OTTO JUNKER CM GmbH

Special Steel Casting & Machining

Casting & Machining

OTTOJUNKER
CASTING & MACHINING

Casting and machining

Know-how for specialized tasks

The name OTTO JUNKER is synonymous worldwide with high expertise in the casting and machining of metals.

In the company name OTTO JUNKER CM GmbH, “CM” stands for Casting and Machining. Our decades of experience in casting high-alloy metals and machining metal parts enable us to produce components for exacting uses.

Thanks to the unique combination of our in-depth know-how in metal casting and machining, we are renowned worldwide as a supplier of high-quality, technologically convincing components in special steels and aluminum alloys.

Materials for the most extraordinary uses

OTTO JUNKER CM is one of only a very few foundries that boast long-standing experience in an exceptionally wide and varied range of alloys. Our specialities include the Junkeralloy® range of special alloys, which can be used instead of various wrought alloys, and the casting of customized iron-, nickel- and cobalt-based alloys.

We support our customers along the entire value chain - from designing and engineering components, to selecting the most suitable material through to high-precision machining. We also develop customized alloys for specific uses.

Components for challenging uses

Our work focuses on the production of complex, sophisticated components for machinery and plants that have to be able to operate reliably day in, day out under the most challenging conditions.

For example:

- Valves and fittings for industrial use that have to be resistant to corrosive attack as well as high and/or low temperatures
- Highly safety-critical components able to withstand extreme – internal and external – pressures at several hundred meters below sea level
- Pump components that possess both good ductility and good wear resistance
- Machine beds for high-tech industry that have to be machined with ultra-high precision

Industries

We manufacture components for machinery and equipment that has to be able to operate with the utmost reliability and precision.

Many of our customers have been with us for decades, proving that we supply excellent quality on a continuous and dependable basis.

This is, to a large extent, due to our sincere, open, honest and solution-oriented way of communicating with our customers.

Our know-how:

- Specific materials
  - Resistant to low and high temperatures
  - Resistant to corrosion
  - Resistant to wear
  - Nonmagnetic
- Large, complex components
- Thick-walled components
- High-precision machining

Industrial fittings, valves and pumps

Corrosion and wear-resistant components for the chemical, oil and gas industries

Special machinery engineering

Ultra-high precision manufacturing of large aluminum components

Thermal processing

Heat and wear-resistant components for thermal waste treatment plants and industrial furnaces

Food industry

Ready-to-install cast components made of stainless steel alloys

Mechanical processing

Corrosion and wear-resistant components for centrifuges and mills

Specialties

Customized castings produced as one-offs or in series

Melting

Precise control

The foundry specializes in high-alloy, sophisticated special steels and iron-, nickel- and cobalt-based special alloys.

Our experts control the melting process with a high degree of precision to obtain alloys that possess the metallurgical properties, such as carbon and gas content, necessary to produce castings that boast exactly the technological features required for the specific application.

High flexibility

For melting, we use a range of atmospheric and vacuum induction furnaces of different sizes.

This wide variety of available melting furnaces ensures that we can always use the optimal metallurgical process for each individual material grade. The same applies to the heat sizes. Our comprehensive range of furnaces allows us to choose the ideal furnace for small heat sizes and for castings requiring heat sizes of up to 14 t.

Proven furnace technology

In our foundry, we use furnaces from OTTO JUNKER. They fully meet our special performance requirements and have proved to operate extremely reliably over decades.

Casting

Wide range of material grades

We cast components with gross weights ranging between about 500 g and 14 t. Our hand-molded castings have diameters of up to 6,000 mm.

We adjust our casting and heat treatment processes not only to the specific component geometry, but also to the great variety of special alloys we process, e.g. duplex-steel castings with wall thicknesses of up to 250 mm.

Smooth surfaces

We mainly use the sand molding process, as it offers great freedom of design. This allows us to accurately mold even very complex structures.

We use the cold setting process to make our casting molds. We have developed our binder system specifically for achieving smooth surfaces on high-alloy grade castings.

Optimal heat transfer

For heat treatment, we also use a process specially developed in-house to account for the properties of the material grades used and the requirements of thick-walled components.

The production of thick-walled castings in particular necessitates very rapid heat removal. To achieve this, the casting to be quenched is flooded with 40m^3 of water within seconds, resulting in optimal heat transfer.

Machining

Wide range

We specialize in the machining of the castings produced in our foundry and high-precision machining of large equipment components.

Our portfolio ranges from raw castings made of special alloys to large, precision-machined aluminum components that are ready to install.

Complex shapes

We rigorously align our machining equipment to the manufacturing of one-offs and small to medium-sized series of complex, high-quality components.

