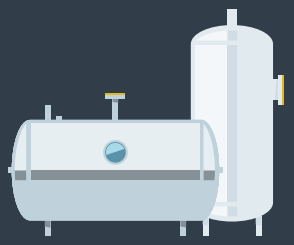
TANK AND EQUIPMENT CONSTRUCTION

Lorch turns up the pressure and dials up the SPEED



At GOH in Dreis-Tiefenbach and Stadtfallendorf, everything revolves around pressure and impermeability at uncompromising quality levels. At the two locations, a staff of approximately 85 produce tanks and pipeline components of superior quality for equipment manufacturers and leading businesses supplying compressed air preparation products or operating in the chemical sector and the aviation industry. After realising that their equipment was becoming too long in the tooth to still be up to the task of producing the top-tier weld seams they require, GOH decided it was time to upgrade to the latest, most advanced technology. To find the right solution, GOH surveyed the market extensively – and, finally, became convinced that a smart welding solution from Lorch works best for their purposes.

CHALLENGE

GOH manufactures up to 250 pressure tanks every year. A large portion of these tanks are customised solutions such as the tanks they made for Europe's largest compressed air preparation system, which deliver a capacity of 95,000 m^3 of purified air an hour. Made of stainless and carbon steel, the tanks have a sheet metal thickness of up to 120 mm and must be able to withstand pressure levels of up to 1,000 bar. A daunting challenge that places enormous requirements on the quality of every single weld seam. What is more, every welded joint that is created manually must be perfectly free of any pores and have an optimum weld appearance. Fully aware of this necessity, GOH subjects all of their tanks to a water pressure test prior to delivery. Many weld seams are also checked during an additional ultrasound/X-ray test. GOH used to apply TIG welding to produce the root welded seams on the round profiles they process as TIG welding allows the welder to join both edges of the material perfectly and with next to no pores. The main downside of this welding process is, however, its exceedingly slow speed. What the company needed, therefore, was a solution that can deliver both: perfectly clean seams and a significant boost in welding speed and, as a result, increased productivity.

SMART SOLUTION PROVIDED BY LORCH: MIG-MAG WELDING SYSTEMS INCLUDING SPEEDPULSE AND SPEEDARC

Until now, MAG welding in the area of pipeline and container construction was viewed with disfavour as the droplet transfer was allegedly not as clean as in other processes. To disprove this notion, Lorch developed "SpeedRoot" and supplied GOH with this solution. This MIG-MAG process is based on the technology used in Lorch's S-SpeedPulse system and marries TIG-like root welding quality with the unique speed of MIG-MAG welding.

Today, a welder at GOH takes only a few minutes to clamp the round parts onto the table. Next, he sets the appropriate welding parameters including material and wire thickness using the intuitive and easy-to-use Lorch control, allowing him to start welding in no time at the right amperage and with the proper argon-CO_2 gas mix. The system allows the welder to assume the best possible position in relation to the component and can start welding right away. Every weld seam will turn out as required from the start.

Allowing for cold welding, the SpeedRoot delivers top-notch weld seams in a much shorter period of time. This process cuts down the time needed to weld a container pipe socket to 8 minutes, which used to take 12 minutes when the welder applied TIG welding. But the advantages do not stop there: While GOH used to require up to three welding units per workstation to handle the various seam layers and multitude of wires and gas mixes, they need only a single, compact-size S-SpeedPulse unit today. Changing wires – for instance, from solid to flux-core wire, is a breeze as well. Since they can capture the root at greater depth and with perfect accuracy, the welders at GOH can even forgo a back weld. This is made possible by SpeedPulse. This welding process devised by Lorch provides for a nearly continuous transfer of material onto the workpiece. The leading droplet, which is pulsed, is always followed by a second, controlled metal transition in spray arc form. Added benefit of pulse welding: Bridging gaps as wide as 10 mm is a now cinch, and filling penetration depths of up 120 mm, which are not uncommon for the massive spherical cavity resonators, does not pose a problem either.

Lorch's space-saving SpeedPulse technology offers GOH a host of additional advantages: The arc remains perfectly stable for the entire duration of the burning time. The penetration into the material is much deeper today despite the smaller heat penetration zone, enhancing the strength of the entire weld tremendously. Better still, the fact that this process produces little spattering and delivers higher working speeds cuts down the time required for rework. The results are weld seams of flawless quality that will pass any durability test with flying colours.

TANK AND EQUIPMENT CONSTRUCTION

THIS IS THE CUSTOMER'S VERDICT:

"Instead of just one droplet per pulse, the system produces a droplet that is stretched out and provides for a newly continuous transfer of material onto the workpiece. The wire deposition rate increases, and this 'extra' amount of material translates to greater speed. These advantages drove us to purchase four new systems instead of just one, as we had planned originally. Things moved fast after we placed our order: The four Lorch S-SpeedPulse systems including SpeedRoot option we ordered were up and running on our premises within a week, thanks in no small part to Ralf Herrmann, who works as an application engineer at Lorch and helped us configure the systems at rapid speed. And, we were able to keep this speed up: At present, seven of our welders are working on components that have been pre-assembled and spot-welded by our metal workers. Depending on the application at hand, SpeedRoot allows our welders to achieve processing times that are up to three times faster than during TIG welding. Aside from the pristine weld seam quality, it was this type of reduced processing time that won us over and led us to opt for this solution. Ever since we started using SpeedPulse and SpeedRoot, the error rate of our welders has been approaching zero. Meanwhile, our quality management system has been recognised by the Lloyd's Register Foundation. We also managed to obtain the ASME and SELO certifications that allow us to operate on the Chinese market. Another welcome side effect of SpeedPulse welding on steel and stainless steel is a noise reduction of approximately 10 per cent. In consequence, our pulse welding operations fill our factory halls with much less noise."

Gunther Heupel, Managing Director and production manager at GOH

Gunther Heupel, Technical Manager and welding expert at GOH, is thrilled with the quality of the seams Lorch's MIG-MAG welding processes produce.

Lorch SpeedRoot: Spatter-free and requiring much less energy, SpeedRoot works three times faster than TIG welding even on an 8 mm gap during root welding.

The premium-quality pressure tanks made by GOH are sold world-wide: Common applications include air treatment plants, filtration systems for aircraft fuelling systems or CO_2 generators in the beverage industry.

Applying Lorch's SpeedRoot process, Luis Braga uses an S-SpeedPulse system to weld the root layer of the pipe socket. The top layer is welded using Lorch's SpeedPulse process.

Would you like to learn more?
Mr. Dalmer accompanied this project and will be happy to receive your requests: bernd.dalmer@lorch.eu

LORCH