facades, roofs and windows.

» Safety optimisation in connection with accident prevention through an appropriate material flow layout and concept from a sequential perspective, and plant design.

» Modern fire alarms in the halls and offices, as well as emergency electricity generation systems/batteries and lighting.

» A secure supply of extinguishing water with in-plant storage capacity, hydrants and pressure increasing system.

» Ergonomic office design, fixtures and fittings.

» Employee-friendly design of the social and hygiene amenities.

» The environment-protective collection of wastewater from the hygiene amenities in tanks and its transport to the local treatment plant

vaTSSA started to draw up and introduce an integrated management system in line with ISO 9001, ISO 14001 and OHSAS 18001 almost immediately and overcame this hurdle in masterly fashion through successful, initial certification in September 2014. A changeover to ISO 9001:2015 and ISO 14001:2015 was already carried out during recertification in July 2017.

Both the management and staff regard this commitment as vital in order to secure both the sustainable development of the company and the ability to fulfil customer demands.

vaTSSA is set to play a particularly significant role in the design and establishment of a modern rail system in the Arab region, as in teamwork with the Group’s engineering experts, it is developing and offering the special technological solutions needed for the specific environmental conditions found in the region (desert climate, sand) and thus fault-free, efficient and competitive railway operations.
Netherlands – voestalpine WBN B.V.: integrated HSEE design in a new plant as well as “Level 5 on the ProRail CO₂ emissions ladder”

In 2012, voestalpine WBN B.V moved from its premises in Utrecht to the voestalpine Railpro site in Hilversum. Accordingly, a new works had to be designed and in this connection the project team has done a thorough job with regard to HSEE design and planning. In addition to the technical aspects mentioned above (analogous to VADEMSAS) the integration of a geothermal heating system is worthy of special note.

At the beginning of 2013 voestalpine WBN received a “level 5 CO₂- consciousness certificate” from the Dutch railway network operator ProRail, which is the highest level achievable on this national scale. This certificate was granted due to the fact that since 2011 and the start by ProRail of a scheme for the support of climate-conscious corporate management, voestalpine WBN has slashed its CO₂ emissions by a notable 64%.

(direct and indirect CO₂ emissions 2011 = 558.3 t; 2016 = 201.7 t)

Energy savings were achieved through the following package of measures:
» The move from Utrecht to Hilversum and an energy-optimised production and office building designed by the company’s planning department.
» The purchase of “green” electricity
» The use of economic leasing vehicles

The progress towards the reduction target is calculated on a quarterly basis and the annual balance is published on the voestalpine WBN website. Not only are the CO₂ emissions occurring directly at the location counted, but also indirect emissions such as those emanating from electricity use and business travel. The target established for voestalpine WBN for the 2011-2015 period of a reduction in CO₂ emissions of 5% per year has therefore been significantly exceeded, but WBN also sees further potential for improvement.

Financial incentives. Since the introduction of the “CO₂ performance scale” in 2011, the CO₂ footprint has become an indispensable part of the management of the Dutch railway infrastructure company. In order to climb another rung on the “CO₂ ladder”, certain requirements have to be met with regard to CO₂ emissions. The more of these demands that are fulfilled, the greater is the financial reward from ProRail. This takes the form of a rebate on the total used in an invitation to tender, which clearly improves the competitive position in comparison to other companies.

Frequent cost savings. A positive side effect of the ProRail initiative is that companies scrutinise the processes in which CO₂ is emitted. Consequently, as CO₂ emissions are often related directly to energy consumption, which is expensive, the reduction of CO₂ output frequently results in cost savings.

In addition, during June 2017 WBN successfully undertook initial certification pursuant to ISO 14001:2015 and OHSAS:18001.
Germany – voestalpine BWG GmbH: diverse successes through employee involvement on the basis of the 9-14-18-50001 management system

voestalpine BWG GmbH operates at five locations (Butzbach, Brandenburg, Gotha, Dresden and Heilbronn), which in total possess an area of approximately 457,000 m², over 600 employees and hundreds of items of plant and machinery. Therefore, the creation of an integrated management system centred around ISO 14001, OHSAS 18001 and ISO 50001 on the basis of a quality management system pursuant to ISO 9001, which had been in existence for quite some time, was not an ad hoc assignment. Nevertheless, owing to an intensive focus on HSEE over many years, preconditions at the locations were promising and resulted in the fact that the project was concluded with successful certification in May 2016. Further system development resulted in the following summarised successes:

Work safety
Following the completion of certification, even greater efforts were made with respect to employee involvement, as this was seen clearly as the decisive factor for success. In order to visualise all the most important figures for every aspect of HSEE, HSEE islands were installed at three production plants, which above all were also intended as communication points. The integrated presentation monitors show current key statistics and projects, as well as the latest reports.

In addition, 2017 saw the holding of the second Safety and Health in the Workplace Action Day, which was organised by employees for employees and focused on workplace ergonomics. Support was also provided by the TK health insurance fund and the safety officers gathered at the Gotha plant for an exchange of information and experience. The safety officers at the respective plants have their own regular meetings in order to discuss the latest accident-related events, define countermeasures and undertake tours of the premises.

During a meeting of the inter-BWG work safety committee, an annual report on the topic of work safety was presented for the first time. At the same meeting, the attainment of targets was confirmed and new objectives were established. One emphasis will be on the registration of near misses, in order to strengthen prevention thinking. The next Work Safety Action Day will relate to the concrete sleeper area, an accident focal point for the year, with the aim of raising employee awareness levels and achieving greater workforce involvement.

One small highlight is our “Accident Lui”, which is always installed after an accident in order to signal to those in the vicinity, “Beware! An incident has occurred here!” Employees can obtain information regarding the accident from the board held by the Luis, which have been well received by the workforce. However, it is naturally voestalpine BWG’s intention that the LUIS will be seen as seldom as possible.
Health
In order to further intensify efforts regarding employee health, company health management was introduced. A pilot project was launched at the Gotha plant and the workforce was closely involved in the design of the related measures. During a variety of workshops, focal points were determined and steps defined. For example, back muscle training was offered within the plant and this was very well received. Above all, these exercises are much easier in a group, when carried out jointly by colleagues in an atmosphere somewhat more relaxed than that of the working day.

With professional support, the ergonomics of a number of workplaces in the production and administrative areas are being analysed and improvement potential identified. In addition, the work safety specialists are actively involved in the refitting of workstations and machinery purchases. For example, during the renovation of office space, attention is paid to both colours and height-adjustable worktops.

In a move designed to encourage personnel from all areas to drink water, particularly during hot weather periods, water dispensers have been installed at the voestalpine BWG locations. This move also represents a contribution to environmental protection, as the use of refillable water bottles has considerably reduced the employment of disposables.

Energy
In the energy field, voestalpine BWG’s key statistics with regard to gas, water, electricity, compressed air (from electricity) and diesel fuel were collated in greater detail and appropriate measures extrapolated. In order to better classify energy consumption, (additional) meters were installed on large consumers and the advisability of installing further meters is to be examined in the case of all new investments. One major project involved the installation of LED lighting at all of voestalpine BWG’s three production plants and this served the complete range of HSEE considerations. The new lights have resulted in reduced electricity consumption and a considerable improvement in lighting conditions, which has been enthusiastically received by the workforce.

The extremely old compressed air supply system at the Brandenburg plant has been renewed (also with a conceptual alteration), which has enabled a cut in energy consumption of around 30%. In addition, the optimisation of furnace occupancy (gas) represented another focal point. In this regard, a key figure was implemented in order to document the level of furnace loading. The resultant visualisation alone was already sufficient to somewhat reduce energy consumption.
Environment
Work commenced on the introduction of an improved waste and materials concept, as well as the related information supply system. Accordingly, a suitable number of waste bins were installed on islands using a colour code system. Regular emptying and a reasonable distance between the islands also represented significant success factors. Waste reduction is the primary objective and naturally this commences at the beginning of the production process (supplier/purchasing) and extends to a suitable collection point for each material. The income derived from the material fractions and lower waste disposal costs also makes this concept economically attractive, but it can only be successful if all employees are involved and participate.

CSR
All these aspects contributed to the fact that this year voestalpine BWG achieved silver status during CSR certification by Ecovadis. The attainment of gold constitutes the target for next year.

Special information regarding turnout grinding:
During the construction of a maintenance hall for turnout grinding trains (“turnout grinding hall”) in Brandenburg, HSEE aspects were integrated during both planning and completion. Optimum heat insulation and highly efficient dark radiation heating system were installed in the hall along with an air absorption heat pump for the heating of the offices and storage areas, and a modern oil separation unit for wastewater from cleaning. However what made this project particularly special was the fact that prior to its commencement, extensive soil contamination derived from the former operations of the former East German State Railways had to be removed in cooperation with German Railways. This was necessary in order to make the site suitable for long-term use and create new workplaces, and involved the excavation and disposal of some 17,500 t of contaminated earth, which contained roughly 355,000 kg of oil emanating from past leakages of cooling agents, as well as around 4,100 t of contaminated rubble (above all concrete).

Turnout grinding using these special trains also constitutes a service that offers sustainability, as it prolongs turnout service life, conserves resources and reduces railway noise emissions.
Germany – voestalpine SIGNALING Sainerholz GmbH: technical noise optimisation in an extension

voestalpine SIGNALING Sainerholz GmbH lies in extremely tranquil surroundings, but excellent company development necessitated increased production and hence the building of an extension. Therefore, the planning team focused on the provision of optimum noise protection for the residential buildings in the vicinity. Numerous variations were examined and finally the ideal solution found, which resulted from the layout of the buildings, the design of the transport logistics and routes, as well as the entrances and gates, the selection of the building materials and the design of the plant.

