

Vermeer Eemhaven International is one of six healthy and experienced companies making up the VE Group. Established in 1955, it has been supplying innovative custom-made solutions to the process industries for almost sixty-five years. Working from seven modern production halls, it specializes in the design, manufacture, repair, and maintenance of shell & tube heat exchangers, airfins, and pressure vessels for the oil & gas, chemical, and petrochemical industries in a variety of materials.

With an outstanding list of customers, for example Aramco, BP, Chevron, Dow, Equinor, ExxonMobil, Neste, Shell, and Total, Heat Exchanger World caught up with CEO Paul Blonk, Sales & Marketing Director Maxim Schouten, Manager Operations Joffrey Hagendijk, and Manager Engineering Bert van den Heuvel to find out more about the company's success story that has made it such a leader on the world stage.

Vermeer Eemhaven International: a heat exchanger maintenance knowledge center since 1955



By John Butterfield

➤ Replacement bundles for Shell.

Brief history

Vermeer Eemhaven International started out as a small ship repair company in 1955 at the heart of Rotterdam's docklands in The Netherlands, where it is still to be found today. Indeed part of its present-day production facilities are formed from a building where the company's adventure began.

Its work began to change from ship repairs largely due to the proximity of Shell. From 1902 Shell had been refining crude oil nearby and by the end of World War II things really started to take off for them. By the 1950s Shell was refining more than a million tons of crude a year, and also began producing chemicals. This was around the time Vermeer stepped over to the oil & gas industry and got involved in the maintenance of shell & tube heat exchangers. "For the first thirty years," says Maxim Schouten, their Sales & Marketing Director, "we were actually only engaged in the maintenance of heat exchangers, so retubing and on-site maintenance. However, after this extensive period, Vermeer started in-house engineering. From then on we started designing our own builds and began to work closely with project engineering companies and EPC contractors. Effectively, Vermeer Eemhaven became established as a heat exchanger company for new builds and maintenance."

"During this time we realized that many of the companies with which we worked carried out their engineering, manufacturing, and installation work with separate companies. By 2000 we had therefore established a one-stop solution for clients whereby we offered all these possibilities ourselves," he continues. The Group grew further when Vermeer Site Services, Vermeer Process Technology, Vermeer India, Vermeer Denver International, and Vermeer ThermEx were added to the VE Group's portfolio. Anno 2019, the company is a true global player with a strong footprint in all parts of the world, delivering process equipment to literally a Who's Who of renowned clients.

Efficiency and innovation in the factory

When it comes to talking about what makes us unique," says Bert van den Heuvel, Manager Engineering, "one of our biggest advantages is our expertise. We are definitely a maintenance knowledge center and are renowned for this. We're also a very experienced team. Our engineering team has been in the design business for thirty plus years. Moreover, as a company – technical staff and management – we form a happy and flexible working team. Employees tend to stay a long time when they join us."

"Just as important," joins in Joffrey Hagendijk, Manager Operations "is that we can realize very short turnaround



times because of the efficiency we have introduced into the factory. This has been partly achieved by robotizing all our repeatable production processes with state-of-the-art CNC machines, which have additionally solved the difficulty of finding new, skilled technical staff as our older employees reach retirement age."

Production turnaround times have likewise been tightened up by the company's use of the production planning tool 'Primavera'. This has enabled them to make a very detailed overview of both human and machine resources as well as the status of all parts and deliverables when setting up a complicated production schedule. Nothing is overlooked and the planning is continually updated. "In this way," says Joffrey Hagendijk "we avoid starting to build before everything is in place, ensuring no time is wasted. Moreover, because we keep close tabs on the time spent carrying out each phase of a build we know exactly how long every job takes. This allows us to continually improve the accuracy of our timing on jobs, resulting in ever tighter and achievable turarounds. Our end-user clients around the world know that when they need a heat exchanger delivered with a very short delivery schedule, we will achieve it."

Apart from these factors Vermeer is fully equipped to build complete heat exchangers. The company is not dependent on sub-suppliers, which enhances turnaround times and indirectly ensures that a lot of re-tubing project work comes their way.

