

Brück: More than a forge Going all the way

From forged pieces to complete components: Germany-based Brück is worldwide the only forging company to be able to go the whole way. "Our competence starts with material sourcing and stretches to delivering finished products for the most demanding applications," Noël Smeets, CEO of the Dutch subsidiary Brück Pipeconnections, explains in an interview with CFN. "We produce tailor-made solutions for our customers in different industries." The range of applications reaches from the bottom of the sea to thousands of kilometers into outer space. To achieve this performance the company is consequently investing in its know-how and its capacities. "Actually, we are three companies under one roof: forging and ring rolling, machining and building components."



The company's roots reach back to the year 1923. Established by Karl Brück as "Eisenwarenfabrik" in Ensheim, it has developed into one of the world's largest specialist in manufacturing forgings, seamless hot rolled rings, flanges and special forgings. 1,000 material varieties, 20,000 tons of raw material in 400 different grades can be found in stock – impressive numbers, which attest to the company's forging capabilities. Especially, metallurgical know-how is a result of more than 80 years experience. "Based on that experience we are able to process materials from common carbon steels to high-grade stainless steels, nickel-based alloys and titanium," Smeets states. This competence is supported by state-of-the-art machinery: five presses with capacities between 1,250 and 8,000 tons which enable the manufacturing of a wide range of products from flanges for nuclear power stations to rings for tunnel boring machines.

New die forging press
The new 8,000 ton open die forging press which started production in December 2009 opens up even more possibilities. "On the one hand, we can produce bigger rings now; on the other hand, we can manufacture additional products such as shell forgings for valves and pumps or parts for cranes," Export Manager Peter van

Gansewinkel explains. A new forging line for series production at Brück's plant in the Czech Republic offers their clients attractive conditions for the manufacturing of series parts of at least ten pieces. "We continuously invest in our forging competence and capacity in order to stay ahead of the competition," attests Smeets.

Another core competence of Brück is ring rolling, therefore the company runs five ring rolling mills. Combined with the latest heat treatment technology for methods such as hardening, tempering and annealing the ring rolling expertise enables Brück to produce seamless key parts for e.g. load transmission, power industry and aerospace applications. Rotary equipment for excavators, rotor shafts and bearings for modern windmills are typi-



cal products made by Brück. Literally, a highlight is the ring rolling of the booster segments for the European Ariane rockets, which carries the company's products even into outer space.

Machining

Years ago, Brück took the decision to grow from pure forging to machining products. "The big advantage is that we can offer the complete range of machining from one source," Smeets explains. To achieve this they have built a complete machinery park with more than a hundred CNC controlled machines such as cutting, milling and drilling machines and turning units. According to Smeets, "We have constantly been upgrading our machinery to a higher level, meeting the needs of the market." One specialty is gear cutting. This technique is e.g. used to produce gears for wind turbines. Brück is able to manufacture gear-cut seamless rings with a diameter up to seven meters.

Component building

The third "company" within Brück is component building. From the early 90's on, Brück followed a strategy to deliver their clients complex components from one source. The company started assembling and testing constructions for the oil and gas industry. This strategic decision was taken with an eye toward a new development in the oil and gas industry - the "Swivel Stacks", which permit Floating Production Storage and Offloading Vessels (FPSO) to move in rough weather conditions while being connected to risers attached to the sea bed. In this field Brück has gained an excellent reputation, processing duplex



Express delivery service

One key component of Brück's strategy is service. According to the slogan "Will not work has no place" they have developed a special express delivery service. This means that products can be manufactured per customer drawings within six and 15 working days. "Within our manufacturing process we constantly reserve space for express orders," avows Van Gansewinkel. "As we are independent from third parties we can react quickly and flexibly." Especially in plant engineering, power stations and the wind energy industry, Brück has noticed a constantly growing demand

for these express deliveries. An impressive example is the delivery of two large rings with a diameter of approximately 4,600 mm to South Africa. The rings, which were ordered by a petrochemical company for a waste heat boiler, had to be transported to a not common test location within short terms. A task that could only be fulfilled with help of expeditious production by Brück, and delivery by plane. Consequently, the customer chartered an Antonov, the only plane being able for the flight of such large parts. "The costs for the flight were much higher than for the

products. But everything was on the spot in time."

Another example is an emergency repair job for the German nuclear power station in Biblis. In the plant there was a crack detected in a nozzle forged onto a pipe connection. Within ten working days the first parts were delivered and just five days later the remaining pieces reached the nuclear power plant. This quick delivery was possible because Brück had the demanded material on stock. This performance saved Biblis 37 Million euros, which would have been required to be paid in the case of a longer shutdown.

steels and overlay welded carbon and low alloyed steels. "We have almost 20 years of experience and thus are an appreciated partner for the industry," Jack Hoeben, Manager Projects, says.

One example is the construction of swivel stacks for the Brazil-based oil and gas company Petrobras. "We were responsible for the timely delivery of four process and two utility swivel units for the Peregrino FPSO," Hoeben says reflecting back. The order included material supply, forging, heat treatment, final machining, assembly and testing of all main swivel components. In April 2009, all units were delivered to the shipyard in Singapore. There Brück assisted its client with the installation of the swivel stack into the terminal. In total the company has already developed over 60 swivel modules in cooperation with the clients. The biggest swivel stack weighed in at 205 tons and was 25 meters high.

In general the process starts with the design. "We get involved at the very beginning so that we can supply value-added know-how from our engineers," Hoeben explains. For the Nord Stream pipeline e.g. Brück designed and produced special forgings to

connect different pipe legs. Intensive study and analysis resulted in this particular product.

"Quality is key," Van Gansewinkel clearly states. For that reason every product is intensely tested before leaving the manufacturing facility. The range of in-house testing includes e.g. corrosion tests, spectral-an-

alytical inspection, impact tests and simulation of varying circumstances.

"As you can see, we control the entire process from material sourcing to delivering the finished product. For our customers every step is traceable," confirms Smeets. This is what Brück means by going all the way...

Frank Wöbbeking

OVERLAY WELDING

When forged parts are used in a highly corrosive environment they need to be made of high material grades. But nickel alloys or titanium are very expensive. A way of finding a balance between costs and performance is weld overlay cladding. Brück exercises this technique for flanges and special forgings using low alloy steels as a basic material combined with weld consumables like Inconel 625 for overlays.

Facts & Figures

Name of the company:	Brück
Headquarters:	Ensheim, Germany
Branches:	9 (Germany, Netherlands, UK, Czech Republic, Dubai and USA)
Plants:	4 (Germany, Czech Republic, Netherlands)
Employees:	More than 900
Industries:	Power plants, wind energy, oil and gas, pressure vessels, special piping, heavy machinery construction, shipbuilding, aerospace and wheels
Products:	special forgings, flanges, rings, shafts, nozzles