



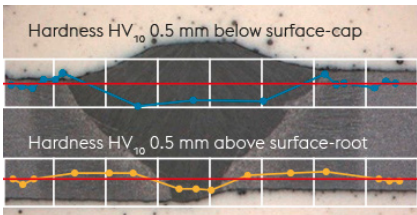

JOIN! Your Full Welding Solutions for Lasting Connections

MANUFACTURING HIGH STRENGTH STRUCTURES IN THE CRANE AND LIFTING INDUSTRY – WHEN SAFETY MATTERS

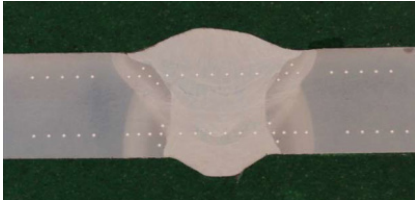
URANOS and TERRA power sources together with Böhler Arc and unique arc processes as RapiDeep (URANOS & TERRA) and QuickPulse (URANOS) paired with Böhler Welding diamondspark metal cored wires and solid wires is the perfect combination for high strength applications.

Main benefits

- » 20 % higher speed
- » Unique matching solution for 1100 MPa yield strength grades
- » Mechanical properties are also met in high strength thin walled applications both in the heat-affected zone and weld metal

Specific application	Solution features	User benefits
Optimized properties for thin walled applications 	<ul style="list-style-type: none"> » For very low wall thickness, in the range from 2 up to 5 mm, HAZ (heat affected zone) softening (low hardness) or hardness peaks play an important role. Hardness profile of the welded joint is mainly influenced by the heat input during welding. » Böhler Welding high productive low heat input solutions offer excellent mechanical properties including a smooth hardness profile » low heat input process (0.4 kJ/mm) applied to a 3mm butt weld without preparation, made in 1 pass at 120 cm/min reaching, good bead shape, perfect and smooth penetration and harmonized hardness profile. In this specific case the wire used is diamondspark 700 MC for welding S690 steel grades, either TMCP or Q+T 	<ul style="list-style-type: none"> » avoid softening or hardness peaks in thin walled components » Increase of travel speed up to 120 cm/min
Optimized properties for the perfect shape high speed fillet welds 	<ul style="list-style-type: none"> » Böhler Arc in combination with diamondspark metal cored wires make it possible to fine tune mechanized welding procedures above 100 cm/min welding speed for high strength materials. » Using the innovative RapiDeep process speed is further increased by 10 % (120 cm/min) 	<ul style="list-style-type: none"> » "Crispy" arc with good wetting behavior – better weld bead surface » More regular penetration » Focused electric arc with improved stability » Increase in travel speed up to 120 cm/min

Ultra high strength 1100 MPa yield strength matching solution



- » The new diamondspark 1100-MC is the only welding consumable, which can guarantee to meet the plate strength.
- » The patented chemical composition of the metal cored wire safeguards a matching solution for ultra-high strength base materials, produced either as classical Q/T or alternatively fine grained base material in line with TM rolling processes.
- » Böhler Arc specific welding programs for diamondspark 1100 MC available for all the processes
- » Possible to meet the required 1100 MPa Yield Strength in the weld metal, also achieving an excellent toughness
- » Perfect arc behavior with the Böhler Arc welding programme

Optimized welding behavior for lattice cranes



- » A new specific welding job using the double pulse mode was developed to cover all important aspects for this application
- » Good penetration is done with current peak of pulse mode
- » Gap bridging can be reached with low current phase
- » Very good steering of weld pool viscosity can be achieved with double pulse
- » Low spatter formation
- » Easy handling as the weld pool cools down in the low current phase
- » Good weld bead shape as the average current is in a save range for this application
- » Perfect penetration

BÖHLER ARC – let the Arc Ignite – An extensive welding programs library for repairing Crane & Lifting



- » All the parameters are made and tested to perform best welding results with Böhler Welding filler metals
- » Perfect arc ignition – to guarantee the perfect welding experience from the start
- » Customization and upgrade is possible
- » The welder simply choose the suitable synergic line and starts welding
- » Repeatability and constant quality
- » **Large range of welding program library available for the whole Crane & Lifting welding consumables product range according to the below table, including different shielding gas, diameters, RapiDeep and QuickPulse**
- » Crane & Lifting programs are available as starting set packages and add-on packages. Ask Böhler Welding for the best solution for you!

Welding processes which makes the difference in crane & lifting



Innovative welding process based on a highly concentrated arc, resulting in a consistent heat input reduction, higher precision, easier control, deeper penetration as well as less risk of undercuts.

