

About to celebrate their eighty year anniversary, Bronswerk Heat Transfer B.V. was founded in 1940 as a manufacturer of thermic boilers by J.B. Möring and Th. Steenaart in the town of Nijkerk, The Netherlands. From the beginning the company has innovated and grown, it's drive has lead to what it is today, a true expert in the provision of heat transfer solutions. Bronswerk facilitates the design & manufacture of shell & tube heat exchangers, air cooled (fin fan) heat exchangers, and high complexity heat exchanging systems. Further to this, they design, manufacture, and instal industrial heat pumps as well as helping their customers optimize and extend their existing or new heat transfer processes. **Heat Exchanger World headed off to talk to Jeroen van Ruitenbeek, Sales Director and Arne Tänzer, Marketing Manager about the company's unique success story, and about some of the products that have brought this about.**



# Bronswerk Heat Transfer: Solving customer problems with innovative, proven technical solutions

*By John Butterfield*

## Company profile

As of the summer of 2019 the company employs more than 130 staff. Bronswerk Heat Transfer's main location in The Netherlands remains in Nijkerk but the company has recently expanded to add a second office in Rotterdam. In Nijkerk there is an extensive engineering and design department, where the academic level is high. There are departments that handle project management, sales, and a fully integrated manufacturing facility. "Despite being located in The Netherlands, our products are literally in use all over the world, in every continent and almost every country," says Arne Tänzer.

All enquires coming into the company are handled from the Nijkerk office but the company also works closely with local/regional partners and can manufacture it's equipment locally when necessary to ensure their client's needs and requirements are completely understood. The companies sales and engineering staff travel extensively to meet clients and help them address the challenges with which they are faced. When it comes to industries, Bronswerk Heat Transfer is principally strong serving the oil & gas, chemical, and power segments, and it also has clients in other industrial branches such as the pulp & paper and food processing industries.

## Bronswerk's unique characteristics

So what makes Bronswerk Heat Transfer unique? "By nature," says Arne Tänzer, "we have an innovative character and inquisitive style. We love to solve customers' problems with technical and unique solutions. Through the years we have built up extensive experience, knowledge, and know-how, which we are very happy to share with our clients on such diverse subjects as: high-process pressure requirements, thermal & mechanical questions, and to apply the right knowledge in using exotic materials. Our specialization is our ability to offer ground-breaking solutions, designs, and products to customers."

In this respect, Bronswerk Heat Transfer continually strives to improve its products by using the information and feedback that it receives from its clients and from the market to incorporate into future designs. It is therefore able to constantly provide customers with an increased level of reliability and sustainability. "As a medium-sized company," points out Jeroen van Ruitenbeek, "we have much more flexibility and creativity in our ways of working than is often inherent in multinationals or larger organizations. It is this that allows customers to get equipment that, is not only efficient and fit for purpose but also, generats cost-savings, especially when a client experiences



difficult constraints like lack of space, structural weight concerns, or maintenance challenges. We excel at solving the problems that generate the headaches of clients under such circumstances.”

“What also helps is that we are backed up by some very interesting products in terms of high-pressure shell & tube heat exchangers, air-cooled heat exchangers and industrial heat pumps, that function optimally under extreme process conditions. We always aim to supply complete ‘turn-key’ system solutions to ease the challenges facing our customers, though we can also deliver parts of processes as required,” adds Arne Tänzer.

When talking products, Bronswerk Heat Transfer do not confine themselves to the rigidity of working solely with standard ranges. “We can build anything as long as we understand what is needed and why. It also goes without saying that we are familiar with all the international design codes so can produce equipment as per these standards,” adds Arne Tänzer.

### Compact header heat exchanger

Bronswerk Heat Transfer’s unique Compact Header Heat Exchanger provides a great example of their innovative na-



ture and design flexibility. “The shell & tube heat exchanger market is rather conservative,” Arne Tänzer tells us. “As such, customers rely heavily on their suppliers to come up with reliable, compact, and durable designs. As a knowledge-based company, we continually improve our designs, especially when it comes to working with high-pressure applications up to 1000bar! And our clients benefit directly from this. For example, our patented Compact Header Heat Exchanger has been designed to take up to 30% less plot space & weighs 40% less than an equivalent conventional header design. This Compact Header Heat Exchanger still has the same flexibility in design as per the TEMA standards.

On offshore facilities, both characteristics (weight and size reduction) are extremely useful where space can be tight, and providing extra structural support can be extremely costly. Moreover, the Compact Header Heat Exchanger only needs 10% of the maintenance time of conventional high-pressure heat exchangers because of its clever plug-type tube inspection method. Based on our past experience we know that in high-pressure applications considerable inspection time is required during manufacturing where extensive welding has taken place. Bronswerk Heat Transfer used their experience with air-cooled heat exchangers and integrated the solid block-type header into the ‘out dated’ shell & tube heat exchanger design, which reduced the amount of welding significantly, leading to a very controllable and reliable delivery time. This unique Compact Header Heat Exchanger design has the same flexibility in design as per the TEMA standards. It has mainly been used offshore, for example, in the Gulf of Mexico and Brazil. It is especially suitable for use wherever heat exchange is needed in a high-pressure process (>100Bar) such as from gas fields.

### Whizz-Wheel® fan system

The Whizz-Wheel® is another of Bronswerk Heat Transfer’s outstanding innovative solutions that demonstrates the company’s capabilities to make improvements to conventional equipment: “In a typical air cooled heat exchanger process the supplier designs/builds the air-cooled heat exchangers and purchases the fans from a fan-supplier,” explains Arne Tänzer. “We can do it differently.