"One of our advantages is that we have a relatively 'flat' form of management," adds Maxim Schouten. "The management team walks around the factory and talks to the technical staff and listen to their ideas to improve processes. We take their thoughts onboard when making decisions. As such all are highly motivated because we all can and need to improve and change our organization."

Engineering in-house

Certainly the company's in-house engineering is also a key to company success providing customer-tailored solutions and in-depth technical know-how. All designs are



drafted in 3D using the software package 'Solid Edge'. The department's own in-house capabilities are also backed up by engineering staff working from Mumbai in India – a liaison which has been running since 2009, and to facilitate cooperation all Indian staff have been trained in all aspects of the in-house engineering team's work.

"Whenever we get a new order we always hold a kick-off meeting to launch the project and set up a tentative planning. In this way we can already begin to outline project deadlines and make sure they can be met. As a department we, moreover, are capable of working with many different design codes like ASME Section VIII, Division 1, the Dutch rules for pressure vessels (RToD), the Euro norm EN13445, and the German codes AD2000," says Bert van den Heuvel.

Production specialities

"We tend to concentrate on the production of high-quality, well-defined products in standardized forms, continues Maxim Schouten. "However, to succeed in today's markets, this is often not enough. Pricing also needs to be very competitive. The European heat exchanger market is tight and economically challenging. In recent years many companies have had to offer products below cost value to keep afloat whilst the lower grade heat exchanger market is now largely in the hands of India, South Korea, and China. Our success has come by concentrating on the top-end of the market: productions in monel, hastelloy, stainless & duplex stainless steels, titanium, copper, & copper alloys, and cold-rolled steels, high pressures equipment, and special technologies. Our product range covers: condensers, reboilers, airfin coolers, U-bundles, helixchangers® and airfin collers, transfer line exchangers, texas towers, and helitowers. Other process equipment we offer is valves and filtration.

Services and Pop-A-Plug

When it comes to assisting clients, Vermeer Site Services provides specialized services in the installation and maintenance of heat exchangers and piping. Mobile personnel work 24/7 in order to fit in with the scheduling of customers and minimize their downtime for both regular maintenance and shutdown operations. The team is, moreover, equipped with special tools and all parts, including specially designed bushings and plugs (Pop-A-Plug) in

» Super duplex condenser.

« MAUS MA2501 welding/ expanding robot.

» Titanium U bundle.



various materials in order to keep clients' businesses running smoothly.

"The Pop-A-Plug system, which we use for example," says Maxim Schouten "was developed by the EST Curtiss-Wright Group. It provides a mechanical sealing solution for leaking and degraded heat exchanger tubes without explosives or hot work, eliminating the potential for circumferential cracking and other heat-related issues associated with welding. Its advantage is that its simple



» Pop-a-plug.

hydraulic installation takes only minutes, significantly reducing turnarounds and downtimes. It can withstand pressures up to 420 bar and is made in the same materials and sizes as the tubing of the heat exchanger so never damages the tubing in which it is applied. It has been additionally fully embraced by several end clients and is advised in the AMSE codes."

HELIXCHANGER® Heat Exchanger (under license by McDermott's Lummus Technology)

Vermeer has been a Lummus Technology licensee since 1996, with a license to build and sell HELIXCHANGER

heat exchangers. This enhanced heat transfer technology is applied to provide solutions for common issues of conventional shell & tube exchanger such as shell-side fouling, optimal pressure drop utilization, and flow induced vibration. In the HELIXCHANGER heat exchanger, quadrant-shaped baffle plates are placed at an angle to the tube axis in a sequential arrangement to create a helical flow pattern around the tubes. This provides more supports to the tubes which means lower vibration potential and more importantly a higher average shell side velocity that may increase heat transfer, allows more throughput for the same pressure drop, and reduces shell side fouling rate. They are also friendly to the environment. The technology offers a lower lifecycle cost solution whether the customer's needs are to extend the operating period between cleaning campaigns of crude preheat exchangers, reduce capital costs, or improve the energy-efficiency of feed/effluent towers. In many cases such heat exchangers have increased efficiencies between 15–20% whilst fouling rate has been drastically reduced thus lowering user's greenhouse gas emissions. The technology can replace conventional shell & tube heat exchangers in grassroots, replacement and retrofit markets in many applications, and Vermeer is one of the market leaders in this range, having built over 350 of them.

