


Allard-Europe

A partnership for the future



Allard-Europe is a specialist steel and iron 'jobbing' foundry, making fully machined castings to customer's specification. This tailor-made approach often results in a partnership lasting many years. The company is a well know and appreciated partner in the dredging, offshore and shipbuilding industry. As an example of an old, heavy industry company transforming into a high-tech enterprise, Allard is searching for new opportunities in other markets. Stainless Steel World went to Turnhout, Belgium, to learn more about this company.

By Michael van Wijngaarden

"We are a real production company," says CEO/Managing Director Jef Dijckmans, "that offers turn-key casting solutions. "Working in partnership with the customer and searching for the best solution. The geometric freedom of the casting process is renowned, but cost and technical limitations, specific to certain alloys, need to be taken into account." The start of the foundry process, Mr Dijckmans explained, is the conception of the pattern, the gating and the risering system. "To ensure that the finished product is up to standard our foundry engineers use advanced 3D-CAD modelling and computer simulation techniques, as well

as good old common sense. A good pattern is the basis for a good casting and it still takes craftsmanship to produce them, mostly in wood. They remain property of our customers and can be stored in a 4000 m² warehouse." The patterns are fitted with a so called casting method. The gating system is used to fill the mould in a controlled manner. The risering system is optimized to compensate for the loss in volume during the transition of liquid to solid metal, to avoid shrinkage. The whole is embedded in resin bonded sand and after curing the pattern is removed, leaving the mould cavity to be filled with metal.



QUALITY

Five induction furnaces enable the foundry to melt an impressive total of more than 25 tonnes of liquid metal at one time. We learned that only high standard raw materials and alloys are used during the melting process and, Foundry Engineer Mik Doms told us, to ensure the high-level production process, computers continuously monitor the progress of the furnaces. The quality of the production process is furthermore guaranteed by various procedures which underscore the company's high reputation for quality control. All necessary equipment and qualified personnel are avail-

able to execute the classical inspections in the foundry. Furthermore, in Allard's modern in-house laboratory melt samples are analysed with optical emission spectroscopy to verify the chemical analysis of the molten metal. After the analysis, computerised equipment linked to each furnace allows the foundry engineer to precisely adjust each melt to meet the proper specifications. A final analysis just before pouring assures the exact composition requirements of each alloy. Finally, ladle-metallurgy is applied to ensure the optimal quality of the melt. The pouring itself only takes a few seconds, 3 minutes at the most. After the casting process, once the casting has been knocked out, the gating and risering system is removed by oxy-fuel cutting or gouging and the casting is further cleaned by grinding in the fettling shop. The ultimate material properties are only obtained after heat treatment. Contrary to rolling and forging, a foundry can not induce strengthening deformation as the geometry can't be changed. It only has analysis and heat treatment to fine tune material properties. For this purpose five fully automated heat treatment furnaces ensure a perfect heat treatment of every casting. The furnaces can process up to 45 tonnes of castings at one time. Furthermore, water, polymer and forced air quenching facilities are available. Allard-Europe's qualified staff can run a whole battery of destructive and non-destructive tests to determine the mechanical properties, dimensions and integrity to assure the castings meet the demands of its clients. Jef Dijckmans: "We are very proud that all our efforts have paid off. In 1992 Allard was the first foundry in its kind in the Benelux to obtain the ISO 9002 certificate and ISO9001 from 2002 on. Our quality assurance system is described in our quality manual and is used by all our collaborators throughout the entire production. It is our goal to deliver perfect service for total customer satisfaction. It supports our "partnership for the future" to a wide group of well appreciated customers in all kinds of industries."

FLEXIBILITY

Besides aiming for the best quality, Allard-Europe is also geared to being one of the most flexible players in the field, even worldwide. Mr Dijckmans explained that the production runs of the company involve mostly unique parts to small series. However, the machined casting weight of these products can vary from a few grams up to 20 tonnes in steel and 22 tonnes in iron. Mould dimensions can vary from 450x450mm up to 5800x5800 mm. "Our scope of materials is very wide, ranging from unalloyed to highly alloyed grades in both steel and cast iron. Today, the foundry produces more than 100 different materials to customers' specifications or to national standards. In many cases we assist customers in making the right choice of material." A major contribution to the flexibility is the in-house machining of castings. "We have a full range of machining possibilities enabling us to deliver finished castings. This avoids subcontracting, jeopardising final delays.

INVESTMENTS

To stay on top of market developments and keep serving its clients to the fullest, Allard-Europe has gone through a substantial investment programme and is planning to invest in the future as well. Mr Dijckmans: "Over the past 3 years we have invested several million Euros, both in the production side as well as in the safety and environmental aspects of the company. On the production side we installed an in-house developed heat treatment furnace for impellers that can be used for specific and local heat treatment. On top of that, money was spent on modernizing and improving the sand treatment systems for the moulding area. In the near future we will increase our lifting capacity with a new 80 tonnes crane that will allow us to expand our production range. On the safety side we have introduced a new dust and smoke extraction system. To extend our engineering capabilities we took delivery of a



Metronor 3D optical measuring system.

METRONOR 3D optical measuring system. The system is fully portable and measurements can be made - at site - all over the world. Furthermore we have invested substantially in our own machining capacity." Some years ago the existing large milling machines were complemented by a third, new boring machine on a large boom. The vertical turning mills with 6.3 and 2.3 m working diameter were supplemented by the pièce-de-résistance of recent investments: a brand-new 10 m diameter full CNC vertical turning mill, installed in October 2004. This mill has hugely expanded Allard-Europe's drilling and milling capacity and has strengthened its position as a leading jobbing foundry/machining shop to the industry.