Germany – LASA Schienentechnik GmbH: diesel particle filters for generators

LASA Schienentechnik GmbH is located near Bremen and is regarded as a maintenance specialist in the turnout and track welding and grinding area for local transport operations and industrial railways.

For this purpose, LASA possesses trucks equipped with diesel generators, which are used to power the welding equipment, grinding machines, lighting and warning signals needed at construction sites. Therefore, in order to contribute to a reduction in inner city fine dust levels in line with environmental protection considerations, LASA has begun to equip its generators with diesel particle filters from the Krone company. The particle filters are cleaned by specialist companies and can be reused. Three of the seventeen LASA trucks have already been fitted out and, depending upon the market situation, other vehicles will be added during the 2018 financial year.

In a further measure, successful tests were carried out with the workforce using individually adjusted hearing protection, which has now been introduced. The advantages:

» Improved protective effect
» Greater comfort during extended wear
» Optimum fit
» Several years of service life
» Robustness
» Easy cleaning
» Human speech frequencies are attenuated less than machine noise. This means that in spite of wearing hearing protection, employees can communicate with comparative ease, which benefits technical safety.
In July 2017, VAMAV successfully passed initial ISO 14001:2015 and OHSAS 18001 certification.

In addition, 114 employees participated in a national health programme:

» The check-up consisted:
  » 37 differing part-examinations (including definition of cholesterol and sugar levels, a lung function test, body fat level determination, vein and artery status, inner eye pressure measurement, skin cancer prevention and lactose intolerance test, etc.)
  » Subsequent health advice
  » First aid training

» As a final point, the employees received an information package containing their individual results and brochures explaining how to deal with the recognised health problems, as well as general healthcare matters.

» VAMAV intends to use the general results as a basis for further health projects.

A new central facility has been built for the separate collection and storage of hazardous and non-hazardous waste. Special containers fitted with integrated sumps for the prevention of liquid leakages have been obtained for the storage of hazardous waste. A total of 17 m³ of liquid and 12 m³ of solid hazardous waste can be stored and one container is heated in order to protect aqueous waste against the effects of frost especially in winter. The floor of the building has been covered with a liquid-tight and chemical-resistant coating in order to prevent soil and groundwater contamination.

In line with the implementation of the 5S concept in offices, new bins for the separate collection of waste and useful materials (above all paper and plastics) have been installed.
Bulgaria – voestalpine VAE Sofia GmbH: renovation of the building facades

The voestalpine VAE Sofia GmbH building incorporates office accommodation and two production hall aisles with a total area of around 4,400 m². The facades have now been fully renovated from both a structural and heating insulation standpoint through the mounting of 6cm-thick EPS insulation sheets on the brickwork (approx. 2,070 m²) and the replacement of the old windows with insulated versions, which typically provide a 75% improvement in heat insulation. In addition, the heating system was upgraded to the benefit of both the workforce and the environment.

Latvia – voestalpine VAE Riga GmbH: first VAE Group company with an ISO 50001 certificated energy management system and detailed safety information

In May 2014, the first environmental management system pursuant to ISO 50001 within the VAE Group was successfully certificated at voestalpine VAE Riga GmbH and the following initial successes subsequently achieved:
» The electrical energy consumption per working hour, as well that of natural gas per heating degree day were reduced by 5% as compared to the initial basis in 2013.
» LED lighting was installed, which also improved workstation illumination.
» The control of the natural gas fired heating was upgraded.
» Water-saving armatures were installed wherever worthwhile.
» Employee awareness levels with regard to energy consumption and costs were further heightened by means of an intensive information supply. This process continues because it is important that every workforce member contributes to the attainment of cost saving targets through optimum, individual conduct.
» In addition, the related findings are valuable for the entire VAE Group, as VAE Riga has supplied the system development documentation to all its sister companies and this information was integrated into the VAE HSEE Guidebook as a model and the basis for ideas.

Furthermore, the company possesses certification pursuant to ISO 9001, ISO 14001 and OHSAS 18001. Within the framework of these systems, employee training and information are allocated top priority.
» Consequently, prior to the beginning of a shift, a reminder of the ten most important safety regulations is given and safety stipulations are kept constantly in view on monitors.
» All employees are trained with regard to correct conduct in emergency situations (above all proper fire fighting).
» At the time of reporting, the company has already been accident-free for 667 days!
UK – voestalpine VAE UK Ltd: work emergency management and third party legal compliance check

In 2016 a bund failure on an oil storage tank was noticed by the vaVAE UK staff. The KN Services company, which specialises in oil spill clean-ups, was contracted to trace and remediate the contamination. Accordingly soil was sampled and analysed. Surface water and groundwater were unaffected. The core contamination was excavated and 3.2 t of oil-contaminated soil were disposed of correctly. In addition, a final bio-treatment eliminated the remaining oil residues in the surrounding soil. Finally, KN Services was able to state that the work had been completed as required. The oil tank was replaced and the bund repaired.

As far as organisational matters are concerned, vaVAE UK has carried out a third-party legal compliance check in cooperation with the specialist consultancy, WBS-SMS, and has also established a register of binding obligations. These activities form the basis for the next planned project, which comprises the implementation of a management system according to ISO 14001:2015 and OHSAS 18001 at both the Edinburgh and Harworth locations.

UK – voestalpine SIGNALING Fareham Ltd: staff and management training

voestalpine SIGNALING Fareham has successfully extended its existing ISO 9001 management system with OHSAS 18001 and ISO 14001:2015.

» A special point of emphasis during system development was employee training. In particular, in the course of the important “Working on Railway Infrastructure” process, all the relevant stipulations were collated in the clearest and most easily understood manner possible. In addition, the top management received specific further coaching through the certificated “Directing Safely – Safety for Executives and Directors” course.

» A risk analysis was undertaken for the location.

» The plant facilities are subjected to monthly, internal H&S audits.

» The company fulfils the requirements of the applicable modules of the Railway Industry Supplier Qualification Scheme (RISQS) and is examined in this regard annually by independent experts from the Achilles organisation.
Austria – Weichenwerk Wörth GmbH (WWG): comprehensive HSEE measures during the expansion and restructuring of the works

Owing to excellent company development, over the years WWG has had to enlarge its site, add additional halls and restructure its entire production sequence. In the course of this process and as a result of the very close proximity of the neighbours due to historical factors, numerous HSEE measures were once again successfully implemented, e.g.

» Comprehensive heat and noise insulation measures on the facades, ceilings/roofs, skylights and windows of the buildings (over 12,000 m², which is larger than two football pitches, and thus roughly 80% of the facades and ceilings and roofs of the heated buildings have been thermally insulated). Between 2010 and 2012, these thermal renovation measures (adjusted for heating degree days) saved approximately 47% of the heating energy requirement. In turn this figure corresponds with some 1,600 MWh per year and on the basis of the modern natural gas central heating approximately 338t of CO2/year.

» In 2013 a central energy control system was installed, which governs heating, lighting and the central lock on the compressed air system, and thus provides additional energy savings.

» A switch to LED lighting in all production and storage halls. Originally these employed 250 sodium vapour lamps with an output of 600W each (including ballasts). As a result of the reduction in the required output of the LED system, the quality of the lighting was improved in tandem with a reduction in electricity consumption of around 60%.

» Noise protection: technical encapsulation of various noise sources, as well as the installation of noise protection walls along the entire eastern perimeter (roughly 5 m-high) in order to safeguard the residential neighbours to the greatest possible extent (in 2005 an approximately 120 m-long wall was erected along the north-eastern perimeter and in 2017 an 88 m extension was added on the south-eastern side).

» Realisation of a wooden sleeper storage concept using covered areas for the reduction of malodours for the neighbours to a minimum (in particular in connection with protection against moisture and sunlight).

» Top quality extractor and filter systems in the areas of tongue grinding, butt and manual welding, and autogenous cutting.

» An appropriate precipitation drainage concept, renewal of sewer sections and the installation of a new washing facility with modern oil separator.

» In the course of the switch of WWG’s water supply to the public system, the entire, roughly 50-year-old ring pipeline was replaced by a 150mm plastic version thereby preventing losses due to leaks.

» Safe storage technology due to the erection of stores for gas, flammable liquids and other chemical supplies.

» Holistic fire protection concept with alarms in all buildings, structural fire safeguards and a secure supply of extinguishing water that included the installation of a comprehensive lightning conductor system.

» Safety concepts and machine checks.

» The installation of a modern, automatic sleeper plating system, which has relieved employees of extremely unfavourable tasks from an ergonomic and posture perspective, as well as reducing noise and vibration impact.

» Interior renovation of halls, all offices, the hygiene facilities and social amenities.

» Site remediation prior to a land purchase: WWG purchased an approximately 4,800m² plot of land bordering the eastern side of its premises. In the course of the purchase, a known pollutive source was removed in cooperation with the seller, Austrian Federal Railways, and official support. The contamination stemmed from an oil tank, which had been used by Austrian Federal Railways in the past for firing the Wörth heating plant. The plant had already been switched to gas in the early 2000s, but nonetheless a total of 1,064 t of oil-polluted soil and 346t of concrete rubble were disposed of in an environment-friendly manner. Subsequently, the local Water Authority provided certification that the remediation objectives had been achieved.