Thermal maintenance system by Vermeer ThermEx International

In addition to heat exchangers, the company is also a specialist when it comes to methods that require process heating such as sulphur, polycarbonates. It designs, manufactures, and supplies thermal maintenance systems for all kinds of piping, vessels, and tanks maintaining the required process temperature and enabling melt-out requirements. The combination of its cost advantage over jacked piping, low steam consumption, and its thermal and reliability advantages over tube tracing make it an attractive thermal maintenance solution for most processes of high viscosity products. Such systems can also be attractive as an external heating system on vessels, drums, and storage tanks, in cases where contamination from internal coil leaks cannot be tolerated and/or the wall temperature uniformity is critical to prevent condensation and

» A schematic of the equipment on the front cover.





« Vermeer ThermEx heating elements on sulphur vessel.

corrosion. Steam, hot oil, or glycol water is conveyed as a heating medium through the ThermEx system. The heated elements transfer the heat at first to the vessel/tank/drum wall and secondly to the process medium. The shape of the rectangular sections with pipe radius rolled into the sections provides a wide heating surface to its component guaranteeing optimal heat transfer. Moreover, the use of heat transfer mastic between the ThermEx system and wall avoids any air-gap and acts as a corrosion barrier.

“Some of the advantages compared to jacketed piping are that the system is cross contamination free, less expensive (CAPEX), uses less steam, and less expansion loops are needed. The system is easy to install and fully redundant, meaning for maintenance the process pipeline does not have to be drained as the system is externally fitted. It can be replaced while the process is still running,” says Maxim Schouten.

Anabeeb

In 2013 the company went into partnership with Anabeeb, a Saudi Arabian Company set up in the 1980s to support the oil & gas, and petrochemical industry in the Middle East. Anabeeb and the VE Group work together when it comes to dismantling, cleaning, manufacturing, and repairing different types of process equipment and the extensive level of expertise on both sides has provided the VE Group with the opportunity to globally increase its activities in design, manufacturing, and repairs in the region.



“Heat exchangers were rarely revamped in Saudi Arabia. Instead they were often scrapped and a new one was bought when maintenance was needed. We have brought our re-tubing expertise to the partnership and orders are increasing. A next step will be for us to start manufacturing together in Saudi Arabia. This has a lot to do with IKTVA's program to buy at least 70% local content. Once the manufacturing plant has been set up by Anabeeb, we will be able to offer clients extra services in the form of maintenance, contracting, and manufacturing. Together we have serviced various clients in the Middle East and several proven technologies will be introduced in the

Middle East region soon. In order to showcase these heat exchanger technologies and heat exchanger maintenance, Anabeeb and Vermeer plan to organize a heat exchanger summit in Jubail in December 2019 promoting our joint expertise and services,” says Maxim Schouten.

Strategy for the future

“Looking ahead to the next five years, we will continue to focus on the heat exchangers market doing business directly with end-users, and concentrating on the one-on-one renewals,” says Paul Blonk, CEO. “We regularly visit all the end-users in Europe for this. Further, we also intend to expand our business into the Middle East and Africa particularly focusing on HELIXCHANGER technology and, because of our partnership with Anabeeb, hope to expand our business further with Saudi Aramco. On other fronts we will concentrate on expanding our ThermEx business and that of Vermeer Denver International – a supplier of industrial valves to the petrochemical and power generation industries. Certainly we hope to continue to work on prestigious projects like Hail and Gasha for ADNOC, which is the largest offshore sour gas project in the world, costing over twenty-two billion dollars upon completion, and Saudi Aramco on the Marjan offshore oil field.

With our focused and flexible team, our continued expansion into automation, short delivery times, and competitive prices, we believe we have a great future ahead.” «

» Fully insulated exchanger by Vermeer.

