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In the Spotlight

voestalpine Böhler Welding: A leading innovator and producer of filler metals



As the company's motto for joint welding 'lasting connections' suggests, voestalpine Böhler Welding is entirely devoted to welding consumables and understands the very DNA of filler metals. The metallurgical, service and technical know-how accumulated over the decades is reflected in the company's product portfolio which offers a complete range of solutions for all metal-joining processes, with particular focus on medium- and high-alloyed materials. To learn more about the secrets of their success, Stainless Steel World News spoke to Dr. Martin Peruzzi, Member of the Management Board and Chief Technology Officer of voestalpine Böhler Welding.

By Matjaž Matošec

Founded in 1870 as a steel-trading firm and producing welding consumables since 1926, the Austrian company known today as voestalpine Böhler Welding (hereafter vaBW) has been greatly expanding through mergers and acquisitions since the 1990s. In 2007, vaBW came under the ownership of the metallurgical multinational voestalpine Group, becoming fully integrated into it and receiving its current name

in 2013, which also brought the implementation of a new corporate brand and organisation structure. Forming part of the Metal Engineering division, vaBW focuses its business activities around three specialised and dedicated brands: Böhler Welding, UTP Maintenance and Fontargen Brazing. Together they employ around 2,400 people and had in the last fiscal year a turnover of EUR 545 million.

Local presence, global reach

With customers in more than 150 countries, 41 branch offices in 28 countries and more than 1,000 distribution partners worldwide, vaBW is a global player acting locally. Dr. Peruzzi puts these figures into a broader context: "At the moment we have 12 production sites, seven of which are located in Europe where we develop and produce filler metals for global use, whereas our regional plants in Mexico, Brazil, India, Indonesia, and China, cater for local markets. Strategically, this is very important because from Mexico City, for instance, we serve not only the Central American market, but also ship products to the US and Canada. Shipping there our entire product range from Europe would no longer make us competitive, and the same applies to our plants in Asia. In all these places there are many local producers with which we cannot compete from Europe. Most customers want the full package, not only the innovative, medium- and high-alloyed products, but also quality standard products, which is why it is so important to have

a local production site. We are constantly growing and looking for further strategic targets, either to increase market share in certain regions or to get into new technologies."

Strategic partnerships

One example of an acquisition adding greatly to the company's expertise is that of Avesta Welding in 2005. Formerly part of Avesta Sheffield which, since 2004, is a wholly-owned subsidiary of Finnish Outokumpu, this purchase meant the arrival of further competence in high-alloyed stainless and duplex materials. As Dr. Peruzzi explains, "the acquisition of Avesta Welding not only gave our company a further boost in the stainless range, but has also led to a close relationship with the Outokumpu Research Centre. Since then we keep close contact, especially when it comes to the development of new materials and welding consumables. As a developer and producer of welding consumables we always have to think ahead, about the future needs of the market, and the same applies to base material suppliers. In this respect it is very important to keep close contact with base material producers, because whenever a new development in steel grades is initiated in the medium- and high-alloyed stainless, duplex or superduplex grades, we can immediately start developing matching filler metals. This is



Dr. Martin Peruzzi, CTO of voestalpine Böhler Welding



Three product brands combine a comprehensive portfolio of filler metals.

very important because in the end every type of steel must be welded somehow. A recent example is related to the lean duplex stainless steel LDX 2404® from Outokumpu. Having complemented this new grade with a matching flux-cored wire, we can now offer a full solution – from stick electrodes and solid wires to flux-cored wires – for lean duplex steel grades which are becoming increasingly used in, for instance, the mining industry.”

Focus on medium and high alloys

The importance that they place at vaBW on collaboration with other innovators such as Outokumpu reflects the company's clear focus on high-end products. As Dr. Peruzzi explains, “our vision says that we want to be the preferred solution provider of medium- and high-alloyed consumables in our focus industry segments. This is where our core competence has always been. In the medium-alloyed range we speak about creep-resistant materials for power generation and high-strength alloys used in the crane & lifting industry, whereas in the high-alloyed range we speak about nickel-based materials

used for cladding in the oil & gas upstream, petrochemical and waste-to-energy industries and about all the stainless steel grades, including duplex and superduplex grades, for the automotive and chemical industries, respectively. This is our key portfolio. In terms of volume we are not a global leader, this has never been our target. Rather, we want to grow strategically in our medium- and high-alloyed range, while at the same time further developing our product portfolio in the unalloyed range.”