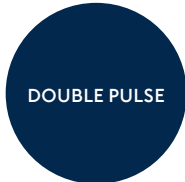
- » RapiDeep shows better penetration and smoother transition with base materials when operating at the same wire speed and travel speed. It can produce higher penetration with still a very good bead shape when increasing +60 % the travel speed
- » Significantly increase the welding speed with a direct impact on cost saving (higher productivity, less welding time)
- » For Crane and Lifting performance is further enhanced when using diamondspark metal cored wires, reaching considerable welding speed above 100 cm/min in various applications

Welding processes which makes the difference in crane & lifting



Alter-ego of RapiDeep in the 'Pulsed' world

- » QuickPulse couples the benefits of the concentrated arc with the greater stability offered by the pulsed arc for the best penetration at low heat input and high welding speed
- » In Crane & Lifting, it enhances the performance when solid wires are used as filler material



Special Böhler Welding function

- » It features two different waveforms. The first at higher intensity ensures the melting of the base material, while the second is characterized by a wider arc opening at lower parameters. The second waveform takes benefit from the fluidity and the heating generated by the first waveform to efficiently deposit material, filling bevel and gaps without a further over-heating
- » In case of assembly with gaps or non-regular geometry like in lattice boom cranes, it is essential to achieve the perfect welding

Equipment Product Range for Crane & Lifting

TERRA 400/500

Product features

- » Easy handling for the welder
- » User-friendly ergonomics
- » Low weight
- » Ideal for steel welds
- » Flexible use
- » Includes RapiDeep process
- » High power at 100 % of duty cycle
- » **Perfect for ArcDrive and RapiDeep processes so ideal for Crane and Lifting applications with metal cored wires**



Terra 400 MSE

Adjustment range	3A – 300 A
Duty cycle MIG/MAG – 40 °C	50 % – 400 A 60 % – 360 A 100 % – 340 A
Duty cycle MIG/MAG – 25 °C	80 % – 400 A 100 % – 360 A

Terra 500 MSE

Adjustment range	3A – 500 A
Duty cycle MIG/MAG – 40 °C	50 % – 400 A 60 % – 360 A 100 % – 340 A
Duty cycle MIG/MAG – 25 °C	80 % – 500 A 100 % – 470 A

URANOS 4000/5000 series

Product features



- » Excellent wire feeding properties due to innovative wire feed concept
- » Connection to automation systems and robot systems possible
- » Digital color display for easy process selection
- » Cutting edge digital inverter technology
- » Cost-saving energy efficiency (even in demanding continuous operation), „Green @ wave“ inverter technology for high energy efficiency and perfect control over all welding phases
- » Includes RapiDeep, Pulse and QuickPulse process
- » High power at 100 % of duty cycle
- » **Perfect for ArcDrive, RapiDeep, Pulse and QuickPulse processes so ideal for Crane and Lifting applications with solid wires and metal cored wires and for automation/robotic**

URANOS 4000 PME

Adjustment range	3A – 400 A
Duty cycle MIG/MAG – 40 °C	60 % – 400 A 100 % – 360 A
Duty cycle MIG/MAG – 25 °C	100 % – 300 A

URANOS 5000 PME

Adjustment range	3A – 500 A
Duty cycle MIG/MAG – 40 °C	50 % – 500 A 60 % – 470 A 100 % – 420 A
Duty cycle MIG/MAG – 25 °C	80 % – 500 A 100 % – 470 A

Personal Protection & Accessories



- » One of the most important aspects in the welding process is the protection of the welder.
- » Therefore voestalpine Böhler Welding created the new weldCare personal protection & accessories line. The products reflect our high quality demands and give the welders the protection and the tools they need.

Weldtech-Application-Service



- » For voestalpine Böhler Welding, being a Full Welding Solutions provider means acting as a partner for Crane and Lifting manufacturers through the weldTECH Application Services, which include a team of welding engineers experienced in welding of high strength steel structures

Calculation Tools



- » The Welding Calculator App supports the planning and optimization of welding tasks such as the calculation of cooling time, preheating temperature or the calculation of the required filler metal quantities. available for Android in the Google Play Store and for iOS in the App Store

Welding Consumables Product Range

diamondspark cored wires for welding of high strength structures

PRODUCT NAME	EN/ISO	AWS/SFA	BASE MATERIAL STEEL GRADE
diamondspark 700-MC	18276-A: T69 6 Mn2NiCrMo M M21 1 H5	A5.36 / SFA-5.36: E110T15-M21A8-K4-H4	S690/S700
diamondspark 900-MC	18276-A: T89 5 ZMn2NiCrMo M M21 1 H5	A5.36 / SFA-5.36: E131T15-M21A6-K4-H4	S890/S900
diamondspark 960-MC	18276-A: T89 4 ZMn2NiCrMo M M21 1 H5	–	S960
diamondspark 1100-MC	18276-A: T89 2 ZMn2NiCrMo M M21 1 H5	–	S1100

Solid Wires for Joint Welding of High Strength Structures

PRODUCT NAME	EN/ISO	AWS/SFA	BASE MATERIAL STEEL GRADE
Böhler X70-IG	16834-A: G 69 5 M Mn3Ni1CrMo	A5.28 / SFA5.28: ER110S-G	S690/S700
Union NiMoCr	16834-A: G 69 6 M21 Mn4Ni1,5CrMo	A5.28 / SFA5.28: ER100S-G / [ER100S-1(mod.)]	S690/S700
Union X90	16834-A: G 89 6 M21 Mn4Ni2CrMo	A5.28 / SFA5.28: ER120S-G	S890/S900
Union X85	16834-A: G 79 5 M21 Mn4Ni1,5CrMo	A5.28 / SFA5.28: ER110S-G	S890/S900
Union X96	16834-A: G 89 5 M21 Mn4Ni2,5CrMo	A5.28 / SFA5.28: ER120S-G	S960