» A Turnout Academy was installed in the northern section of BG1 and the neighbouring BG 6, the centrepiece of which is formed by two adjacent, connectable lecture rooms each offering space for some 25 people and equipped with modern presentation equipment. In addition, several fully functional demonstration turnouts have been installed, in order to allow seminar attendees to experience the function and workings of the respective turnout type at first hand, and also train their handling. The better coached the future users are with regard to turnout technology, the greater is the efficiency of system operation and maintenance.

» Improved accident and health statistics. Owing to the fact that in the 2015/16 financial year WWG’s LTIFR figure amounted to 69.6 and the Health Rate to 93.9%, an extensive programme was launched for an improvement in this situation:

» Sixteen additional safety officers were trained.

» Three neuralgic working areas (recycling, pitched roof assembly and BG2 production) were subjected to detailed reevaluation.

» Accidents and near misses were dealt with in an absolutely identical fashion and underwent precise analysis in a process that involved the accident victim, his/her immediate superior, the works council, the responsible safety officer and the safety expert. The findings were then communicated to the departments and via the information terminals.

» Reworking of the glove concept with a focus on the use of cut-resistant gloves in production.

» Preparation of a safety concept for WWG visitors (also in connection with the new Turnout Academy).

» Revision of the WWG walkway and traffic route concept (also in connection with the new Turnout Academy).

» Development of the “Point of View” project in order to raise the awareness levels of the safety officers and their direct superiors. In a monthly basis, a representative of the HSEEQ department meets the respective responsible manager and his/her safety officers at a randomly chosen spot within their areas. From this point, under the auspices of the HSEEQ expert, the manager and the safety officers should establish what unsafe conditions and actions they can recognise. The
result is then photographed and a month later a second meeting is held to determine if changes have been made. This procedure is repeated until the area is defect-free, after which another location is freely selected. The objective is not merely the removal of deficits, but more the coaching of the respective superior with regard to the recognition of unsafe conditions and conduct and an improvement in general safety and risk awareness through team discussions.

During the 2016/17 financial year, in total these measures resulted in a reduction of the LTIFR to 49.5 (approx. -30%) and an improvement in the Health Rate to 95.6%. Nonetheless, WWG is still not satisfied and intends to further intensify the efforts launched in the 2016/17 financial year, which were aimed at lowering the accident rate.
Brazil – VAE Brasil: 5S concept

Both the management and staff at VAE Brasil, which is located near Sao Paulo, are involved with HSEE issues in a highly systematic manner. A **5S concept** has been implemented throughout the company with marked effects on safety. Moreover, **42 exhaust fans** have been installed in the halls to ease the load on the workforce regarding heat and these have proven to be highly efficient.

USA and Canada: voestalpine Nortrak Inc.: “Behaviour-Based Safety” and the “U-Care” concept

voestalpine Nortrak has seven production locations in North America and a workforce of around 950. The group’s **accident statistics trend** is most impressive:

» **Between 2011 and 2016, the OHSA Incident Rate (number of accidents subject to obligatory reporting per 200,000 working hours) was cut by 80% from 5.98 to 1.24** (please see diagram).

» **From 2007 to 2014, accident-related costs were reduced by 90%.

This is the result of **systematic efforts** on the part of management, the responsible specialists and the entire workforce. Moreover, in order to continue on this successful path, **additional programmes** have been initiated:

» Strengthening of internal auditing with a focus on employee conduct at all plants

» Extension of residual risk analyses at all plants

» Enlargement of workplace safety analyses

» Introduction of a human influence factor classification and analysis system with regard to accidents and near misses

The central element in success is the focus on **“Behaviour-Based Safety (BBS)”**. Above all, this concentrates on the human accident factor through:

» Frequent short audits.

» The provision of positive feedback with respect to safe actions and conduct, and the provision of appropriate correctives in the case of safety deficiencies.

» These measures lead to intensive communications and increased awareness regarding safer procedures

» All employees (including executive management) and specialist areas participate in this system and make a correspondingly committed contribution.

The U-CARE Programme combines the main cornerstones:
Mexico – Nortrak Damy: frog grinding cabins and medical care programme

In efficient cooperation with Zeltweg and following an exemplary exchange of experience, grinding cabins were installed and fitted with an efficient extraction and filter system. As a result, dust levels in the hall were lowered considerably.

In addition, Nortrak-Damy carried out medical examinations for all employees. These checks not only included audiometry (hearing capacity), spirometry (breathing), but also blood tests that covered diabetes (sugar) and arteriosclerosis (cholestrine). Further medical advice in connection with nutrition or recommended medication was then provided on the basis of the findings.

India – voestalpine VAE VKN India: ISO 14001 and OHSAS 18001 certification

The location near New Delhi operates a turnout production facility and a foundry for manganese alloys. The site was not only freed from contaminated soil and deposits in the course of the takeover, but in 2010 the management and staff already succeeded in establishing a management system at the company, which has received ISO 9001, ISO 14001 and OHSAS 18001 accreditation and corresponding recertification in the following years. This pioneering achievement in an emerging market, has not only set a precedent within voestalpine VAE GmbH, but has also contributed to the fulfilment of the claim by our group to be a branch leader.

Republic of South Africa – voestalpine VAE South Africa: numerous improvement measures with regard to air, water, soil and employee health protection, as well as the first photovoltaic system in the VAE Group

» At the Kimberley and Bloemfontein locations, rails were previously moved forward on greased frames. This led to creeping soil contamination due to drip losses, as well as the subjection of the employees doing the work to danger and extreme physical loads. This concept has now been fundamentally revised at both locations with the removal of the old equipment, soil decontamination and the installation of new transport runways and roller beds. As a result, both the soil and the health & safety of the employees have been protected.

» In addition, an underground, single-wall tank has been substituted for a surface tank, which can be monitored, with the result that now there are no longer any underground tanks in use at company locations.

» Collectors have been installed at the coolant supply stations.

» At the Bloemfontein location, three cabins with extraction and filter units have been installed for frog grinding. This has not only reduced the dust loads upon the employees involved directly with grinding, but also all other workers in the surrounding hall (typically by around 80%). The high-quality filtration system prevents the emission of directed or diffuse dust emissions into the environment. Moreover, the cabins have lowered the noise levels in the hall and ergonomic improvements have been achieved through upgraded cabin lighting.

» As an additional measure, an existing extraction unit for other grinding work was fitted with a wet dust separator. Consequently, dust emission and floor contamination in the area are prevented further (removal amounts to over 90%) and the inhalable levels of dust to which employees are directly subject at the grinding station are approximately 70% below the permitted limit. The measures implemented have also reduced dust levels in the surrounding hall area to 90% below the permitted limit, which incidentally corresponds with European standards.

» Unfortunately, the Bloemfontein location has had to close and
At present, the plant is being shipped to the Isando works. Naturally, the achievements listed above have also been transferred to the new location and the closure itself is being completed in line with the HSEE concept (safety, waste disposal) designed especially for this purpose.

The VAE Group’s first photovoltaic system has been installed at the Isando location. The system covers 2,250 m² and the design data points to output of approximately 350 kWp, annual electricity production of around 483 MWh and the related avoidance of roughly 466 t of CO₂ per year.

Owing to a systematic approach to the topic of work safety and good training, for the past four years the lost time reportable accident rate according to national definition at the three locations has amounted to 20% of the national average.

All these successes are naturally no coincidence, but rather the result of a competent and committed analysis of the material by the project team within the framework of an accredited management system pursuant to ISO 9001 and ISO 14001. The introduction of OHSAS 18001 is the next major objective.
voestalpine VAE Railway Systems has been located in Mackay since 1990 and was the first international subsidiary within the VAE Group. In 2015, vaVAE RS grew considerably owing to the purchase of the Bathurst location in New South Wales from Australian Railways. This additional production facility manufactures turnouts and also carries out rail welding. A comprehensive HSE due diligence survey was completed in the course of the acquisition process, which among other aspects included a precise analysis of the situation regarding soil and groundwater impact. During this procedure, in teamwork with the seller and the local authorities, an excellent data basis was created for future operations.

Following privatisation, the appropriate management systems were installed and now both company locations possess management systems certificated in accordance with ISO 9001, ISO 14001:2015, OHSAS 18001 and AS/NZ4801.
At this juncture, we would like to thank local employees, managers, external partners and authorities for the constructive teamwork without which none of these successes would have been possible. Unfortunately, or perhaps fortunately, it would exceed the capacity of this report if we were to describe all the many additional technical and organisational measures that have been implemented at the locations both mentioned and unmentioned. It should also be stated that numerous locations have already received ISO 14001/OHSAS 18001 certification, others are heading in this direction and many employees and managers have already established new and ambitious objectives for further development and continuous improvements.
# 9. ENVIRONMENTAL, HEALTH AND SAFETY OBJECTIVES & SUCCESSES

The following is an overview of the status and implementation of our activities in the HSEE field and above all, our objectives for the coming years. Naturally enough, the programme of measures is subject to continuous further development in line with the knowledge and requirements emanating from ongoing operations and we are pleased to state that during this year we were once again able to pinpoint additional challenges, which have already largely been dealt with successfully. Summaries regarding especially important projects from earlier HSEE programmes that have already been concluded can be found in the section “HSEE aspects at the location”, or in previous environmental statements from the location.