New products for future challenges

At vaBW they have clearly defined not only their core products, but also their focus industries. One of them is the power generation industry where the greatest demand is for medium-alloyed welding consumables, especially for creep-resistant products. These products are extremely demanding as they require creep resistance at very high temperatures. In the near future, with the introduction of more energy-efficient next-generation thermal power plants, these temperatures are expected to rise to up to

700°C, requiring new materials to combat heat. According to Dr. Peruzzi, “among the materials capable of providing a solution to this challenge will be those based on 9–12% chromium and nickel-based alloys. As yet there may not exist such a plant, but I expect to see the construction of the first thermal power plant using this 700°C technology by 2020. Such plants will, no doubt, create the need for innovative filler metals which we are currently developing. Thermal power generation is therefore a very important industry for us, despite the rise of alternative energy which also creates new opportunities. At least for the next 25 years or so, the major part of global energy is expected to be produced either from gas or coal.”

Similar trends can be observed in the transportation industry and, more specifically, in the automotive sub-segment, providing another area of innovation in which vaBW is greatly involved. Dr. Peruzzi explains: “The big challenge for the automotive suppliers nowadays is to reduce the weight of the car so as to make it more energy-efficient. In helping to facilitate this trend, we focus on the exhaust system, using materials that are more resistant to high temperatures and corrosion. Why? One way of improving the efficiency of a car is to increase the temperature of the exhaust fumes coming out of the engine. This requires new materials, primarily from the austenitic and ferritic families. Since all these materials need to be welded, we have developed and completed our series for the exhaust system, mainly consisting of stainless austenitic and ferritic wires. More specifically, we have two product groups for the exhaust system: the solid wire and the metal-cored wire. Having already had a very good product portfolio of solid wires, especially when it comes to 307Si, 430 and 439 grades, we have focused lately on developing metal-cored wires which are growing in demand in the automotive industry. The reasons for this are very simple: welding with the metal-cored wire is comparatively faster, with good arc stability and better gap-bridging ability, while the arc of the metal-cored wire allows a wider penetration profile, thus reducing the risk of lack of fusion. These are very important customer benefits!”

Yet another focus industry for vaBW is the petrochemical industry which is to benefit from the company's three new products developed in the past few years, including Bismuth-free stainless-steel-cored wires, now being introduced to the market. Described in more detail in the box above, the new products also offer innovative solutions for strip-cladding of Alloys 347 and 625, both providing greater time and cost efficiency.

Global application engineering teams

None of these product developments would have been possible without a strong R&D department into which 1.6% of revenue is invested each year. At vaBW they follow a decentralised approach which allows their R&D

Electro Slag Strip Cladding Innovations

voestalpine Böhler Welding has introduced two new flux/strip combinations to improve the economy of the electro slag strip cladding process. The new solutions enable to reach Alloy 347 and Alloy 625 composition on non- and low-alloyed parent materials in a single layer, at much higher productivity than so far obtainable. The products are of primary interest to the petrochemical and chemical industries, power generation, and the paper & pulp and food industries.

With the Flux Record EST 347-1 HS TL (HS=high speed, TL=thin layer) fabricators can potentially double the cladding speed and save 20% on strip consumption through reduced layer thickness, compared with standard single-layer solutions available in the market.

