

HIGH PRODUCTIVITY FULL WELDING SOLUTION FOR CRANE AND LIFTING TECHNOLOGY

voestalpine Böhler Welding Italia S.r.l. has once again demonstrated the great application support and know-how transfer to increase the productivity when welding fillet joints of high-strength steels together with the company MTS S.r.l.

The company MTS S.r.l., based in Italy, manufactures components for earthmoving and lifting equipment, made of carbon steel, high and very high resistance low-alloy steels, from S355 J2+N type to grade S1100.

THE CHALLENGE

First of all it is always essential to understand the actual customer requirements and to evaluate the welding situation. As such, voestalpine Böhler Welding focused on the most used applications in MTS, i.e. fillet welds of basements, frames and beams made of S690 QL and S 700 MC with thicknesses ranging from 7 to 40 mm.

voestalpine Böhler Welding proposed to MTS improvements in both semi-automatic and robotic welding by using the RapiDeep process and optimizing the behavior of the electric

arc thanks to Böhler Welding consumables and the Böhler Arc welding programs. Of utmost importance was the selection of the optimal welding parameters to increase productivity while improving the weld quality to avoid rework.

SOLUTION COMPETENCE

The application technology team in Italy supported the customer with the Böhler Arc synergic welding programs for the RapiDeep process, together with our Böhler X 70-IG, the right welding equipment and personal protective equipment for the welders.

The result was a remarkable 50% reduction in welding time for the robotic solution and 20% for the semi-automatic welding job, which convinced the customer to implement the complete welding solution.

PRODUCTS FOR CRANE AND LIFTING APPLICATIONS

- » **Consumable:** Böhler X 70-IG in 1.2 mm (EN ISO 16834: G 69 5 M21 Mn3Ni1CrMo)
- » **Welding equipment:** TERRA 400 RapiDeep for partially mechanized welding
- » **Welding equipment:** URANOS NX 5000 PSR integrated with the Yaskawa robotic arm
- » **Böhler ARC:** synergic welding programs for the rapiDeep process
- » **Guardian^{62F}** Welding helmets
- » **Welding blankets fibre 550**
- » **Torch MIG MT 540**

Single pass improved procedure

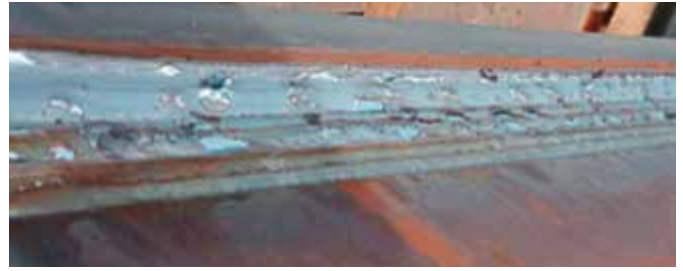
- » The welding speed increased from 27 to 41 cm/min (+52%), the same in terms of deposition rate from 3.7 to 6.3 kg/h

Multipass improved procedure

- » The welding speed increased by 100% in the first and second pass and by 72% in the further last pass. The same trend can be seen in the deposition rate.

Although the current is higher with RapiDeep, due to the higher wire speed, the heat input is lower, thanks to the higher travel speed. The final weld results were achieved by:

- » ensuring excellent mechanical properties for high-strength steel welds
- » significantly increasing the productivity
- » reducing deformation and distortion of welds
- » less spattering, oxydes formation and less undercuts, resulting in less repairing rate and less post-processing work, for brushing, grinding and repair



PRODUCT FEATURES

Böhler X 70-IG solid wire for the welding of high-strength, either thermomechanical and quenched and tempered structural steels with a minimum yield strength of 690 MPa. Due to the precise addition of micro-alloying elements, Böhler X 70-IG solid wire features excellent ductility and crack resistance in spite of its high strength. Good impact energy results down to -50°C.

We have offered **TERRA 400** with the RapiDeep process to achieve 2 goals:

- » increasing productivity
- » reducing heat generation while maintaining the metallurgical quality of the joint

We achieved 20% more productivity compared to manual welding.

For this reason, we have offered **URANOS NX 5000 PSR** to increase productivity with robotic welding as well.



RapiDeep

- » Designed and developed to maximize productivity and speed
- » Easy to start and to operate
- » An accurate, focused weld bead, thanks to excellent weld control
- » Improved penetration with optimized fusion of edges and roots
- » Thanks to perfect arc control, the welding speed can be up to 50% higher than in a standard MIG/MAG process

Helmet Guardian^{62F} the all-in-one solution protection and clear view welding and grinding helmet with flip-up protection and automatic darkening function for best welder protection.

WELDING BLANKETS FIBRE 550 is part of the safety equipment designed to protect you, your equipment, our environment and other valuable objects from spatters, sparks, heat treatment, sand blasting and molten metals. The blanket is suitable for working temperatures of up to 550°C.

TORCH MIG MT 540

MIG/MAG torches from Böhler Welding are durable products for premium performance and high-quality welds. With their light weight and excellent balance, our air and liquid cooled torches are premium products with which you can achieve outstanding welding results.

Thanks to the relationship we have built with the owner Daniele Tonel and his staff, we have been able to gain the necessary trust to make people realize that vaBW is the reference welding company because it focuses on the search for a perfect weld seam and is able to offer a complete welding solution.

Also, thanks to the development of MTS, which has dedicated its third warehouse entirely to welding, we have been able to sell welding machines:

- » 11 TERRA 400 PME machines and
- » 2 welding systems for robot Yaskawa, which has increased the orders for Böhler X70-IG.

We believe that the success is due to the technical and commercial solutions that our team has found to satisfy the customer optimizing and fully automating the welding processes. This could be a valid example for other companies.

*Pietro Il Grande, Equipment Line Manager –
voestalpine Böhler Welding Italia S.r.l.*

JOIN! voestalpine Böhler Welding

Why us? We are a leader in the welding industry with over 100 years of experience, more than 50 subsidiaries and more than 4,000 distribution partners around the world. Our extensive product portfolio and welding expertise combined with our global presence guarantees we are close when you need us. Having a profound understanding of your needs enables us to solve your demanding challenges with Full Welding Solutions - perfectly synchronized and as unique as your company.