## Completed measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>Objective or success</th>
<th>Realisation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewer and water pipe renewal (southern branch Stage 2)</td>
<td>Renewal of approx. 200 m of sanitation and rainwater sewer, as well as 50 m of drinking water pipeline and thus leakage prevention</td>
<td>October 2017</td>
<td>Green</td>
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<tr>
<td>New design of the NDT testing area (vaW)</td>
<td>Extension of the extinguishing water pipeline by around 150 m</td>
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<tr>
<td>Tongue cleaning extractor and filter system (vaW)</td>
<td>Equipping of the work station with a grinding cabin, including an extractor and filter system</td>
<td>April 2018</td>
<td>Green</td>
</tr>
<tr>
<td>Improved dust capture in frog grinding cabins 1 and 2 (vaW)</td>
<td>Doubling of extractor performance to 10,000 m³/h per cabin (existing extractor/filter system now only in cabins 3 and 4; additional systems in cabins 1 and 2)</td>
<td>April 2022</td>
<td>Blue</td>
</tr>
<tr>
<td>Encapsulation of lathes and machining centres (vaSZ)</td>
<td>Two encapsulated lathe and machining centres with extractor/filter systems for coolant mist (80% prevention of diffuse emissions)</td>
<td>April 2018</td>
<td>Green</td>
</tr>
</tbody>
</table>

## Ongoing measures

- Tongue cleaning extractor and filter system (vaW)
- Improved dust capture in frog grinding cabins 1 and 2 (vaW)
- Encapsulation of lathes and machining centres (vaSZ)

## Newly established measures

- Encapsulation of lathes and machining centres (vaSZ)

## Measures adopted from the last environmental programme (open or adapted objective)

- Sewer and water pipe renewal (southern branch Stage 2)
- New design of the NDT testing area (vaW)
- Tongue cleaning extractor and filter system (vaW)
- Improved dust capture in frog grinding cabins 1 and 2 (vaW)
- Encapsulation of lathes and machining centres (vaSZ)

## Measures that proved impractical or were replaced by alternatives

- Tongue cleaning extractor and filter system (vaW)
- Improved dust capture in frog grinding cabins 1 and 2 (vaW)

### Key

- Green: Completed measures
- Blue: Ongoing measures
- Dark Blue: Newly established measures
- Light Green: Measures adopted from the last environmental programme (open or adapted objective)
- Grey: Measures that proved impractical or were replaced by alternatives

### Abbreviations:

- vaW = voestalpine Weichensysteme GmbH
- vaSZ = voestalpine SIGNALING Zeltweg GmbH
- VAE = voestalpine VAE GmbH (Holding)
- StZ = übergreifende gemeinsame Aktivität am Standort Zeltweg

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<table>
<thead>
<tr>
<th>Measure</th>
<th>Objective or success</th>
<th>Realisation</th>
<th>Status</th>
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<tbody>
<tr>
<td>Extractor and filter system in a deburring work station (vaSZ)</td>
<td>Equipping of a deburring work station with an extractor and filter system</td>
<td>February 2019</td>
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<td></td>
<td>Extraction performance of 2,000 m³/h</td>
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<td>Reduced dust emissions</td>
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<tr>
<td>Extractor/filter system repair programme (vaW+vaSZ)</td>
<td>Exchange of various filter cartridges and mats in dust and aerosol separators</td>
<td>April 2018</td>
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<tr>
<td>Magnet powder test for tongue fillers (vaW)</td>
<td>Emission prevention</td>
<td>March 2020</td>
<td></td>
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<tr>
<td>Replacement of natural gas and diesel stackers with e-stackers (Zl)</td>
<td>Emission prevention</td>
<td>2025</td>
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<tr>
<td>Painting cabin (vaW)</td>
<td>Acquisition of a painting cabin for small paint jobs</td>
<td>2020</td>
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<td></td>
<td>Reduction in malodours in the hall</td>
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<tr>
<td>ENERGY/CO₂</td>
<td>Renovation of the BG9 facades and roof (vaW)</td>
<td>December 2017</td>
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<td></td>
<td>Renovation of the facades and roof with an area of approx. 1,600 m²</td>
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<td>Non-inflammable roof design instead of the previous construction with wood soffits and multilayer tap paper</td>
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<td>Installation of noise insulation windows</td>
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<td></td>
<td>Installation of noise insulation facade, BG 9 East</td>
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<td>Integrated fire alarm and smoke heat extractor system</td>
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<td>Integrated LED lighting including safety and escape route orientation lighting</td>
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<tr>
<td>Renovation of the BG11 roof aisle (vaW)</td>
<td>Renovation of the roof with an area of approx. 1,100 m²</td>
<td>June 2017</td>
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<td></td>
<td>Ergonomic improvements to atmospheric conditions (droughts, temperature)</td>
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<tr>
<td>Switch of the hall lighting to LEDs (Zl)</td>
<td>Gradual transition of the lighting in other halls to LED systems that include safety lighting and BG5</td>
<td>Target 2025</td>
<td>January 2020</td>
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<tr>
<td>Compressor replacement (vaW)</td>
<td>Energy savings</td>
<td>October 2018</td>
<td></td>
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<tr>
<td>Increased e-mobility (StZ)</td>
<td>Promotion of the use of public transport and e-vehicles</td>
<td>March 2020</td>
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<td></td>
<td>Promotion of the reduced use of cars within cycling and walking distances</td>
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<tr>
<td>SOIL AND WASTE</td>
<td>Coolant switch (vaW)</td>
<td>December 2017</td>
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<tr>
<td></td>
<td>Changeover to a standard coolant</td>
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<td>Lower concentration and thus reduced consumption</td>
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<td>Cleaner machines through reduced carryover</td>
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<td>Reduced odour level</td>
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<td></td>
<td>Cost savings</td>
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<tr>
<td>Waste collection station in BG11 (vaW)</td>
<td>Installation of a covered waste collection station, southern BG11</td>
<td>August 2019</td>
<td></td>
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<tr>
<td>Replacement of X-ray chemicals with digital imaging (vaW)</td>
<td>Prevention of hazardous waste through an investment in an RT scanner</td>
<td>March 2019</td>
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<td>Cessation of X-ray film, developer and fixing bath purchasing</td>
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<td>Cessation of the disposal of approx. 600 kg of X-ray chemicals per year</td>
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<td>Reduction in electricity consumption</td>
<td></td>
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<tr>
<td>DOCUMENTATION, INFORMATION AND TRAINING</td>
<td>Safety course (Zl)</td>
<td>October 2017</td>
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<tr>
<td></td>
<td>Installation of a safety course with a focus upon experience</td>
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<td></td>
<td>Topics: work safety, first aid, health protection</td>
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<td></td>
<td>Sensitisation with regard to danger</td>
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<tr>
<td>New apprentice instruction (Zl)</td>
<td>Annual instruction of all apprentices with a safety course and first aid training</td>
<td>Ongoing from</td>
<td>2017</td>
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<td>as sensitisation regarding the danger of accidents for new, inexperienced employees</td>
<td></td>
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<tr>
<td>Instruction videos for visitors, employees and apprentices (Zl)</td>
<td>ECreation of videos as visual aids for apprentice and employee instruction</td>
<td>March 2018</td>
<td></td>
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<tr>
<td></td>
<td>Apprentice project</td>
<td></td>
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<tr>
<td>HSEE Newsletter (vaW)</td>
<td>Monthly information regarding accidents, key figures and current HSEE topics</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>Safety leaflet for plant visitors (Zl)</td>
<td>Redesign of important information in this connection</td>
<td>October 2017</td>
<td></td>
</tr>
<tr>
<td>“Safety in a Nutshell” employee manual (Zl)</td>
<td>Reference work with important HSEE information for everyday working, e.g. proper use of personal protection equipment, appropriate conduct in the case of emergencies, accidents and leaks, the meaning of signs and pictograms, correct waste separation, etc.</td>
<td>December 2016</td>
<td></td>
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<tr>
<td>Safety Officer manual (Zl)</td>
<td>Comprehensive reference work with HSEE information</td>
<td>June 2017</td>
<td></td>
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<tr>
<td>Safety Officer training (Zl)</td>
<td>Training and relaunch of the Safety Officers as module/department support with regard to HSEE topics</td>
<td>February 2019</td>
<td></td>
</tr>
<tr>
<td>Measure</td>
<td>Objective or success</td>
<td>Realisation</td>
<td>Status</td>
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<tr>
<td>Safety officer team training (Zl)</td>
<td>1.5-day team training for safety officers regarding HSEE issues relating to organisation, communication, conflict situation and corporate culture</td>
<td>December 2019</td>
<td></td>
</tr>
<tr>
<td>Redesign of the personal protective equipment standard (Zl)</td>
<td>Drawing up of personal protective equipment standards for employees and visitors to the Zeltweg location PPE standard for forwarding companies</td>
<td>January 2018</td>
<td>November 2019</td>
</tr>
<tr>
<td>Development of layered process audits (LPA) (vaW)</td>
<td>Replacement of the Smart audit system with so-called LPAs and the inclusion of operational efficiency measures, quality and HSEE</td>
<td>April 2018</td>
<td></td>
</tr>
<tr>
<td>Review of existing processes and instructions (Zl)</td>
<td>Integration of application experience Taking into account of the ISO audits Redesign of the general instructions – presentation Special instruction documentation for apprentices</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>Further merger of HSEE databases (Zl)</td>
<td>Integration of the work accident database into the gutwin software accident module</td>
<td>March 2019</td>
<td></td>
</tr>
<tr>
<td>Provision of HSEE directive documentation as e-learning (StZ)</td>
<td>The general HSEE directive is supplied to the workforce as e-learning</td>
<td>January 2020</td>
<td></td>
</tr>
<tr>
<td>Future Zone (StZ)</td>
<td>Creation of a new apprentice area with teaching possibilities on the CNC lathes and milling machines Various manual workstations for safe work structuring Introduction of a PSA standard for apprentices Installation of an emergency board Installation of a standard board (e.g. CIP)</td>
<td>March 2019</td>
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</tr>
</tbody>
</table>