Thanks to the availability of several, high-performance milling centers and our carrousel- and mandrel-type turning lathes, we are able to perform virtually all machining steps in-house.

High precision

Our largest machines are designed to handle components of up to 20 t weight and diameters of up to 6,000 mm.

The precision-machining centers achieve machining accuracies down to 30 µm.

Large diameters

Large castings are often circularly symmetric. These components are machined on our carrousel-type lathes, which can handle parts of up to 6,000 mm in diameter.

Close tolerances

We also use our expertise gained in the finish-machining of our castings to perform machining services for large aluminum components that have to comply with particularly exacting tolerance requirements.

Satisfied customers

Due to the high quality of our products and our dependability as a supplier, customers from industries such as semi-conductor, food and environmental technology have called on us for more than 20 years as their key supplier for complex machine components.

Quality

Integrated Management System

We know the exacting conditions the components we produce have to perform under from the longstanding relationships with our customers. These include extreme pressures and forces, which mean that the components have to be highly resistant to wear, corrosion and/or heat.

Therefore, quality assurance plays a pivotal role for us. In our Integrated Management System, all methods, processes, instruments and activities are laid down within a harmonized structure.

High repeatability

Our quality control staff ensure that all the components we produce are of a consistently high quality using dedicated measuring and testing methods.

These begin with testing the molding material for our casting molds, followed by continuous process control and, finally, inspection and documentation of the finished products. This guarantees high repeatability in one-off and series production of components that may come in very different geometries and a wide range of alloys.

Close partnerships

The comprehensive know-how and decades-long experience of our employees form the basis for the high quality of our products.

In materials and component development, we work closely with world-leading universities and institutions, and our customers to ensure that we always use the latest equipment and are always at the forefront of alloying expertise.

The company

OTTO JUNKER GmbH

Otto Junker established the company in 1924 in the German town of Lammersdorf, about 20 km from Aachen. During the first decades of its existence, the company, named after its founder, evolved into a medium-sized enterprise focusing on the supply of plants and equipment for the production and processing of metals.

Since the 1950s, the OTTO JUNKER special steel foundry has become increasingly specialized in casting and machining components made of high-performance, iron-, nickel- and cobalt-based special alloys and is now a technology leader in the metals industry.

OTTO JUNKER CM GmbH

By providing machining services in addition to “just casting”, the foundry has continuously evolved into a supplier of specialist components for demanding uses.

Since 2021, the foundry has operated independently as OTTO JUNKER CM GmbH, a wholly-owned subsidiary of OTTO JUNKER GmbH. This enables both companies to focus on their respective core businesses and customers, while maintaining close contact and the direct exchange of experience with employees of the other OTTO JUNKER companies.

The mission

The castings and machine components that we produce have to be able to perform reliably even in the most challenging uses. Therefore, we are committed to meeting the highest quality standards.

As one of the biggest employers in the region, we have a responsibility to the local communities. We continuously expand our product portfolio to secure the location and strengthen it for generations to come.

This is one of the reasons for which our sustainability is of great importance to us. We comply with very high environmental standards and work intensively on measures to make our facilities CO_2-neutral.

Saving resources

Recovering energy

As an energy-intensive company, we are aware of our ecological responsibility and feel strongly obliged to save natural resources as best as possible.

The way we recover heat from our furnaces and continuously optimize our processes is exemplary in our industry. In close cooperation with OTTO JUNKER industrial plants specialists, we are working intensively on making our equipment and processes CO_2-neutral.

Recycling instead of buying new

We also meet the requirements of an efficient circular economy in our production processes. In our foundry, we operate almost exclusively with used sand that we recycle many times over. We use virgin sand only when it is absolutely unavoidable for quality reasons.

Thanks to our commitment to rigorously avoiding waste, we are continuously reducing our environmental footprint. We sort and return more than 96 percent of unavoidable production waste to the recycling loop.

Staying below emission limits

All casting activities that may have an impact on the environment are performed in closed buildings. Our top priority is to avoid dust wherever possible.

Our highly effective exhaust air processing and filtration systems achieve far better emission values than the applicable standards and limits.

Work safety

Health protection

Foundry processes generate extremely high temperatures: The combination of molten metal and extreme heat creates a high-risk working environment.

To minimize this risk, and ensure a safe and healthy workplace for our employees, we use the latest protective equipment, providing better protection than currently legally required.

Exhaust air cleaning

We operate our casting shops according to the highest standards stipulated by current work safety and environmental regulations. For example, before releasing the air from our casting shops to the atmosphere, it is passed through a microfiltration system and the heat is extracted to heat our manufacturing facilities.

Using expert knowledge

We have implemented a comprehensive safety management system to prevent hazardous situations from occurring in the first place. To make the system as effective as possible, we work closely with on-site occupational safety and medical experts.

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