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Magnatech

speaks the welder's language

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Welding & Fabrication Special

Cover story

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Magnatech Europe not only provides welding equipment to its customers but also in-depth process knowledge.



By Michael van Wijngaarden

The welding world is quite a small one. There are only a number of specialised welding companies that supply the latest in welding equipment. In this niche market there is a company that specialises even further. Magnatech is fully geared to supplying orbital welding equipment to customers world-wide. The company's European branch is based in Dronten, The Netherlands, which is where we spoke with Managing Director Mr Wynhold Wijnholds.

When meeting Mr Wijnholds it is clear from the start that he is driven to run a successful business and will go the extra mile to meet his customer's demands. On one occasion, for example, Mr Wijnholds was called in to investigate unexpected welding problems with a client in New Zealand and didn't hesitate to book a flight for the next morning in order to see what the trouble was and to help. This illustrates the commitment that is typical for Magnatech Europe ever since it was founded in 1992 as an independent sales organisation for the American mother company. But Mr Wijnholds was already involved in the welding industry long before that. After finishing his studies he started with Hobart Brothers International. Hobart was eventually sold and Mr Wijnholds continued his work independently as an exclusive distributor for Magnatech, whose products had always been sold through Hobart. This was the start of a fruitful enterprise that today services Europe, the Middle-East, Africa and Asia.

LANGUAGE

The development of orbital welding was sparked by the nuclear industry and dates back to 1965. At that time the nuclear industry used large metal O-rings to seal the pressure vessels of the nuclear reactors that were used for commercial power generation. Their size ranged between 12 feet and 24 feet and they were required to be GTAW welded to join the ends of the formed tubes. However, the nuclear safety and quality demands with regard to welding of pipes are so stringent that no welder can meet these demands, especially since pipe welding is one of the most demanding weld jobs. Mr Wijnholds: "We soon learned that there was no equipment available to weld tubes, especially the ones that had already been formed into a circle. This is why we developed an autogenous tube welder. This allowed an employee with no welding skills to make welds that meet the most stringent nuclear standards with absolutely no defects tolerable. The success of the tube welder formed the basis of an orbital pipe welding system that we introduced in 1971."

Mr Wijnholds furthermore explained that the power sources for orbital weld heads have the additional capabilities of rotation speed, filler wire speed, torch oscillation and electronic arc gap control. The microprocessor-operated power sources even have welding programs that are avail-

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able in various languages. Mr Wijnholds: "We literally speak the welder's language. Today, we are one of only a few companies world wide that can supply this kind of specialised high-tech equipment."

INNOVATION

Although orbital welding is highly specialised work, demand for orbital welding equipment is not limited to the nuclear industry. There is also considerable demand from the power generation industry, pulp and paper processing industry, chemical and refining, food processing, pharmaceutical and semiconductor industry. Demand is promoted by the fact that the number of skilled pipe and tube welders, especially in field applications, is declining which causes wages for these professionals to increase. In addition to that, clients are tightening their quality standards and require absolute welding quality, which is increasingly difficult for welders to achieve. This is why Magnatech focuses highly on product development and innovation, without losing sight of the cost-aspect. The relation between quality, ease of operation and affordability is key to the company's business.

Mr Wijnholds: "Magnatech has always focused on reliability, innovation and quality. John Emmerson, who purchased Magnatech in 1962, put the company on the map with these three vocal points. The added value of Magnatech lies in our know-how, which makes us a true specialist."

We learned that Magnatech is selling at a system level, not a component level, but the implication of that difference is not readily apparent. Mr Wijnholds continues: "When a customer purchases a new welding power source, he may or may not get assistance in learning how to use it properly or to his best advantage. But usually it is closer to purchasing a hand-tool, with the expectation that the customer knows that you must use different types of drill bits when drilling a hole into wood or stainless steel. The orbital pipe welder is

only one component of that system, and that will really perform if the customer implements all of the other aspects required to make the system perform. This may mean the purchase of other equipment, or taking more care in specifying both welding consumables and material, or simply a different/new way of performing tasks.

Magnatech Europe has to provide not only the equipment, but also generally the in-depth process knowledge to the customer, if he is to be successful.

We are frequently called in for specific problems, and have to diagnose the true case, and provide a solution. For example, the pipeline industry has a particular problem that is uncommon and only occasionally appears. The pipe can become magnetic because of the manufacturing technique used for large pipe, testing methodology, or handling. If the magnetic field becomes strong enough, it will bend or "blow" the arc to one side. The customer may not be familiar with this problem and perceive it as "something wrong with the equipment".