**ERGONOMIC, PSYCHOLOGICAL AND SAFETY IMPROVEMENTS FOR EMPLOYEES AND THE ENVIRONMENT**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Objective or success</th>
<th>Realisation</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction of company health promotion (Zl)</td>
<td>Start of the “really healthy” project Health survey, result analysis Creation of structures and processes for health promoting work and workplace design</td>
<td>Ongoing from May 2017</td>
<td></td>
</tr>
<tr>
<td>WIT blue collar employee health training (vaW)</td>
<td>Following the successful introduction in the frog grinding area, continuation through the development of a targeted training programme for the employees on the butt welding machine and 1,000t press Support from a physiotherapist</td>
<td>October 2017</td>
<td></td>
</tr>
<tr>
<td>WIT white collar employee health training (Zl)</td>
<td>Creation of a training programme for white collar workers together with a physiotherapist</td>
<td>December 2017</td>
<td></td>
</tr>
<tr>
<td>Redesign of the tool issue, measuring machine and template store working areas (vaW)</td>
<td>Ergonomic improvements (flooring, lights, windows, roof, draughts, temperature)</td>
<td>October 2017</td>
<td></td>
</tr>
<tr>
<td>Redesign of the testing laboratory (vaW)</td>
<td>Installation of a state of the art lab table and a sample preparation station with integrated extractor</td>
<td>December 2017</td>
<td></td>
</tr>
<tr>
<td>Repositioning of the frog grinding cabins in the material flow direction (vaW)</td>
<td>Improved safety: Workpiece turning unnecessary Workpieces no longer extend into the stacker transport area</td>
<td>April 2020</td>
<td></td>
</tr>
<tr>
<td>Renovation of approx. 1,700 m² of hall flooring in the eastern section of BG6 (vaW)</td>
<td>Removal of height differences/prevention of tripping dangers</td>
<td>December 2017</td>
<td></td>
</tr>
<tr>
<td>Enclosure of the roller conveyors in the Mur storage area (vaW)</td>
<td>Avoidance of crushing areas Noise reduction</td>
<td>September 2017</td>
<td></td>
</tr>
<tr>
<td>Purchase of new cranes (vaW)</td>
<td>Optimum controllability and load stabilisation</td>
<td>April 2018</td>
<td></td>
</tr>
<tr>
<td>Load manipulators for machining centres (vaSZ)</td>
<td>Easing of the physical strain on employees</td>
<td>April 2018</td>
<td></td>
</tr>
<tr>
<td>Load manipulators for machining centres (vaW)</td>
<td>Easing of the physical strain on employees in the packing area</td>
<td>March 2020</td>
<td></td>
</tr>
<tr>
<td>Equipping of stackers with direction indicators (Zl)</td>
<td>Technical safety improvement LED lights project the direction in front of the stacker</td>
<td>From April 2019</td>
<td></td>
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<tr>
<td>Pallet changers</td>
<td>Ergonomic improvements, enhanced safety</td>
<td>April 2018</td>
<td></td>
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<tr>
<td>Purchase of new lifting platforms (vaW)</td>
<td>Increased safety as compared to ladders, scaffolding and cages Avoidance of exhaust gases in the hall by means of e-drive</td>
<td>April 2018</td>
<td></td>
</tr>
<tr>
<td>Shelf inspection (Zl)</td>
<td>Inspection of all shelves and uniform labelling and signage Monthly shelf checks (November 2019)</td>
<td>September 2017</td>
<td></td>
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<tr>
<td>Measure</td>
<td>Objective or success</td>
<td>Realisation</td>
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<tr>
<td>Purchase of ventilated helmets (vaW)</td>
<td>Purchase of additional ventilated helmets for grinding and welding work stations (vaW)</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>Overhaul of the 1000t press high-pressure vessel (vaW)</td>
<td>Renewal of the high-pressure pump</td>
<td>September 2019</td>
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<td></td>
<td>Renewal of the boiler</td>
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<td></td>
<td>Renewal of the compressor.</td>
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<td></td>
<td>Piping and safety valves</td>
<td></td>
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<tr>
<td>PPE dispenser (vaW, vaSIG)</td>
<td>Employees are provided with standard PPE articles such as protective gloves and dust masks by a PPE dispenser</td>
<td>2018 (SIG) August 2019 (W)</td>
<td></td>
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<tr>
<td>Renovation of the road and track between BG 10 and 11</td>
<td>Renovation of the track and drains</td>
<td>March 2020</td>
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<tr>
<td></td>
<td>Removal of surface irregularities</td>
<td></td>
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<tr>
<td>Redesign of the storage area in front of BG25 (vaSIG)</td>
<td>Installation of a high-bay warehouse and acquisition of a side loader for removals from the shelving</td>
<td>April 2019</td>
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<tr>
<td></td>
<td>Ergonomic and technical safety improvements</td>
<td></td>
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<tr>
<td>PREVENTIVE MEASURES FOR ACCIDENT AND EMERGENCY AVOIDANCE (RISK MANAGEMENT)</td>
<td>Nine emergency leakage sets, in order to enable a rapid response in an emergency at the location</td>
<td>March 2017</td>
<td></td>
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<tr>
<td>Purchase of additional leakage sets (vaW)</td>
<td></td>
<td></td>
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<tr>
<td>New emergency management folder (Zl)</td>
<td>Collation of the most important points for the members of the on-call standby team at the Zeitweg location</td>
<td>March 2017</td>
<td></td>
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<tr>
<td>Emergency board installation (vaW)</td>
<td>Installation of three emergency boards in the hall corridors and apprentice area</td>
<td>December 2017</td>
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<td></td>
<td>Equipped with: stretchers, fire extinguishers, fire blanket, megaphone, first aid kit, plaster box, eyebash and capsule dispenser for hearing protection</td>
<td>March 2019</td>
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<tr>
<td>Fire service exercise (Zl)</td>
<td>Exercise with the fire services for improved communications and coordination in an emergency</td>
<td>October 2019</td>
<td></td>
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<tr>
<td>Extension of the extinguishing water pipeline (Zl)</td>
<td>Approx. 150 m extension in the direction of BG13 including the installation of two extra hydrants for quicker and better access in an emergency</td>
<td>October 2017</td>
<td></td>
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<tr>
<td>Revision of the transport concept Securing of blind spots (Zl)</td>
<td>Installation of traffic mirrors</td>
<td>Ongoing</td>
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<td>Warning lights at blind spots</td>
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<td>Signage and speed limits</td>
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<tr>
<td>Ongoing evaluation of work accidents and near misses (Zl)</td>
<td>Accident/near miss reconstruction using event analysis and implementation measures on the HSEE board</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td>VAE HSEE MANAGEMENT</td>
<td>Ongoing preparation of new or updated Newsletters with information regarding current topics, changes in legal, technical and organisational areas, and company experiences.</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>VAE HSEE Newsletter (VAE)</td>
<td>January 2018: establishment of the voestalpine health &amp; safety values and minimum standards in the VAE HSE Guidebook.</td>
<td></td>
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<tr>
<td></td>
<td>May 2018: opening of the VAE HSEE share point with all the HSEE and training documentation of relevance to the subsidiaries, as well as a user guide.</td>
<td></td>
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<td></td>
<td>June 2018: new and efficient regulation of the in-company procedures regarding HSEE enquiries from customers</td>
<td></td>
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<td></td>
<td>July 2018: update of the instructions regarding the handling of hazardous materials (in particular CMR-T substances), as well as work clothing (Annex 4.4 Guidebook).</td>
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<td>March 2019: coordination and procedures regarding product sustainability</td>
<td></td>
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<td>June 2019: collation of all HSEE reporting obligations for subsidiaries</td>
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<td>July 2019: safe machine stops and starts in the case of emergencies</td>
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<td>October 2019: housekeeping campaign against tripping and falls</td>
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<td>Planned January 2020: update of the VAE HSEE sleeper guideline</td>
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<td></td>
<td>Planned June 2020: update of the VAE HSEE material guideline</td>
<td></td>
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<tr>
<td></td>
<td>Planned December 2020: new VAE CE guidelines</td>
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<tr>
<td>Measure</td>
<td>Objective or success</td>
<td>Realisation</td>
<td>Status</td>
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<tr>
<td>VAE HSEE Model Manual (VAE)</td>
<td>Model Manual = template and idea source for the preparation and further development of manuals, processes/procedures and checklists for integrated management systems from ISO 9001, ISO 14001, ISO 50001 and ISO 45001 at subsidiaries. Ongoing updates of the template in line with new requirements and empirical, values from the companies.</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>VAE HSEE management training package (VAE)</td>
<td>Fundamental information on aspects of importance for the creation and continuous improvement of new and existing management systems pursuant to ISO 14001, ISO 45001 und ISO 50001 Ongoing supplementation and updating</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>Installation of a VAE HSEE sharepoint</td>
<td>For simple access to current issues of specifications and information documentation Ongoing supplementation and updating</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>Survey and definition of initial accident statistic (LTIFR) and health rate (HR) targets on VAE Group level</td>
<td>Reduction of the last time injury frequency rate (LTIFR; calculation in line with voestalpine criteria) By 40% (from the initial value of 24.8 to the target value of &lt;15.0) for the 2016/17 financial year (result = 14.8) By 50% (from the initial value of 24.8 to the target value of &lt;12.0) for the 2017/18 financial year (result = 10.5) By 60% (from the initial value of 24.8 to the target value of &lt;10.0) for the 2018/19 financial year (result = 9.2) Establishing of the health rate (HR; also in line with voestalpine criteria) at the already attained high level of approximately 96% Initial value 2015/16 = 96.4% Result 2016/17 financial year = 96.5% Result 2017/18 financial year = 96.7% Result 2018/19 financial year = 96.9%</td>
<td>April 2017 April 2018 April 2019</td>
<td></td>
</tr>
<tr>
<td>Supplemented accident statistic (LTIFR) and health rate (HR) targets on VAE Group level</td>
<td>Establishing of the last time injury frequency rate (LTIFR; calculation in line with voestalpine criteria) for the entire group at a level of &lt;10.0 and the steering of all the individual locations to a level of &lt;15.0 Further improvement of the health rate (HR; HR; also in line with voestalpine criteria) to a level of 97%</td>
<td>Ongoing</td>
<td></td>
</tr>
<tr>
<td>CEO HSEE Content Conference (VAE)</td>
<td>Annual HSEE contributions</td>
<td>Annually</td>
<td></td>
</tr>
<tr>
<td>Preparation of the first directional life cycle analysis (LCA) of a turnout (cradle to gate) (Master's thesis by Ms Evelyn Uitz / Graz University)</td>
<td>First directional analysis of contributions to CO2 emissions and energy consumption From the preliminary phases Either from, or influenced directly by, turnout production in Zeltweg Either from, or influenced directly by, the operational phase of a turnout</td>
<td>January 2018</td>
<td></td>
</tr>
<tr>
<td>In-depth continuation of the topic of life cycle analysis (LCA) of a turnout (cradle to gate) (Master's thesis by Mr Philipp Koller / Graz University of Technology)</td>
<td>Refining of the material balance (more precise material specification/classification) Broadening of the analytical scope to include the complete service life in the track Study/evaluation of differing, complete turnouts systems with regard to sleeper types (wood, concrete and soled concrete sleepers)</td>
<td>February 2019</td>
<td></td>
</tr>
<tr>
<td>Certification of additional VAE production centres pursuant to ISO 14001 und ISO 45001</td>
<td>VAE assistance through: Start information “VAE HSEE Management Training Package” Collation of all relevant VAE specification and information documentation at the VAE HSEE Share Point Assistance in the case of concrete questions</td>
<td>Conclusion of the main part by March 2019; subsequent ongoing retention</td>
<td></td>
</tr>
</tbody>
</table>
PROJECT PHOTOS 2019

