Cover Story

Rolf Kind GmbH: Thriving on the challenge of unique forgings

As a forging specialist, Rolf Kind focuses on overcoming the limitations of conventional forging through innovation and highly efficient production methods. With an active research and development team, Rolf Kind keeps its eyes firmly on the future. I spoke with CEO Markus Kind about the company's impressive global reach, its affinity for challenging projects, and its custom heat exchanger solutions.

Rolf Kind's Managing Directors Markus Kind (left) and Ralf Kind (right).

By Ellie Pritchard

Founded in 1969, Rolf Kind is a family-led company, passed down to Markus and Ralf Kind from their father. For 53 years, the company has specialised in the manufacture of larger-sized open die forgings, specifically in stainless steels, nickel-based alloys, and titanium-based alloys. Recently relocated to Lindlar Kaiserau, roughly 40km from Cologne, the company's 85+ employees can now work closely together in a brand-new headquarters. This more centralised way of working enables smooth operation and logistics as the company produces products for the oil and gas, (petro)chemical, marine, food and other sectors.

The Rolf Kind way

We begin by discussing Kind's unique position in the market. Generally speaking, most manufacturers of open die forgings work with standard materials such as carbon steels, whereas Kind seeks out projects requiring specialty services in stainless and alloy-based steels. "We have a completely different way of working," explains Markus. "Our process is customisable thanks to our network of partners with various expertise."

Kind does not run its own forging press, but instead uses forging equipment on an 'as-need' basis, depending on the customer's request. "We can choose the best forging equipment for the part needed," says Markus. "This is certainly unusual in our market, but it enables us to take on unique projects and gives our team excellent experience working with various machines and product requirements."

"We can use the specialities of each of our partners in a very practical way; one may be very good in long shafts, another is best in forged discs, another in pierced pieces, and the next has a specialism in larger hot rolled rings. So, we can always choose the right equipment for the right forging."

This process allows the Rolf Kind team to focus on its key competencies, being special materials and large parts. The company prides itself on delivering the largest pieces forged from the most complicated materials such as corrosion resistant stainless steel, nickel alloys, and titanium. For many of its capabilities, Kind is confident it is operating in a league of its own. "Most other forging companies are not able to handle the projects we accept as they require incredibly large sizes, complicated shapes, and very technical specifications. But this is what we do."

"If you see the whole world of steel as a bakery, Kind is producing the cherries on top of the cake"

"I like to put it this way: If you see the whole world of steel as a bakery, Kind is producing the cherries on top of the cake," Markus smiles. "This means that we are really looking for the special, extraordinary projects…And we leave all the standard pieces for everyone else."

Local production, global export

It is the company's in-depth knowledge of materials that makes it a trusted name across its global customer base. For the most demanding and challenging forgings, Kind is a first choice always. Manufacturing for the (petro)chemical and oil and gas industries means delivering products that are able to withstand the most corrosive environments and doing so on time, every time. Kind instils confidence in its customers, a valued capability in such a niche market sector.

"We know where to source the big ingots, for example, which can be a challenge considering the size of ingots that we are processing," says Markus. "And we have the right equipment here in our plant to do the mechanical processing. We have a very big range of machinery; for instance, we can turn and mill shafts up to a length of 26 metres which I don't believe can be said by many European companies in this industry."

Around 90% of the company's manufacturing operations are centralised in Germany, but 80% of its tailor-made forgings are exported globally. Kind delivers forgings for the most sophisticated international projects. With a sales representative in the US and exclusive sales agents in Italy, South Korea, Japan, India and China, Kind is present in all important markets worldwide.

Large-scale tubesheets

Rolf Kind is renowned for its heat exchanger tubesheets, and supplies unique orders that are ultimately used by highly-demanding companies such as BASF.

