

Salzgitter Mannesmann Stainless Tubes

Gatekeepers of quality now ASME III qualified

Salzgitter Mannesmann Stainless Tubes has been supplying tubular products to the international nuclear power generation industry for over three decades. The company takes its role seriously and enforces a staunch ethically responsible work practice by insisting on no compromises in terms of safety and quality. This stance has earned it a strong reputation among its many customers around the globe. Nuclear Exchange visited some of the SMST-tubes team at the company's headquarters in Germany to learn about the company's history, how it's supplying quality products to the industry today, and why it continues to set the standard for excellence in years to come.

By Joanne McIntyre

The history of SMST-tubes's nuclear activities dates before 1994 when the company was known as Mannesmann DMV Stainless. Since then only the names changed. The company produces stainless products in four production centers located in Germany, France, Italy and the United States. "Early in the company's history we decided upon a strategy of focusing high quality products," explains Michael Bellinghausen, Member of the MRW Executive Board & CEO of SMST-tubes. "An extension of this strategy was the restructuring of the worldwide sales organization to create Key Account

Managers a few years ago. This structure allows us to collect expertise about individual industries and concentrate groups of people on each one, enabling us to become real partners to our customers instead of simply producing tubes." "Our background in the nuclear industry stems from our participation in the French and German nuclear program in the early 1980s," continue Mr. Bellinghausen. "Five years ago we realized that a number of our experienced nuclear personnel were approaching retirement age, so an important part of the Key Account structure was retaining that expertise. A system was put in place to transfer

knowledge to a new generation of employees to make the link between the older team and our new approach to the nuclear market. That has been a great asset because it's meant that as the industry has begun to flourish again all our expertise and nuclear culture has been retained. New people have been brought in to capture this knowledge and grow our business further, such as Mr. Deepu Balasubramaniam who is Key Account Manager for Nuclear Power Engineering." Every step of the production of nuclear products inside SMST-tubes is overseen by a dedicated nuclear team who make a complete plan for each product to





ensure that all requirements from the specifications are met, thanks to our expertise and rigorous controls explains Mr. Balasubramaniam.

Guaranteed supply chain

Each project comprise of specifications originating from technology suppliers like Areva or Westinghouse, the utility, the fabricators etc. Thorough inspections or surveillance are essential to make sure that the specifications are completely



*Mr. Michael Bellinghausen,
Member of the MRW Executive Board &
CEO of SMST-tubes.*



Quality testing at the company's plant in Italy.

implemented in the shop floor, thereby the products are manufactured with the expected quality as the power plant design foresees. A reliable and qualified supply chain with nuclear culture is the must from this point of view. "Our products and production processes are qualified in the supply chain right from the "technology designers to fabricators". After identifying that some of their customers were having problems sourcing specific items at short notice, SMST-tubes took steps to develop a guaranteed supply chain by working with selected partners in the nuclear industry. "While our core business is developing and producing straight or U-bend heat exchanger tubes, instrumentation tubes and pipes, we've extended the services we provide beyond our own products" explains Mr. Christophe Le Rigoleur, VP Sales & Marketing. "By forging partnerships with qualified suppliers of the products used with the piping like a specific fitting, we ensure that if a customer needs for example a small quantity of tube within two days, they can get it. Delays are avoided by ensuring that the products are



*Mr. Christophe Le Rigoleur,
Vice President Sales & Marketing.*

kept in stock by qualified distributors. It's a service we're able to provide either to any member of the supply chain – suppliers, fitting manufacturers, distributors, fabricators, etc. It creates a very stable, qualified supply chain which is vital for the nuclear industry. By working closely with a very limited number of selected partners we can help our customers to find the items they need, in a short time." In addition to this, SMST-tubes also maintain small quantity special nuclear grade raw materials in stock, to provide additional service to our customers in case of short delivery or small quantity requirements. Moreover our long experience with old norms and specifications also comes in handy when participating on the replacement of equipments or piping, in an old nuclear power plant".

Qualifications

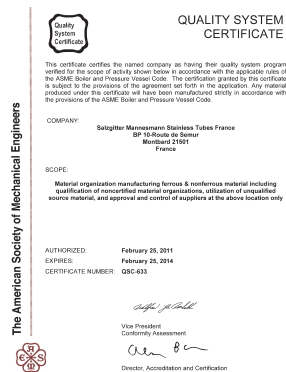
SMST-tubes takes its commitment to respecting the requirements of the industry very seriously.