Focus on apprentices: Future Zone

Digital imaging x-ray bunker, Prevention of hazardous waste
10. GENERAL INFORMATION

DURING RECENT YEARS, EXPERT JURIES HAVE PRESENTED OUR COMPANY WITH NUMEROUS AWARDS AT EUROPEAN, NATIONAL AND REGIONAL LEVEL FOR SPECIAL ACHIEVEMENTS WITH REGARD TO OPERATIONAL EMPLOYEE, ENVIRONMENTAL AND CLIMATE PROTECTION:

10.1 ENERGY AWARDS

THE VOESTALPINE LOCATION IN ZELTWEG IS A DOUBLE ENERGY GLOBE WINNER

In November 2010, the Energy Globe STYRIA AWARD was presented for the tenth time by the Netzwerk Öko-Energie Steiermark (NOEST) and the LandesEnergieVerein (LEV), and for the third time in cooperation with the Wirtschaftsinitiative Nachhaltigkeit (WIN).

The overall winner was the voestalpine location in Zeltweg for the successful implementation of its holistic energy concept. This contained numerous measures, which resulted in a CO₂-neutral location balance and thus represented a pioneering achievement for an iron and steel processing company.

The energy concept is based on three cornerstones:

» Measures for increased efficiency and the saving/prevention of energy consumption, e.g. through the thermal renovation of buildings, heating system optimisation, the use of waste heat from production, employee training and the raising of awareness levels with regard to an efficient approach to energy.

» Conversion of the heating systems from natural gas to district heating using biomass and waste heat from a regional system in teamwork with Bioenergie GmbH.

» Electricity supply from the company’s hydropower plant in cooperation with Energie Zotter GmbH and Mr. Rochus Penz.

Shortly afterwards, the location was also honoured at the Energy Globe Austria Gala in Wels with the Energy Globe AUSTRIA AWARD in the Air Category. In the explanation of its judgement, the expert jury stressed the significance of the company’s holistic approach as an example for the entire world.

In addition, the implemented energy concept, “With local cooperation and the latest domestic technology to a CO₂-neutral iron and steel processing company” was in the Final of the Fast Forward Award 2010 (the official Styrian business and innovation prize).

Since 5 April 2001, the voestalpine location in Zeltweg is a Climate Alliance company and was thus the first Styrian industrial enterprise in the Corporate Climate Alliance.
10.2 SAFETY AND HEALTH AWARDS

EUROPEAN GOOD PRACTICE AWARDS FOR SAFETY AND HEALTH AT WORK 2003 AND 2011

Every two years, the European Agency for Safety and Health Protection in the Workplace (EU-OSHA), which has the objective of designing working environments in Europe that are safer, healthier and more productive, offers an invitation to participate in the European Good Practice Award competition. The competition itself focuses on certain key issues.

voestalpine Weichensysteme GmbH and voestalpine SIGNALING Zeltweg GmbH were pleased to accept this challenge and with the “Safe Maintenance through Engineering and Organisation” project, which was presented in 2010/11 were nominated by the national jury for the main European competition. Subsequently, the companies were awarded the Good Practice Award 2011 in Budapest.

The Zeltweg location had already won the Good Practice Award in November 2003, with its “Dust and pollutant agent reduction package”, the prize having been presented in Bilbao, Spain.


Beginning in 2002, the Federal Ministry of Labour and Industry awarded a National Work Safety Prize, initially annually and from 2003 onwards, on a biennial basis. The objective of the prize is to recognise companies that contribute to work safety and health care through exceptional initiatives aimed at improving working conditions.

In 2002, the Zeltweg location won the National Prize for Work Safety gold medal for the innovative and sustainable achievements related to its “Safety and Health Protection Programme 2001”. The decisive factors in the capture of this award were the extent of the measures involved and the systematic inclusion of employee protection in operative activities.

For the 2003 National Prize for Work Safety, the company submitted its “Programme of Measures for the Reduction of Dust, Pollutants and Noise”. All these solutions required an intensive study of the relevant working areas and a related selection of alternatives; activities that were not only carried out by specialists from the management, but first and foremost, by the employees from the affected areas. The effort involved was again rewarded with second place in the 2003 National Work Safety Prize.

In July 2007, the voestalpine location in Zeltweg won its third National Work Safety Prize in what was the fourth competition to be held. On this occasion, the company was again the overall winner. The submitted project, “Innovative approaches to the securing of partially and fully obscured danger zones” not only included inventive technical solutions for a variety of potential hazards, but also a systematic approach to problem identification, the investigation and analysis of proposed solutions, and the implementation and verification (including external TÜV audits) of their effectiveness.
10.3 ENVIRONMENTAL MANAGEMENT AWARDS

AUSTRIAN AND EUROPEAN EMAS AWARD

Since 2005, the EU Commission (Environment Department) has presented the annual European EMAS award, whereby the national prizewinners are subsequently nominated for the EU EMAS Award.

The criteria for the competition in 2006 related to the external presentation of EMAS. As compared to consumer goods producers, we are certainly not in a position to communicate with a mass public by means of product marketing, but are nonetheless able to point to a diversity of activities regarding communications via environmental declarations.

Accordingly, the voestalpine location in Zeltweg won the Austrian EMAS Award 2006 and in addition was nominated for the European EMAS Award 2006. The special thematic focus in 2009 was on “green procurement”, or in other words the technical environmental aspects involved in sourcing.

The company captured the Austrian EMAS Award 2009 and naturally we were absolutely delighted when we were announced as the winner of the European EMAS Award 2009 in Stockholm in November 2009. This was the first time that this environmental prize, which is the highest ranking in Europe, had been won by an Austrian industrial company.

EMAS PRIZE 2009 FOR THE BEST ENVIRONMENT TEAM

In June 2009, we were awarded the EMAS Prize of the Austrian Federal Ministry of the Environment in the newly created “Best Environmental Manager/Environment Team” category.

For the expert jury, the decisive factor in this award was comprised by the numerous successes of the Zeltweg environment team since participation in the EMAS Prize in 1997. The prize also related to the more than 100 projects that had been successfully implemented at Zeltweg in the course of the first decade.

AUSTRIAN INDUSTRY ENVIRONMENT PRIZE 1998

The 1998 Austrian Industry Environment Prize, awarded by the Austrian Chamber of Commerce was presented to us for our measures in the areas of resource conservation and emission reductions. The project “Reduction of the use and formation of environment-relevant substances” received the recognition prize during the 1999 Austrian Industry Environment Prize and both projects were nominated for the European Environment Award (EEA) 2000.

The thematic focal point in 2014 was formed by “Effective eco-innovations supporting improvements in environmental performance”. In this regard the company was able to present numerous achievements in the areas of:

» Products and services
» Measures implemented at the Zeltweg production location
» Measures implemented within the globally active VAE Group

Particularly in view of the fact that numerous employees from the three companies at the voestalpine location in Zeltweg worked with great energy and commitment on the projects, it was a special pleasure for us to be announced as the winner of the European EMAS Award 2014 at a ceremony held in Hanover during April 2014. This is thus the second time that we have captured the continent’s most prestigious honour.

The Zeltweg location’s Environmental Statements already received awards in 2000 and 2005 as part of the EMAS Prize (formerly the Eco-Audit Prize). The company also won this honour in 1997 for its successes in the course of the establishment of an environmental management system in line with the EMAS Directive.

