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CustomerStory

alwitra DIE DACHMARKE

Automated welding: process stability meets precision

How EWM React is revolutionising welding processes at alwitra

The requirements for efficiency, quality and process optimisation are constantly increasing in the manufacturing industry. In light of these challenges, the use of innovative welding technologies is proving to be a decisive competitive advantage. This is why alwitra, a leading provider of system solutions for flat roofs, relies on EWM React. This new process for automated welding enables precise control of droplet transfer for perfect weld seams. Other advantages include increased welding speed and reduced heat input.

Over 175 million square metres of sealed roof surface – alwitra GmbH is one of the leading providers of system solutions for flat roofs. Since its establishment in Trier in 1964, the company has set standards for the entire industry with numerous innovations. The core business includes roof waterproofing membranes, roof edge profiles, roof edge covers, wall connecting profiles, fastening systems for secure installation of solar systems and installation of daylight systems and flat roof drainage systems. The products are developed and manufactured at sites in Trier and Hermeskeil, where around 300 people are employed.

Almost all of the products have to be welded, which is why joining technology is so important for alwitra. The quality of the weld seam must impress across many designs, so it is not only highly functional but also looks perfect. "We are continuously adapting our product range to market requirements while taking innovative approaches", says Florian Pfeifer, Production Manager in the aluminium division at alwitra. "In order to optimally meet the needs of our customers, we rely on the use of high-quality welding machines." With EWM React, the flat roof specialist is now using a new type of welding process that overcomes the physical limits of the short arc and opens up a new world of possibilities for component quality thanks to heat reduction.

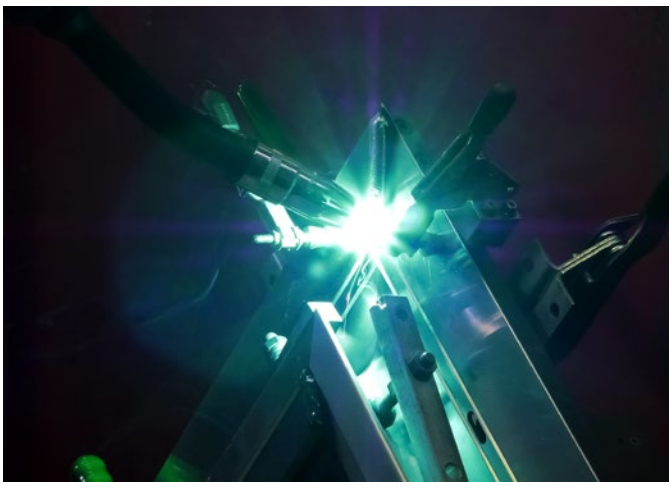
EWM React is a welding process with reversing wire movement which offers maximum control and process reliability for automated MIG/MAG welding.

Automation of standard products

Until now, alwitra has relied on a standard pulse MIG process to manufacture the components. Due to the large proportion of special products manufactured by alwitra, the level of automation in the company remains low. The proportion of automated welding is around 30 per cent, but this number is growing. This is because automation of welding processes is particularly well-suited to the production of standard components. "We see great potential here, as we can improve the quality of the results while reducing costs at the same time", emphasises Florian Pfeifer. "When using welding robots, process stability also plays a major role for us." This is where EWM React comes into play. This is because the combination of a short arc process and digital welding process control, supplemented by a highly dynamic torch drive, enables a precise and reliable automated welding process that delivers perfect weld seams.