Flux Record EST 625-1 LD (LD= low dilution) is currently a product that reaches Alloy 625 composition with the lowest Fe content in a single layer and as such of great importance for the oil & gas industry, upstream and downstream. A patent for the product is pending. Depending on required Fe levels, it brings the following benefits for fabricators:

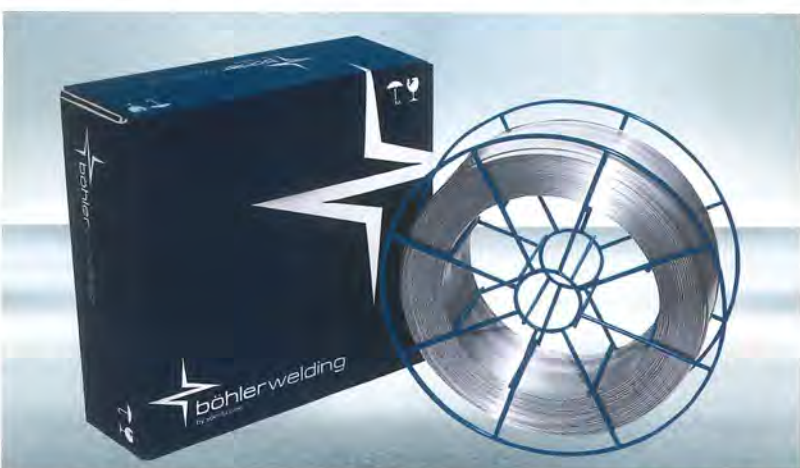
- Fe < 10%: major time saving compared with two-layer cladding.
- Fe < 7%: a saving in strip consumption of 20–25%, compared with common single-layer cladding.
- Fe < 5%: an Fe level so far not obtainable in single-layer cladding, providing increased sulphur stress corrosion resistance.

teams to be located in close proximity to production sites, resulting in many benefits, particularly in terms of efficiency and flexibility. But there is another element to vaBW that makes the company's approach to customer satisfaction truly holistic. Dr. Peruzzi explains: “One should not only speak about R&D because in the welding industry it is essential that new consumables are accompanied by appropriate welding procedures. Within our company this task is the responsibility of global application engineering teams formed of technical, customer-oriented experts. If the customer has a problem using an existing wire, they visit the customer to generate a solution, whereas if we introduce new products, they work with the customer to develop a welding specification procedure, in order to ensure optimal results. Besides bridging the gap on the technical side, our application teams also help introduce new products to the market, which is no less challenging and important than the innovation process.”



Cladding is just one of the company's many areas of expertise.

certain steel grades without having to visit third parties. In other words, as part of the voestalpine Group we have the whole value chain – material resources and expertise – in-house. This is a great asset to our company, making us quite unique compared to other manufacturers of welding consumables. But, crucially, it is our customers that benefit



voestalpine Böhler Welding is completely dedicated to creating 'lasting connections.'

voestalpine Böhler Welding brands

Böhler Welding – More than 2,000 products for joint welding in all conventional arc welding processes are united in a product portfolio that is unique throughout the world. Creating lasting connections is the brand's philosophy in welding and between people.

UTP Maintenance – Decades of industry experience and application know-how in the areas of repair as well as wear and surface protection, combined with innovative and custom-tailored products, guarantee customers an increase in the productivity and protection of their components.

Fontargen Brazing – Through deep insight into processing methods and ways of application, Fontargen Brazing provides the best brazing and soldering solutions based on proven products with German technology. The expertise of this brand's application engineers has been formulated over many years of experience from countless application cases.

For more information, visit www.voestalpine.com/welding.



Every year voestalpine Böhler Welding invests 1.6% of revenue in R&D.

Providing the full package

Being part of the voestalpine Group brings many advantages to vaBW as there is much cooperation between various divisions and specialised business units. The Group as a whole consists of Steel, Special Steel, Metal Forming, and Metal Engineering divisions. As Dr. Peruzzi explains, “we also use the voestalpine pre-material produced by the Group divisions, which is a big advantage for our R&D, because they can develop

most in the end because they can get the full package – base material, end products, services and technical support – from one group of companies. All this coupled with our expertise stemming from decades of experience and specialisation enables us to provide not only the full range of standard, but also highly individual solutions for industrial welding, maintenance & cladding and brazing applications, which sets us apart from our competitors.”