

# **FOMAS:** **Forge more, machine less**

The FOMAS Group has been active in the nuclear power generation market for over four decades, and FOMAS is one of the oldest and most experienced vendors in Europe holding the ASME nuclear certification. The industry calls for the highest levels of quality and delivery service and by responding to these demands, this Italian company has established itself as a world class manufacturer of open die forgings and ring rolling. Today the company's personnel are renowned as experts in the art of forging.

*By Joanne McIntyre*



**F**OMAS has over forty years of experience in nuclear power generation dating back to the late 1970s and it has maintained its ASME certification for all of this time, explains Ms. Sonia Proietti, Sales & Marketing Director of the Open Die Forgings Division of FOMAS Group. "We attained ASME certification in 1978 and have held it ever since. It represents a significant investment over the years; maintaining certification requires us to produce to a very high level of quality, with on time delivery and certified and accurate production processes, 100% of the time." The company has always focused on producing large and small forgings. "All of our nuclear forged products are produced in the Italian facility, located in Osnago (LC) Italy. Products for other applications are also produced by facilities in France, China, India and Italy."

With such a long history it is not surprising to learn that FOMAS forgings are used in literally every nuclear power station in the world. "From France to the USA, and from Finland to Russia and China, FOMAS forgings are found in every plant," continues Ms. Proietti. "The Group is heavily involved in all types of power generation around the world. For nuclear plants we manufacture forged components for both the primary and secondary systems. Examples are huge forged primary heads measuring up to 4.5 m in diameter, inlet/outlet nozzles, primary nozzles, valves and feed water pumps. We manufacture many of the very critical parts for nuclear power generation."

The company is qualified to manufacture forgings for every type of reactor technology used around the world.

### **Forging for Russia**

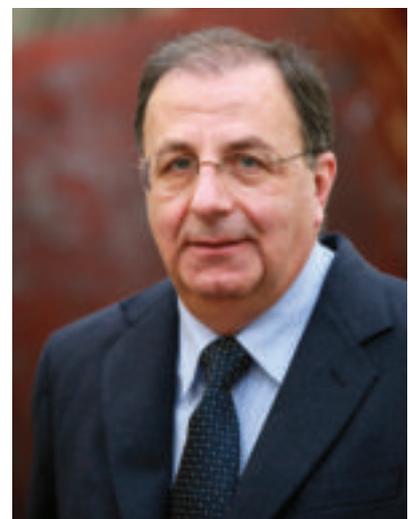
FOMAS was qualified by Rosatom and entered the Russian nuclear programme to deliver primary heads. "Rosatom recently turned to FOMAS due to the advantages we can offer in terms of co-design and quality. In the past



*Ms. Sonia Proietti, Sales & Marketing Director of the Open Die Forgings Division.*

Rosatom would buy in materials and then weld parts together to built large components. At FOMAS we use no welded parts; our enormous equipment is capable of producing mono-block forgings with high integrity and quality. In the nuclear industry it's not easy to work with welded parts, and non-welded components parts are preferable for safety reasons. Last year we received our first order for components for a VVER 1200 Mw Russian plant."

The company strives to be flexible which allows it to meet its customer's requirements. "Flexibility is important for our co-design activities and also in ensuring prompt delivery time. Once an order is received all the necessary



*Mr. Giancarlo Gobbi, Quality Director of the FOMAS Group.*

documentation must be prepared before production. This optimized flow allows us to always be on time with the deliveries. This is incredibly important for nuclear projects where clients could have to pay large fines for delays. We consider 100% on time delivery to be essential, not only for nuclear applications but also in all markets as power generation, oil & gas and general industry.”

### Focus on quality

Quality control is of course a top priority for suppliers to the nuclear industry, and FOMAS utilizes a highly skilled workforce to maintain and improve its quality standards. Over 8% of employees are engaged in engineering and R&D activities, while almost 20% are directly involved in quality control and systems. Among this team is Mr. Giancarlo Gobbi, Quality Director for the entire FOMAS Group who has been with the company for over thirty years. He is also an ASME Member of the Committee on Nuclear Certification, representing the Manufacturer of Materials, and a member of two committees which were appointed to research the possibilities for nuclear power generation in Italy. Unfortunately when the national referendum on nuclear power generation was held shortly after the Fukushima incident last year, the unfavorable result put a halt to plans for



*Tube sheet being prepared at the FOMAS plant in Italy.*

nuclear power stations in Italy for the time being.