MARKETS

Allard-Europe serves a wide variety of industries and the offshore business is clearly a market where the company is building up a respectable reputation. "At this moment", says Mr Dijckmans, "the dredging industry, which is still our most important market, generates about 50% of our turnover." In serving the international dredging market Allard-Europe has a

strong geographical advantage. This industry is dominated by Dutch-speaking companies who are predominantly based in the Benelux area, only a stone's throw away from Allard-Europe's head office. Not surprisingly, some of the biggest projects that Allard-Europe was asked to take part in come from these dredging companies. Sales engineer Peter Burdack: "For the offshore industry we recently supplied 2 massive stainless steel mainhoist hooks with a lifting capacity of 1800 tonnes each. They will be installed on a single crane, built by Huisman-Itrec for the Sapura 3000 pipe laying and construction vessel. The hooks weigh 9 tonnes each and are 2.5m high and 2m wide." Foundry Engineer Mik Doms adds: "We opted for martensitic stainless steel because of the extreme mechanical requirements. The heaviest sections are 430 mm thick. The slow cooling rate and the immense stresses induced by the subsequent grain growth adversely affect mechanical properties, especially elongation and impact. After pouring, the pieces that remained in the mould for a full three weeks to be knocked out, were still red hot. The final mechanical tests had to be made on test bars taken from a sample at the heart of the heaviest section. For this purpose a special hollow bore had to be developed by Sandvik. In the end the tests, conducted under supervision of Lloyd's, proved to be more than sufficient: Tensile strength 830MPa (for min. 740MPa required), Yield strength 647MPa (for min. 510MPa), elongation 21% (min. 12% required) and an average Charpy V impact energy of 113J at -20°C (min. 34J)" Allard-Europe also supplied sheaves, fairlead rollers, wildcats and large rope pear sockets to the offshore industry.

NUCLEAR

Besides the dredging industry, Allard-Europe is also involved in the shipbuilding industry, which accounts up to 15 per cent of the company's turnover. Neck bearings, rudder horns, thruster gear housings, but foremost A-frames are the company's specialty. Even Australian shipyards come to Allard-Europe despite a 2-month journey which the castings have to make before arriving at the yard. Even the nuclear industry is in the scope of Allard-Europe. According to Jef Dijckmans,



Heat treatment of hinge point voor CSO Deep Blue.



Sapura 3000.

Allard-Europe is currently involved in a project which involved the supply of instrumentation bodies in austenitic stainless steel for the nuclear site at Doel. Despite the relative small size of the castings, the project calls upon the full extent of the company's expertise in order to meet the severe corrosion requirements. Mr Dijckmans: "Expertise is one of our key strengths and we aim to expand our knowledge base even further in the future. This gives us an important added value and allows us to compete." For the future, he expects the rising demand for energy to push the nuclear market into a new phase. Nuclear waste storage remains the biggest challenge and Allard-Europe is involved in some test projects at the nearby sites of Mol and Dessel.

CORE

Talking about competition, we discovered that, contrary to popular belief, a company such as Allard-Europe does not so much compete with low-cost countries. Most of its competitors are situated in Western Europe. This brings us to the core of the company, those elements that enable it to survive and even flourish in such a competitive market. According to Mr Dijckmans: "Expertise, flexibility and reliability are the key assets that make us stand out from the rest." "From a production point of view, for example," Mik Doms adds, "we are extremely flexible. We try to find the niches in the market, but to keep an open mind to be able to see other opportunities. If necessary we can rely on specialist know-how from research centres all over Europe. We maintain good relations with casting centres in Belgium, the UK, Germany and France. Customers know this and know how to find us. They know that if they come to us and discuss their problem, in most cases, we are able to help." Another area where Allard-Europe excels in and which is on top of most clients' list is reliability. According to Sales Engineer Peter Burdack, for many oil and gas companies reliability is the key motivator to select a specific supplier. Especially with today's oil prices they cannot afford to wait for a part to arrive and are prepared to pay a little extra as

long as the goods are delivered on time. Mik Doms confirms: "In that respect we see a very interesting development. The patterns that we store in our pattern shop are in fact the property of our clients. In the past we have seen many of these patterns being taken to eastern Europe and China for the products to be made there, which was, obviously, quite alarming to our business. However, we now see more and more clients bringing their patterns back to us and asking us to make their products again." Mik Doms furthermore addressed another topic that is easily overlooked but can determine the success of a company to a large extent. That topic is language. "We literally speak the language of our clients. We cannot only discuss complex technical issue in Dutch or English but in German and French as well. When both parties are involved in such discussions, speaking the same language often proves to be an invaluable asset. It prevents costly and potentially dangerous miscommunications." Mr Dijckmans finishes: "In short, Allard-Europe has become a successful niche-player by offering solutions to very specific casting needs and by speaking the clients' language: both technically as literally. We will continue to do so in the future and aim to serve our clients in the same way that we have done for the past eighty years."

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800 T Hook (Huisman-Itrec).

About Allard-Europe

Allard-Europe is a foundry built for jobbing work, prototypes, single pieces and for small series. It produces castings in a wide range from a few grams up to 20 tonnes in steel and 22 tonnes in cast iron. Casting a material range from carbon steel to high alloy steel and grey, ductile and high alloy cast iron. The company employs 110 people and is based in Turnhout, Belgium.