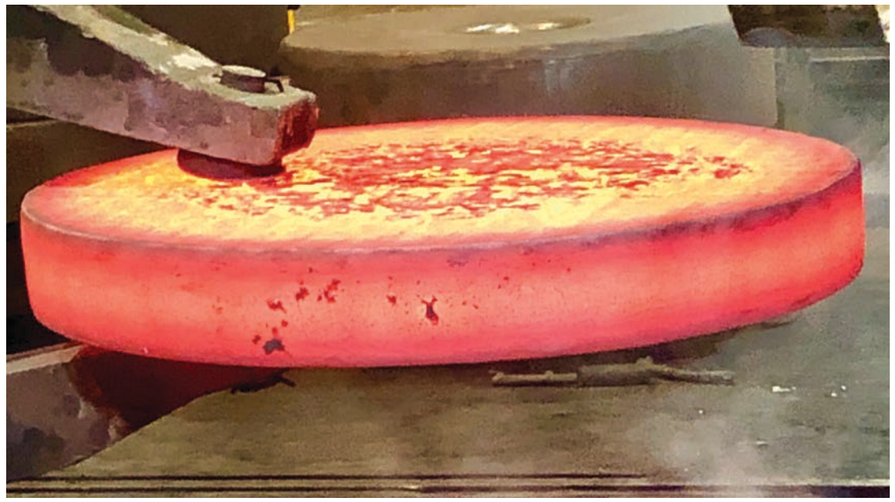
"We received an enquiry from one of our customers needing to produce a unique type of heat exchanger for BASF's chemical process plant in Ludwigshafen, Germany," says Markus. "They requested a very large tubesheet in Inconel alloy 800H, so we knew this would be a very high temperature application. They requested a tubesheet with a diameter of 3210 x 255mm thickness."

After assessing internally, the team decided that it would be an exciting opportunity to show what Kind is able to produce for its customers. The project required an ingot weighing an impressive 35 tonnes; through its network of trusted partners, Kind sourced a mill capable of providing such a mammoth piece. Kind then successfully processed the ingot into a very large forging of 3.3 metres in diameter and 265 mm in height, in the end weighing almost 20 tonnes. The machining of the tubesheet was carried out in Kind's Lindlar Kaiserau facility in Germany.

Rolf Kind service summary:

- Processing of ingots in nickel-based alloys, high-alloy stainless steels and titanium with weights from 3,000 to 50,000 kg
- Open-die forging on forging presses from 20 MN to 120 MN and ring rolling up to 50,000 kg operating weight
- Heat treatment of individual forgings up to a diameter of 4.5 m and a length of 25 m
- Machining in our machine park of lathes and milling machines, boring machines and saws up to a diameter of 4.5 m and a length of 25 m
- Non-destructive tests such as ultrasonic, X-ray, dye penetrant and visual inspection etc.
- Destructive testing in collaboration with accredited laboratories
- Forging technology "made in Germany" used worldwide

Kind combines flexible production management with the precision of its internal processing. This enables the company to guarantee quality that meets the requirements of customers as well as its own high standards.



Heat exchanger tubesheet in 254 SMO, dimensions 2.700 x 370mm thick.

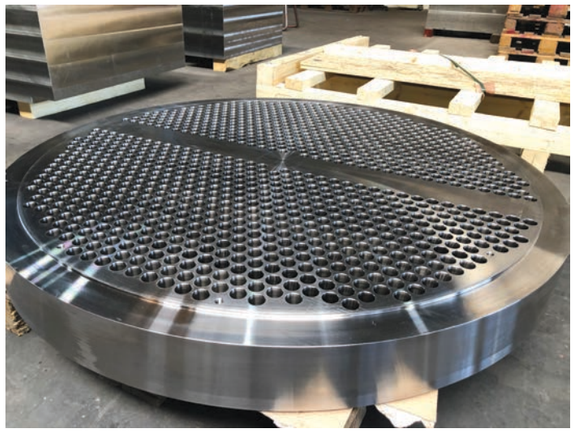
"The project took around 11 months from first enquiry to delivery of the part. It was quite a demanding project, in terms of size and speciality of the material," Markus acknowledges. "We were delighted to be able to deliver the tubesheet exactly to customer requirements."
"I think this really demonstrates what we are so good at," continues Markus. "The unique, speciality projects; like I said, the cherry on top of the cake."