“Our highly skilled workforce has been qualified by all the outside auditing authorities including ASME, DNV, Lloyds, TUV, NNSA, Areva ... it’s a long and complete list,” explains Ms. Proietti.

“Over the years it has become more difficult for many nuclear suppliers to find qualified staff, however we have our own internal training program which allows us to recruit young graduates, thoroughly train them and allow them to gain experience within the company. Our forging manager has over 38 years of experience in FOMAS and is a typical example of how our people stay with us

for their entire careers, growing with us. In all at FOMAS Osnago we have around 340 people involved in the production of critical components, most of whom are very experienced.”

### Investment in manufacturing capability

In order to comply with the most demanding customer requests, in 2007 the Group initiated an extensive EUR 250 million investment in new facilities, technology, and machinery around the world. The ‘Fomas 2012’ project was launched to significantly increase the Group’s manufacturing capabilities and capacity. While the world’s financial crisis hit and was taking its toll on most businesses, the company continued to move forward with investments as planned. Impressively, this major investment project was completed more than a year ahead of schedule. For nuclear applications this included a new 11,300 T press, integrated 400 M/T manipulator, and N°3 Electro Slag Remelting stands capable of producing huge ingots 2 m in diameter weighing up to 125 T. These are required for the AP1000 and EPR reactor technology requirements.

“This investment program has allowed us to increase nuclear product capacity by 30%,” explains Ms. Proietti. “We are ready for the next upswing in the



*The ESR process underway on a nuclear component.*





*A red-hot disk during the forming process.*

global industry and are prepared to grow together with our customers, in terms of co-design and specifications for projects.”

“One of our aims is to help our customers to use materials better; at the design stage they come to us and we help them to maximize benefits in terms of production processes and materials. This in turn minimizes the cost and increases the quality of the components. Being involved from the very beginning when the specifications are being written means this is a close co-design process. For example in 2007 a customer came to us, as he was experiencing huge capacity problems with his current supplier. Instead of receiving 20 forgings per year,

he was receiving just 1. We were able to produce and ship 24 large forgings over two years.”

#### **Increasing global presence**

FOMAS Group has an increasing worldwide presence with new offices in the USA and in Brazil and agents representing the company for over 20 years in China, Germany and many other countries.

“We are very involved in the upgrading of the existing nuclear fleet in Europe and have secured an order for the upgrading of 32 power stations in France. Following the Fukushima incident we have seen a downturn in terms of new projects, but are benefitting from an increase in

upgrading projects so on balance it’s a good time for business. In the near future we are expecting some new projects regarding the storage of waste.”

“The drive to grow is in our DNA,” smiles Ms. Proietti. “We have further investments in machines planned so we are ready to meet 100% of our customers’ requirements. Looking to the future we plan to develop our presence in other countries and regions such as the Middle East; the Group already has a strong presence in that area for the oil and gas market. The nuclear business makes up around 16% of FOMAS’s turnover, while power generation in total makes up almost 75%. Power generation is at the heart of what we do.”

#### **FOMAS forged parts are included in literally every nuclear power plant in the world, including:**

Doel 1-4, Tihange 1-3, Angra 1-2, Bruce 3-8, Lingao, Guangdong 1-2, Qinshan 1-3, Goesgen, Ringhals 1-4, Penley 1-2, Bugey 2-5, Wolsong 1-3, Brunsbuttel, Isar 1-2, Superphenix, Olkiluoto 1-3, Flamanville 1-3, Viver 1200 Mw Baltic and Novovoronezh 2.

#### **Reference list**

History and reputation are important in the nuclear industry. With over 40 years of experience producing high integrity open die forgings for NPPs, FOMAS has an impressive client list including:

AREVA - KSB – Siemens/KWU – Babcock Power – ENEL – Babcock & Wilcox (Can) – Equipos Nucleares- Westinghouse – General Electric - Balcke Durr – Mitsui – BKL Fittings – Rolls Royce - Shanghai Nuclear Power Equipment - MHI - TEPCO - Sulzer – Ansaldo – Shanghai Boiler - Alstom Boiler – Dong Fang Electric – Dong Fang Boiler – TN International – AEM Technologies - Harbin - Oregon – PCC York - STF Italy – Mangiarotti.