"We will never compromise on our products," continues Mr. LeRigoleur. "Last year this commitment to quality



*Mr. Deepu Balsubramaniam,
Key Account Manager,
Nuclear Power Engineering.*





SMST-tubes certifications include AMSE III (top), 'Label Fournisseur Areva' certificate (middle) and the Chinese HAF 604 qualification (bottom).

and safety was recognized when Areva awarded SMST-tubes their 'Label Fournisseur Areva' certificate, recognizing us as one of its top partners. The Award has already led to extra orders as it carries a lot of weight in the industry."

"We offer the same service to Westinghouse or GE-Hitachi," continues Mr. Balasubramaniam. "We recently gained ASME III certification for our French and Italian mills. In addition we are one of the few Western companies to have the Chinese HAF 604 qualification by NNSA. With the complete list of qualifications we now have - AMSE III, RCCM, HAF604, KTA 1401 and various customer & product qualifications—SMST-tubes is able to supply the industry with products all over the world. The knowledge of the specifications like KBM, TBM for Swedish reactors and GOST + TU specifications for Russian reactors are giving us an extra edge on this niche market. It's taken a lot of work and important investment in terms of money, time and manpower over the past three years to reach this stage. Fortunately the process went relatively smoothly as our organization has been supplying the industry for so long that it didn't require a significant change to our work culture".

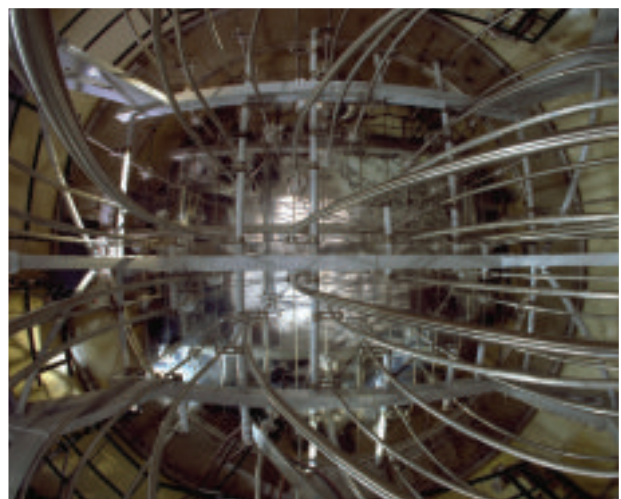
Expertise in nuclear tubular products

"Historically we have worked with Areva and their nuclear technology since the French nuclear program was first developed in the early 1980s," explains Mr. Balasubramaniam. "Our plant in Montbard was a key participant in their nuclear program and has a solid knowledge about their designs. The new developments introduced in the EPR are based on the original design and contain many of the same elements. Therefore it was logical that we would be involved in Areva's projects in Finland - Olkiluoto 3 and France - Flammanville 3- for which SMST-tubes supplied the Class 1 piping, pipes for fittings and instrumentation tubing, as well as the part of supply chain for other special tubing such as tie rods, thermal sleeve, shroud tubes etc. We're also pleased to be Areva's partner in Flammanville 3 project and Taishan 1 and 2 reactors in China, for which we supplied heat exchanger tubing and other special tubings. In-core instrumentation tubing is one of the unique, state-of the art product which we have developed in close collaboration with Areva. This in-core instrumentation system is used for the "neutron flux measurement" and "temperature measurement". Clearly the design specifications used for this tubing are extremely complicated; we were in direct discussions with Areva to fine tune the tube production. This is a tailor made tubing which cannot be compared in any way to normal seamless stainless tube production. We are one of only three companies worldwide who can supply these tubes and we have the advantage of being able to supply them in size ranging from very small tubes to large scale pipes."

We are already working closely with Westinghouse's new generation AP1000 projects. Two of these are under construction in China at the moment for which SMST-tubes supplied tubing for the reactor cooling pump (RCP). The entire Westinghouse design is based on ASME III design, which is why it was essential that we gained ASME III qualification. We received our certificate in May 2011 which is an indication of how the supply chain for the AP1000 is progressing. Gaining this accreditation was part of our long term plan because SMST-tubes wants to be a serious supplier for Areva, Westinghouse, GE-Hitachi and other technology designers for the long term."

Importance of upholding safety and quality

"We must accept that as a supplier to the nuclear industry we have a global social responsibility; we cannot compromise on the safety and quality of our products," continues Mr. Bellinghausen. "The rigorous specifications for nuclear power stations contain two vital aspects - safety and quality – which simply can't be compromised. Nuclear specifications are stringent because they are formulated to foresee large unexpected events such as earthquakes, airplane



In-core instrumentation tubing. Photo: Areva NP.



crashes etc when any failure would result in a difficult situation to handle. As such, we strongly believe that suppliers have a social responsibility for any problems arising from an accident.”