Controlled droplet transfer

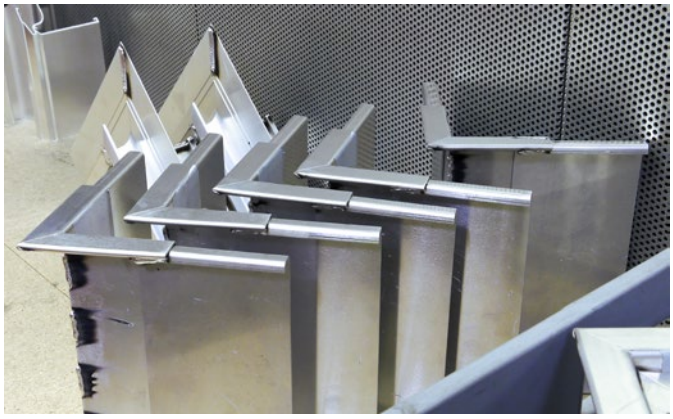
"React" stands for "reversing actively controlled transfer". In this new process from welding technology specialist EWM, the welding droplet is transferred to the weld pool in a controlled manner. This is made possible by regulating the welding voltage and welding current as well as by moving the wire forwards and backwards. The wire moves towards the weld pool at high speed. At the same time, the arc torches onto the weld pool and produces a molten droplet. As soon as the wire contacts the molten metal, the droplet passes into the weld pool through a short circuit. The wire is then precisely pulled out of the weld pool by an active, dynamically controlled retraction and the arc is reignited at very low power. The unique process is the result of combining the powerful Titan XQ R power source with integrated RCC (Rapid Current Control) module and React control. The active wire movement in the high frequency range is generated using a special EWM robot torch with a highly dynamic motor. The EWM process variants Speed, Positionweld and superPulse allow the process to be tailored to the customer's individual requirements. In some cases, the demanding welding tasks require the conventional pulsed arc to be intelligently combined with the React process. This wide variety allowed EWM to supply alwitra with exactly the right setting for each individual seam.

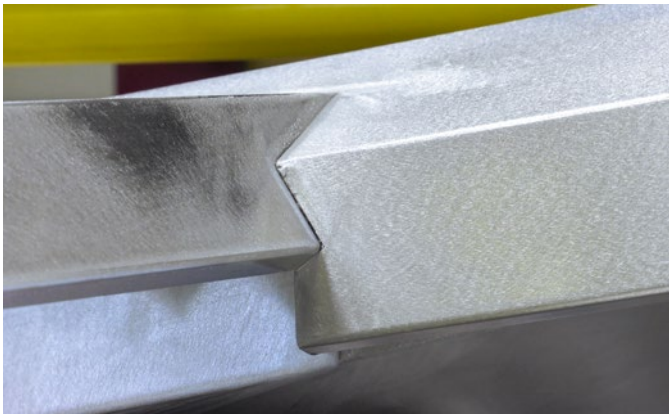


The innovative welding process enables full control of droplet transfer for spatter-free results.

Hardly any spatter and minimal distortion

The high deposition rates of the spray arc range are combined with all the advantages of the short arc. The result is a low-spatter process like the pulsed arc, but cooler for all power ranges. Thanks to the immense process stability, welding speeds twice as high as with a classic short arc can be achieved. Meanwhile, the heat input can be reduced by up to 35 %. "We





High demands at alwitra: The weld seam must not only be highly functional, but also visually convincing.

were able to minimise the distortion of our materials", says Florian Pfeifer. "EWM React also made it possible to improve weld seam quality by making welding spatter and burn-through a thing of the past." If the weld seam burns through, the weld metal on the underside has to be ground away – an additional labour-intensive process. If natural aluminium is used, the entire component has to be remanufactured if it burns through. EWM React now increases the quality of the welding results. Another advantage of the automated process is the increased welding speed. The high deposition rate allows components to be welded more quickly. At the same time, the amount of finishing work is significantly reduced thanks to the stable and spatter-free welding process. For alwitra, this translates to time savings of more than a minute per workpiece – both during welding and post weld work.

Automated welding: Taking productivity to a new level

"We are very satisfied with the welding technology and the optimised process", emphasises Florian Pfeifer. "In its role as a full-service provider, EWM is also characterised by comprehensive, competent advice and support in the implementation of projects. We really appreciate that." It is not only the technically optimised implementation and high quality of the welding machines that is important to alwitra, but above all solution-oriented advice and individual service. "With EWM, we exchange ideas on an equal footing and benefit from short, uncomplicated communication channels. This makes them very pleasant to work with", says Florian Pfeifer. As alwitra will continue to adapt its product range to market requirements, there will be a growing focus on process automation in the future. With EWM React, the expert for flat roof systems can take its productivity to a new level.

Thanks to the high deposition rate, components can be welded faster with EWM React. At the same time, finishing work is significantly reduced, resulting in a time saving of one minute per workpiece.

Almost all of alwitra's products have to be welded, which is why joining technology is so important to the company.

In collaboration with
alwitra GmbH

EWM GmbH | Dr. Günter-Henle-Straße 8 | 56271 Mündersbach
Tel: +49 2680 181-0 | info@ewm-group.com | www.ewm-group.com

Photos:
EWM GmbH, alwitra GmbH