▲ *The Compact Header Heat Exchanger provides a great example of the company’s innovative nature and design flexibility.*

◀◀◀ *Bronswerk Heat Transfer’s head office in Nijkerk, The Netherlands.*

» *Fanblades from a Whizz-Wheel fan system showing their immense size.*



We ourselves designed a fan system and we can use this in newly or retrofitted air-cooled heat exchangers. It is so called the Whizz-Wheel®."

It is often implemented in plants where air-cooled heat exchanger equipment needs to be retrofitted because the plants themselves were built many years ago and may not meet the current operational or process requirements anymore; or because residential areas have encroached on the plants, resulting in a need for more silent equipment to ensure noise pollution norms are met.

"The Whizz-Wheel® fan system is the world's most silent axial fan," says Jeroen van Ruitenbeek "and its implementation often allows companies to reduce noise output by up to 20 decibels for new-builds or for existing air-cooled heat exchangers."

The Whizz-Wheel® system features a very stable sixteen blade fan which produces less vibrations, translating to reduced maintenance and a more reliable industrial process. In fact, it uses up to 40% less motor power when compared to other low-noise type fans, and the fan system is resistant to high crosswinds because of the unique inlet design. Another main advantage of using it by retrofitting it to existing air-cooled heat exchangers is that it

can lead to a performance increase of up to 30%. It can also take up to 30% less plot space if used in newly built equipment. A great benefit when lack of space is an issue. For offshore applications, its smaller and lighter design reduces the amount of structural support needed on a platform, thereby reducing structural loads and overhead costs. The flexibility of its design (6–32 ft.) also permits it to be incorporated into almost all air-cooled heat exchangers for both induced and forced draft designs. "Certainly one method for companies to boost the performance of their heat exchangers is to apply the Whizz-Wheel® fan system instead of increasing the number of air-cooled heat exchangers in their facilities."

The Whizz-Wheel® fan system was designed by Bronswerk Heat Transfer's R&D department around fifteen years ago because they firmly believed that they could develop something better than what is available on the market. It has now been on the market for over a decade and has proven to be extremely trustworthy and a sustainable solution for many end-users located throughout Europe, the Middle East, Asia, and North America, particularly in the chemical, oil & gas, upstream & downstream, and power industries.

» *The 690Bar(g) well tester heat exchangers with retractable bundles.*



## Subsea heat exchanger

"When it comes to subsea heat exchangers, there are not many suppliers," says Jeroen van Ruitenbeek "because the needed solutions tend to be very technical and require knowledge and expertise to be able to develop them. This is the sort of work we revel in!"

"As an illustration, one of our clients has an offshore platform where they were installing a gas compressor. They did not have any water for cooling purposes, or (spare) electrical power to drive cooling equipment. Additionally, there was very little available space on the platform so the ideal solution was to go subsea. They could build a pipeline in super duplex material to transport the gas to the coast at enormous cost. But they decided to cool down the gas with the sub-sea cooler submerged into the sea next to the platform. The gas, when cooled, is less corrosive so they use a carbon steel pipe (instead of super duplex) to transport the gas onshore. It posed a fascinating set of problems – how to simulate it, what sizes of tubes to use in the heat exchanger, what sort of materials to use to prevent fouling and corrosion, how to manufacture it, etc?"

The subsea cooler is designed, manufactured, and put into production by Bronswerk Heat Transfer and it uses the natural convection of seawater to cool the client's process fluid. One of its many advantages is that it requires no space on the offshore platform itself, eliminating the costs of building a support structures. It does not require any rotatory equipment such as fans, motors, or gearboxes to operate the subsea cooler. This ensures that little-to-no maintenance is required.

In this and similar developments, the Bronswerk Heat Transfer team is known as a knowledge center. "Our customer experienced a vibration problem on a heat exchanger they were replacing every two years. We recently checked on its performance after ten years in operation and found out that our client was still completely satisfied with it," adds Jeroen.

## A sustainable, innovative company

Bronswerk Heat Transfer's strength lies in being innovative yet sustainable,

*"We tailor our equipment to our customers' needs and deliver the 'smart' solution."*

cost-competitive but very reliable. As a knowledge center they are able to apply their expertise and know-how to devise solutions that will be viable and efficient, competitive and durable, and low in maintenance for many years to come. As a small anecdote, Arne Tänzer relates the story of a customer who placed a query with Bronswerk Heat Transfer with the intention to get a replacement part. With the query the customer delivered the original data sheet from 1964. "Obviously the warranty on the part had long passed," says Arne "but it goes to show just how long our equipment can last."

## Conclusion

Concluding, Jeroen van Ruitenbeek stresses that although just three type of products have been highlighted in this article, the company has much more to offer. In addition to a huge variety of products for a multitude of industries it also possesses a vast degree of knowledge, know-how, and expertise to provide tailor-made solutions, whether this be for an individual product, or for a complete turn-key heat transfer system installation. "Whenever a potential client feels that they are confronted with a heat transfer challenge that they don't know how to solve, it might just be worth their while taking up contact with us to get our advice and guidance to provide something that is effective and cost-saving. We are not the company to come to for a standard, run-of-the-mill make-shift solution. Bronswerk Heat Transfer is the safe choice, when compared to an 'off-the-shelf solution', we tailor our equipment to our customers needs, and deliver the 'smart' solution." «



« Bronswerk Heat Transfer is one of the few companies in the world capable of designing and manufacturing subsea coolers.