“Considering the large amounts of time, manpower and finance that we have invested in meeting the rigorous nuclear standards it is very surprising how many new companies are emerging who claim to be able to deliver nuclear products. Even with our background and experience in the industry it was no simple matter to revive our existing knowledge to become a top supplier once business started to pick up; how is it possible for newcomers to claim they have the background required, not just in terms of equipment but also human resources? This is simply not possible and it’s a serious concern for any responsible, quality supplier that this situation is arising in today’s market. Finding enough competent human resources is a major challenge even for the very large companies such as Areva and Westinghouse. The most important assets for any company in the nuclear business are your experience and the ability to transmit this experience to your people whether they are in engineering, marketing or sales. This key point is very much recognized by end users and is the reason that our customers have stayed with us for many years.”

Mr. Bellinghausen continues: “For nuclear we go beyond the



SMST-tubes has exported pipes and tubing to nuclear power plants around the globe.

normal rules due to the technical risk involved. Almost every week we are solicited by companies trying to take short-cuts to enter the market by claiming they can supply for instance heat exchangers for half price. As a group we have taken a stance to protect the work ethics of the industry. Frankly speaking we all have families and children who would be put at risk by risky construction. This has meant that sometimes we have turned down business but we strongly believe this position will pay off in the future. There is a global responsibility which must be accepted by suppliers to the nuclear industry. Our customers greatly appreciate our strong ethics and our ability to control the entire production process to meet their requirements.”

Before the end users will place an order with a tube supplier, they must be able to demonstrate that they can accurately produce tubes which fulfill all these stringent requirements. It’s simply not realistic to look for cut-price products in the nuclear industry; safety and quality can never be compromised and that’s something that the SMST-tubes team prides itself on.”

Investing in the future

“In recent years we have made some very important investments in the plant necessary to fulfill the stringent requirements,” continues Mr. Balasubramaniam. “The main products we supply for the nuclear industry are Class 2 and Class 3 heat exchanger tubing, for example tubes produced with low residual stress ie. less than 70 MPa, critical surface cleanliness, tight tolerances etc. The production of U-bend heat exchanger tubes with low residual stress and ‘no-coloration’ is one of the finely-controlled products we



Tubes undergo bright annealing; in addition to power plants, SMST-tubes also supplies tubes and pipes for nuclear fuel preparation and waste treatment plants.

deliver to the nuclear market, thanks to R&D activities which lasted for over a year. The control of residual stress on the heat exchanger tubes is very important, as stress corrosion cracking is one of the major causes of failures of heat exchanger tubes in-service. Quite simply, the lower the residual stresses in the tubes, the longer the life of the tubes in-service will be; this can directly reduce maintenance costs by resulting in longer life times or reduced replacement cycles. Another important aspect is that the critical surface cleaning of pipes used in the Class 1 or Class 2 products is important as any contamination can lead to embrittlement of tubes in-service. Therefore it is mandatory to avoid any low melting compounds or materials carried from lubricants or from any production steps sticking to the tubes. In our plant, we have a special cleaning process to ensure a high degree of cleanliness on the tubes, even to a degree of critical surface cleaning. Thus with more stringent requirements coming on our way, we are ideally positioned to serve the market with heat exchanger tubes for different nuclear technologies around the world.”

SMST-tubes is also involved deeply in the research projects for the future generation of technologies like Nuclear Fusion reactor. SMST-tube’s also play an important role in related sectors like supplying tubes and pipes for nuclear fuel preparation plants and waste treatment plants etc. SMST-tubes has supplied packages of pipes for the nuclear waste treatment plant in France. SMST-tubes has also experience in supplying the hollow bars for the nuclear fuel fabrication.

“Another key aspect in this sensitive industry is project management,” explains Mr. Balasubramaniam. “We offer a high level of service to our clients when it comes to follow-up on the orders, preparing complete documentation, audits, inspection and final certification. It’s part of the service we are happy to provide for our customers.”

Facts & Figures

Name:	Salzgitter Mannesmann Stainless Tubes GmbH; part of Salzgitter Group
Founded:	1886
Headquarters:	Mülheim an der Ruhr, Germany
Key markets:	Nuclear tubing; oil & gas engineering, steel tube umbilicals, tubular goods; boiler tubing
Main products:	Seamless stainless steel and nickel alloy tubes and pipes
Employees:	1,000 worldwide
Production facilities:	Montbard, France; Costa Volpino, Italy; Remscheid, Germany; Houston, USA
Sales:	EUR 354 million (2009)