Future trends

As with the rest of the industry, Markus has noticed an increase in orders for certain energy production applications. "What we can see now is that there are many projects coming up for hydrogen technology with more and more investors in this field. Hydrogen is definitely one of the keywords we will be focusing on in the next few years," says Markus. "Another is LNG terminals; the German government, for example, is investing a lot of money in LNG technology. These are of course pushed by the transition in the energy industry, and a need for energy independence in these complicated times."
Markus refers in particular to a large order for an LNG processing plant in Canada 2 years ago – which required large heat exchangers in 254 SMO material. Kind manufactured solid forged, heavy thickness heat exchanger tubesheets in material 254 SMO / Alloy F44 / UNS S31254 / W. Nr. 1.4547 with forging dimensions OD 2.700 x 370 mm thk. and a forging weight of 16,900 KGS. These impressive tubesheets have become part of heavy heat exchangers working at the LNG Canada Project - one of the largest energy investments worldwide.
Kind has also been a long-term partner in Geneva's large hydron collider (LHC) project, supplying materials as well as performing practical research on new materials, plants, physical applications, and methods of energy production.

Hot rolled ring, Alloy 800H, dimensions 4.600mm.

Rough forged tubesheet.

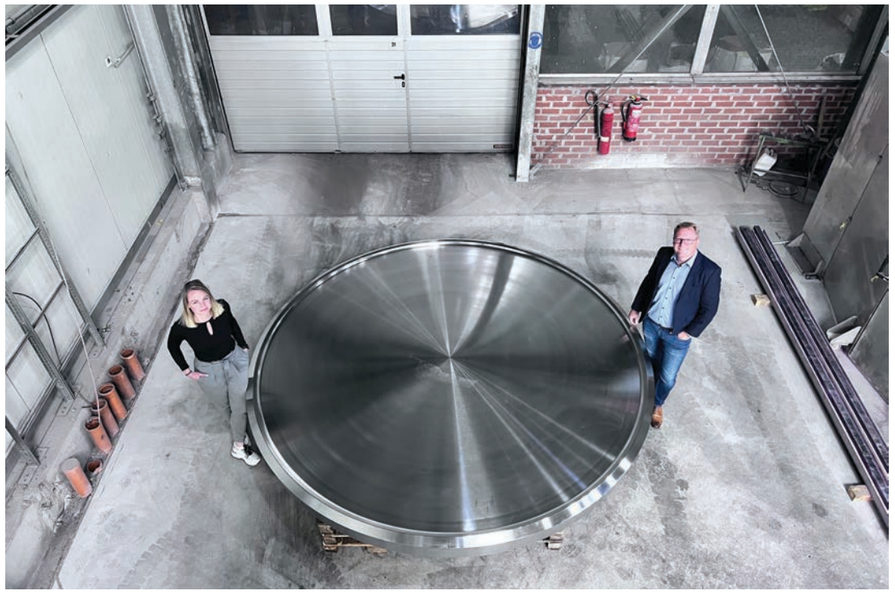


Heat exchanger tubesheet in Alloy 625, dimensions OD 1.680 × 170mm thick.

Nuclear fusion

Another rising technology for which Kind has received project orders is nuclear fusion. "This is a completely new field of business which will be coming up in the next years," says Markus. "We are currently working very closely with two companies on this technology, one based in the US, the other in the UK. Kind is producing large stainless steel forgings which will be used in magnets for these projects."
"The aim is to produce energy via nuclear fusion," he explains. "Those we are working with are very optimistic about getting this technology running within the next 10 years - and of course, those plants will need heat exchangers later on."
Markus also tells us of the ITER project in southern France which he refers to as a "Masterpiece of engineering".
A collaboration of 35 countries, ITER aims to build the world's largest tokamak reactor, a magnetic fusion device designed to prove the feasibility of fusion as a large-scale and carbon-free source of energy (iter.org).

"We have been supplying materials for this project for many years already," says Markus. "We have carried out extensive investigations of how our products fare in incredibly low temperature applications. All materials we supply to this project are being used with liquid helium at 4K (minus 296 degrees Celsius), the lowest temperature on earth. So, we have to produce forgings that withstand those conditions and still possess the required mechanical properties. It also requires us to carry out testing at the same ultra-low temperature, but this is now very common to us."
What is clear about Rolf Kind is its confidence in its ability to provide the best possible service and products for its customers, regardless of the scale and impact of the final application. With a passion for performing where others cannot, the company has carved a path for itself far from the beaten track, excelling in the exceptional.



Solid tubesheet in Alloy 800H, dimensions 3210 × 255mm thick.