The award in June 2007 of the 2006 Environmental Protection Prize of the Federal Province of Styria in the Industry and Business Category richly rewarded the efforts of the Zeltweg location with regard to its submitted project, “Package of measures for (fine) dust reduction and climate protection”.

Following the capture of the Environmental Protection Prize of the Federal Province of Styria in 1997, this was the second time that our company was honoured with this award, which in the thirty-year history of this competition is a unique achievement.

RECOGNITION FOR 20 YEARS OF ENVIRONMENTAL MANAGEMENT

During the EMAS Conference in June 2017, voestalpine VAE GmbH, voestalpine Weichensysteme GmbH and voestalpine SIGNALING Zeltweg GmbH were awarded the EMAS Pioneer Certificate for 20 years of participation.

EMAS certification represents recognition of the numerous measures implemented in recent years in the environmental field, as well as an obligation to pursue further continuous improvements.
10.4 PRODUCT/INNOVATION AWARDS

FAST FORWARD AWARD FINALIST AND NOMINATION FOR THE EUROPEAN ENVIRONMENTAL INNOVATION PRIZE

The market launch of the product “ROADMASTER LIGHT” and the supplemented “ECOSTAR” range from the signalling product area was chosen by the expert jury of the Fast Forward Award 2009 (the official Styrian innovation and business prize) as one of the federal province’s TOP 3 projects. Decisive in this regard were the technical and economic aspects of the products (such as higher availability) and technical environmental advantages (e.g. no lubrication, as in earlier mechanical systems).

At virtually the same time, an Austrian expert jury selected the SIGNALING business unit’s product range for the coverage of the demands of all customer areas (from heavy loads to high-speed, combined traffic, metros and tram systems) as one of the three best national entries for the European Environmental Press Award 2009 (EEP), the European Environmental Innovation Prize, and thus nominated it for the European competition.

The joint project in the turnout system and SIGNALING area for the production and supply of “just in time turnouts” (plug-in turnouts) was already ranked under the top 3 projects in the Fast Forward Award 2006.

10.5 AWARD FOR APPRENTICE TRAINING

On 6 May 2019, a festive ceremony was held during which the best apprentices and their trainers were awarded the honorary “Stars of Styria” title.

Gertraud Zwinger and Klaus Dieter Klicnik collected the award for the training scheme at voestalpine Weichensysteme GmbH, while Philipp Hörtler, Philipp Kogler and Marvin Schaffer were the prize-winners in the category of apprentices with excellent final exam results.

10.6 GLOBAL VAE-HSEE MANAGEMENT AWARD

NATIONAL PRIZE FOR WORK SAFETY 2009 AND EUROPEAN GOOD PRACTICE COMMENDATION 2009 FOR THE VOESTALPINE VAE GMBH HOLDING

Expert juries have awarded the voestalpine VAE GmbH holding company with:

» The National Prize for Work Safety 2009 on behalf of the Austrian Federal Ministry of Work and Social Affairs

» The European Good Practice Commendation 2009 for the European Agency for Safety and Health in the Workplace (EU-OHSA, Bilbao)

The project in question was the “VAE HSE Guidebook”, which was drawn up by voestalpine VAE GmbH and is globally valid within the voestalpine VAE Group (44 production locations on six continents, over 5,600 employees). This Guidebook presents typical health, safety and environmentally relevant problems in “turnout business” and offers suggestions regarding technical and organisational solutions, which are naturally important.

As a result, the National Prize went to Zeltweg for the fourth time in five competitions.
10.7 YOUR DISCUSSION PARTNERS

We trust that with this HSEE Report, we have succeeded in not only providing a view of our current efforts towards achieving the ecological, safety and health efficiency of the procedures and processes at our location, but also that we have aroused interest for innovative and active health, safety and environmental management. Questions and suggestion should be directed to our respective HSEE department heads (HSEE – Health, Safety, Environment & Energy Strategies).

voestalpine Weichensysteme GmbH and voestalpine SIGNALING Zeltweg GmbH
Head of HSEE Department
DI Astrid Raschofer
Alpine Straße 1
8740 Zeltweg, Austria
Tel.: +43/50304/28-353
Fax: +43/50304/68-353
astrid.raschofer@voestalpine.com
www.voestalpine.com/railway-systems

voestalpine VAE GmbH
HSEE-Adviser VAE-Group and vaME-Division
DI Manfred Torschitz
Alpine Straße 1
8740 Zeltweg, Austria
Tel.: +43/50304/28-350
Fax: +43/50304/68-350
manfred.torschitz@voestalpine.com
www.voestalpine.com/railway-systems

(Astrid Raschofer, Martin Findl, Manfred Torschitz, Harald Kaddoura, Daniela Schaffer)

10.8 ENTRY INTO THE ORGANISATIONAL ROSTER AND DATE OF THE NEXT HSEE-REPORT WITH INTEGRATED ENVIRONMENTAL STATEMENT

This location disposes over an environmental management system in line with the EMAS Directive and is registered in the organisational roster (Register No. A-000060). In line with the EMAS III directive, the next HSEE-Report with integrated Environmental Statement will be published in December 2020.

10.9 VALIDATION AND CERTIFICATES

The information contained in this environmental statement – if relevant and essential with regard to the overall environmental impacts of the Zeltweg site – was audited by the environmental auditing organisation, “Lloyd’s Register Quality Assurance (LRQA)”, Opernring 1/R/741-744, A-1010 Vienna, represented by Mr Harald Ketzer and found to correspond with the EMAS III directive.
Certificate of Approval

This is to certify that the Management System of:

voestalpine Railway Systems GmbH

Alpinestrasse 1, 8740 Zeltweg, Austria

has been approved by Lloyd's Register to the following standards:

ISO 9001:2015

Approval number(s): ISO 9001 – 0018684

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signaling, detection and safety related systems.

Paul Graaf
Area Operations Manager North Europe

Issued by: Lloyd's Register EMEA Niedersachsen Wien

for and on behalf of: Lloyd's Register Quality Assurance Limited

Lloyd's Register Group Limited, its affiliates and subsidiaries, including Lloyd's Register Quality Assurance Limited (LRQA), and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has agreed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

Issued by: Lloyd's Register EMEA Niedersachsen Wien, Openingशयनारणी 120A-3, 1010 Wien, Austria for and on behalf of: Lloyd's Register Quality Assurance Limited, 1 Trinity Park, Bickenhill Lane, Birmingham B37 7ES, United Kingdom

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## Certificate Schedule

<table>
<thead>
<tr>
<th>Location</th>
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</table>
| Alpinesstraße 1, 6740 Zeitweg, Austria | ISO 9001:2015  
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signalling, detection and safety related systems. |
| Rotenturmstr. 5-9, 1010 Wien, Austria | ISO 9001:2015  
Sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signalling, detection and safety related systems. |
Certificate of Approval

This is to certify that the Management System of:

voestalpine Railway Systems GmbH
Alpinestraße 1, 6740 Zeitweg, Austria

has been approved by Lloyd's Register to the following standards:

ISO 14001:2015, ISO 45001:2018

Approval number(s): ISO 14001 – 0018687, ISO 45001 – 0026637

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:

ISO 14001:2015
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signalling, detection and safety related systems, information, coordination and controlling of the subsidiaries of voestalpine Railway Systems GmbH in the Profit Centers "Turnout & Fixations" as well as "Signaling" concerning health-, safety- and environmental-related technical, legal and organisational affairs on basis of internal requirements for sustainable development and corporate social responsibility.

ISO 45001:2018
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signalling, detection and safety related systems, information, coordination and controlling of the subsidiaries of voestalpine Railway Systems GmbH in the Profit Centers "Turnout & Fixations" as well as "Signaling" concerning health-, safety- and environmental-related technical, legal and organisational affairs on basis of internal requirements for sustainable development and corporate social responsibility.

Paul Graaf
Area Operations Manager North Europe

Issued by: Lloyd's Register EMEA Niederlassung Wien
for and on behalf of: Lloyd's Register Quality Assurance Limited

Lloyd's Register Group Limited, its affiliates and subsidiaries, including Lloyd's Register Quality Assurance Limited (LRQA), and their respective officers, employees or agents are, individually and collectively, referred to in this clause as Lloyd's Register. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or however otherwise provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.
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| Alpinesstraße 1, 6740 Zeitweg, Austria | **ISO 14001:2015**  
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signalling, detection and safety related systems. Information, coordination and controlling of the subsidiaries of voestalpine Railway Systems GmbH in the ProF Centres "Turnout & Fixations" as well as "Signalling" concerning health-, safety- and environmental-related technical, legal and organisational affairs on basis of internal requirements for sustainable development and corporate social responsibility.  

**ISO 45001:2018**  
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signalling, detection and safety related systems. Information, coordination and controlling of the subsidiaries of voestalpine Railway Systems GmbH in the ProF Centres "Turnout & Fixations" as well as "Signalling" concerning health-, safety- and environmental-related technical, legal and organisational affairs on basis of internal requirements for sustainable development and corporate social responsibility.
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| Rotenturmstr. 5-8, 1010 Wien, Austria | **ISO 14001:2015**  
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signaling, detection and safety related systems. Information, coordination and controlling of the subsidiaries of voestalpine Railway Systems GmbH in the Profit Centers “Turnout & Fixations” as well as “Signaling” concerning health-, safety- and environmental-related technical, legal and organisational affairs on basis of internal requirements for sustainable development and corporate social responsibility. |

| ISO 45001:2018  
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signaling, detection and safety related systems. Information, coordination and controlling of the subsidiaries of voestalpine Railway Systems GmbH in the Profit Centers “Turnout & Fixations” as well as “Signaling” concerning health-, safety- and environmental-related technical, legal and organisational affairs on basis of internal requirements for sustainable development and corporate social responsibility. |
Certificate of Approval

This is to certify that the Management System of:

voestalpine Turnout Technology Zeltweg GmbH

Aptinestr. 1, 8740 Zeltweg, Austria

has been approved by Lloyd's Register to the following standards:


Approval number(s): ISO 14001 – 0026634, ISO 45001 – 0026636, ISO 9001 – 0026634

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:

ISO 14001:2015
Research, design, manufacture, sales and servicing of turnout components and turnout systems.