MAGNETISM

Through its know-how, Magnatech is an expert in miniaturising complex welding equipment that must be able to withstand the use by welding personnel in the demanding welding environment. This has made the company a leader in supplying the most compact orbital pipe welding systems in the world today, such as the Tubemaster C-series. These micro weld heads cover tube and fitting size ranges from 1.6mm to 12.7 mm (0.0625" to 0.5") OD. On the other side of the spectrum is the Pipeliner II, which is a practical alternative to manual welding of larger diameter and heavy wall pipes. Being such a specialist makes Mr Wijnholds travel the globe in order to help his customers and solve their welding challenges. One of these challenges is related to a phenomenon that is still not entirely understood by researchers: the effect



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of magnetic fields on welding. Mr Wijnholds: "Some time ago we were involved in a large offshore project in Norway where flanges needed to be welded on 32" pipes for hydraulic shutters. We performed a large number of welding tests and trained the welders. During the preparation phase I asked the project manager whether they had considered the possibility of magnetic fields in the pipe-ends. These magnetic fields develop in thick-wall pipes and can cause arc-blow resulting in energy loss. From his reply, however, I understood that he was not aware of this phenomenon. During the actual welding activities I was on-site and discovered that it was practically impossible to weld the flanges. Apparently the magnetic fields were so strong that the weld puddle was blown out of the seam. It was incredible. In the end all the pipes needed to be de-magnetised." Mr Wijnholds further described a similar case, the one mentioned earlier, where he immediately needed to go to New Zealand to investigate a welding problem. The project involved welding of clad-steel (carbon steel pipes with 3 mm stainless steel cladding) pipe that were 6 x 12m long, 24" diameter and 25 mm wall and coated with 75mm of concrete. The pipes were to be welded on-shore and installed with a J-lay barge off-shore. "When I arrived there", Mr Wijnholds continues, "the welders indicated that the power sources were not functioning properly. But in fact a gauss-meter showed that the problems were due to magnetic fields, although the Japanese firm that had supplied the pipes had de-magnetised the pipes before shipping them. Apparently, due to the rocking motion of the vessel they had become magnetic again, causing the welding problems."

ROOT PASS

According to Mr Wijnholds, these kinds of situations are typical to the welding industry. There are so many variables that determine the quality of a good weld that welding know-how can hardly be captured in theoretical informa-

tion. This know-how is therefore the key to the company's success. But it is not just limited to the actual welding, Mr Wijnholds explained. Welding preparations are just as crucial to a good weld and this is an area that can count on special attention from Magnatech. One of the welding preparation aspects that Mr Wijnholds focuses on today is the achievement of a proper root pass, especially for cross country pipelines, without loss of speed. The problem, he said, is that these thick-walled pipes are never perfectly round. They can be made round by machining but any welding inspector will disagree with this. To still ensure a perfect weld, equipment such as internal line-up clamps and filled welding wire is essential, which can also be supplied by Magnatech.

Customers can rely on Magnatech to supply any kind of additional equipment related to welding such as machines and tools for plastic pipes, high-speed bevelling and cutting machines, pipe bending machines, engine driven welders, vacuum lifting equipment and even tower lights. And in a world where time is money, Magnatech's one-stop-shop philosophy ensures that all products can be shipped within days of receipt of order through a wide network of distributors, which is likely to expand in the future. According to Mr Wijnholds, most markets do not show any substantial growth, except for South Korea where demand is picking up again, but there are growth opportunities in China and the former eastern block countries. Summarising, providing practical, hands-on knowledge and products is an area where Magnatech excels. Product improvement is therefore an ongoing process at Magnatech and the reason why the company invests all profit into research and development efforts. The ultimate goal, we learned, is to further develop existing products and to design new products for the pipe welding industry that are smaller, lower priced, more reliable and easier to use. ◀

About Magnatech

Magnatech, founded in 1946, is a manufacturer of specialised equipment for orbital pipe and tube welding, using the GMAW, FCAW and GTAW welding processes. Since 1977, Magnatech Orbital Welding Products were sold into Europe through the sales organization of Hobart Brothers International in Amsterdam. At that time Mr. Wynhold Wijnholds was responsible for the sales and technical support of this product line in Europe, Middle East, Far East and Africa. Magnatech Europe, before High Tech Systems, was established by Mr. Wynhold Wijnholds in 1992 to serve the customers and distributors in Europe, Middle East and Africa. Now Magnatech Europe has six employees. Due to product improvements and a growing market there will be more employees in the future. Magnatech Europe is situated in Dronten in The Netherlands