ISO 45001:2018
Research, design, manufacture, sales and servicing of turnout components and turnout systems.

ISO 9001:2015
Research, design, manufacture, sales and servicing of turnout components and turnout systems.

Paul Graaf
Area Operations Manager North Europe

Issued by: Lloyd’s Register EMEA Niederlassung Wien

for and on behalf of: Lloyd’s Register Quality Assurance Limited

Lloyd’s Register Group Limited, its affiliates and subsidiaries, including Lloyd’s Register Quality Assurance Limited (LRQA), and their respective officers, employees or agents and, individually and collectively, referred to in this clause as ‘Lloyd’s Register’, Lloyd’s Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or otherwise provided, unless that person has signed a contract with the relevant Lloyd’s Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusive of the terms and conditions set out in that contract.

Issued by Lloyd’s Register EMEA Niederlassung Wien, Operating TR/F4-1-74, 1010 Wien, Austria for and on behalf of Lloyd’s Register Quality Assurance Limited, 1 Trinity Park, Bickenhill Lane, Birmingham B37 7LS United Kingdom

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## Certificate Schedule

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</table>
| Alpinestr. 1, 6740 Zeitweg, Austria | **ISO 14001:2015**  
Research, design, manufacture, sales and servicing of  
turnout components and turnout systems. |
|                              | **ISO 45001:2018**  
Research, design, manufacture, sales and servicing of turnout components and turnout systems. |
|                              | **ISO 9001:2015**  
Research, design, manufacture, sales and servicing of turnout components and turnout systems. |
| Rotenturmstr. 5-6, 1010 Wien, Austria | **ISO 14001:2015**  
Sales of turnout components and turnout systems. |
|                              | **ISO 45001:2018**  
Sales of turnout components and turnout systems. |
|                              | **ISO 9001:2015**  
Sales of turnout components and turnout systems. |
Certificate of Approval

This is to certify that the Management System of:
voestalpine Signaling Austria GmbH
Alpinestraße 1, 8740 Zeltweg, Austria

has been approved by Lloyd’s Register to the following standards:


Approval number(s): ISO 14001 – 0026639, ISO 45001 – 0026640, ISO 9001 – 0026638

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:

ISO 14001:2015
Research, design, manufacture, sales, inspection and servicing of signaling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as research, design and sales of hollow steel sleepers for railways.

ISO 45001:2018
Research, design, manufacture, sales, inspection and servicing of signaling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as research, design and sales of hollow steel sleepers for railways.

ISO 9001:2015
Research, design, manufacture, sales, inspection and servicing of signaling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as research, design and sales of hollow steel sleepers for railways.

Paul Graef
Area Operations Manager North Europe

Issued by: Lloyd’s Register EMEA Niedersatzung Wien
for and on behalf of: Lloyd’s Register Quality Assurance Limited
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| Alpinestraße 1, 8740 Zellweg, Austria | ISO 14001:2015  
Research, design, manufacture, sales, inspection and servicing of signalling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as research, design and sales of hollow steel sleepers for railways.  
ISO 45001:2018  
Research, design, manufacture, sales, inspection and servicing of signalling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as research, design and sales of hollow steel sleepers for railways.  
ISO 9001:2015  
Research, design, manufacture, sales, inspection and servicing of signalling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as research, design and sales of hollow steel sleepers for railways. |
| Rotenturmstraße 5-9, 1010 Wien, Austria | ISO 14001:2015  
Sales of signalling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as sales of hollow steel sleepers for railways. |
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<td>Sales of signaling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as sales of hollow steel sleepers for railways.</td>
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Certificate of Approval

This is to certify that the Management System of:
voestalpine Railway Systems GmbH
Alpenstraße 1, 8740 Zeltweg, Austria

has been approved by Lloyd's Register to the following standards:

ISO 50001:2018

Approval number(s): ISO 50001 – 0018686

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

The scope of this approval is applicable to:
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signaling, detection and safety related systems.

Paul Groaf
Area Operations Manager North Europe

Issued by: Lloyd's Register EMEA Niederrlassung Wien
for and on behalf of: Lloyd's Register Quality Assurance Limited

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| voestalpine Railway Systems GmbH  
Alpinestraße 1, 6740 Zeitweg, Austria | ISO 50001:2018  
Research, design and sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signalling, detection and safety related systems. |
| voestalpine Turnout Technology Zeitweg GmbH  
Alpinestraße 1, 6740 Zeitweg, Austria | ISO 50001:2018  
Research, design, manufacture, sales and servicing of turnout components and turnout systems. |
| voestalpine Railway Systems GmbH  
Rotenturmstr. 5-9, 1010 Wien, Austria | ISO 50001:2018  
Sales of turnout components, turnout systems and turnout installations as well as associated setting devices, signalling, detection and safety related systems. |
| voestalpine Turnout Technology Zeitweg GmbH  
Rotenturmstr. 5-9, 1010 Wien, Austria | ISO 50001:2018  
Sales of turnout components and turnout systems. |
| voestalpine Signaling Austria GmbH  
Rotenturmstr. 5-9, 1010 Wien, Austria | ISO 50001:2018  
Sales of signalling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as sales of hollow steel sleepers for railways. |
| voestalpine Signaling Austria GmbH  
Alpinestraße 1, 8740 Zeitweg, Austria | ISO 50001:2018  
Research, design, manufacture, sales, inspection and servicing of signaling and detection systems as well as monitoring solutions and safety related systems, e.g. setting devices, switch machines and locking devices, as well as research, design and sales of hollow steel sleepers for railways. |
ENVIRONMENTAL VERIFIER’S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES

Lloyd’s Register Quality Assurance Ltd., with EMAS environmental verifier registration number AT-V-0022 and accredited for the scope:

Research, design, manufacture, sales and servicing of turnout components, turnout systems and turnout installations as well as associated components, systems and installations of signaling, detection, safety related, switching and locking technologies for railways.

NACE Code: see appendix

decides to have verified:

voestalpine Railway Systems GmbH
voestalpine Turnout Technology Zeltweg GmbH
voestalpine Signaling Austria GmbH
Alpinestraße 1, 8740 Zeltweg
Austria

registration number AT-000060

By signing this declaration, LRQA declares that:

- the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009,
- the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,
- the data and information presented in the Environmental Statement of the organisation reflect a reliable, credible and correct image of all the organisation’s activities within the scope mentioned in the environmental statement.

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) No 1221/2009. This document shall not be used as a stand-alone piece of public communication.

LRQA Ref No: VNA0005048-04
Date of verification: 10 November 2017
Verification Expiry: 9 November 2020
Date of validation: 9 May 2020
Validation Expiry: 9 November 2020

Harald Ketzer, Lead Verifier
Lloyd’s Register EMEA, Niederlassung Wien
1010 Wien, Opernring 1/8/741-744, Österreich
on behalf of Lloyd’s Register Quality Assurance Limited
Akreditierungsnummer: AT-V-0022

Lloyd’s Register EMEA, Niederlassung Wien, Opernring 1/8/741-744, 1010 Wien, Österreich, FAX 03902577
# ENVIRONMENTAL VERIFIER’S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES

## CERTIFICATE SCHEDULE

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**DI Harald Ketzer, Lead Verifier**
Lloyd’s Register EMEA, Niederlassung Wien
1010 Wien, Opernring 1/R/741-744, Österreich
on behalf of Lloyd’s Register Quality Assurance Limited
Akreditierungsnummer: AT-V-0222

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Lloyd’s Register EMEA Niederlassung Wien, Opernring 1/R/741-744, 1010 Wien, Österreich, FN 1382517 Z
Die Gültigkeitsklärung gilt zusammen mit der Verfügbarkeitsklärung als Nachweis über die Verifizierung und Validierung. Sie werden bei der beantragung auf Eintrag bei der zuständigen Stelle nach Artikel 3 der Verordnung benötigt. Der Text dieser Erklärung muss vollständig in der Umweltklärung der Firma abgedruckt werden.
ENVIROMENTAL VERIFIER’S DECLARATION
ON VERIFICATION AND VALIDATION ACTIVITIES

CERTIFICATE SCHEDULE

Applicable NACE-Codes:
- C 24.10 Manufacture of basic iron and steel and of ferro-alloys
- C 27.90 Manufacture of other electrical equipment
- C 36.20 Manufacture of railway locomotives and rolling stock
- C 33.20 Installation of industrial machinery and equipment

Jörg Kreuze, Lead Verifier
Lloyd’s Register EMEA, Niederlassung Wien
1010 Wien, Österreich
on behalf of Lloyd’s Register Quality Assurance Limited

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VOESTALPINE VAE GMBH (AUSTRIA)
has been awarded a Gold medal
as a recognition of their EcoVadis CSR (Corporate Social Responsibility) Rating
- DECEMBER 2019-

Valid until: December 2020
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