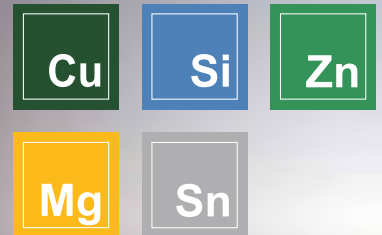


# WE UNDERSTAND METALS



**Tailor-Made Innovations  
since 1924**



*„Identifying all problems without bias,  
finding the solution through joint scientific and practical  
enterprise, and supplying the result to the customer in  
the form of quality products.“*

Guiding principle of our company's founder, Dr.-Ing. E. h. Otto Junker

Sources:

Cover photo captioned Thermoprocessing Plants: S. Dobler

Photo Trial Laboratory at RWTH Aachen: A. Wels

Photo Otto Junker Award Winner: M. Lux

## OTTO JUNKER GmbH

OTTO JUNKER combines innovation and tradition.

As a supplier of forward-looking equipment solutions and castings and holders of exceptional technological expertise, we are nevertheless guided by the traditional values on which our growth is based and to which we remain committed in our day-to-day work, as a benchmark and orientation, now and in the future.

**Put us to the test!**

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# OTTO JUNKER GmbH

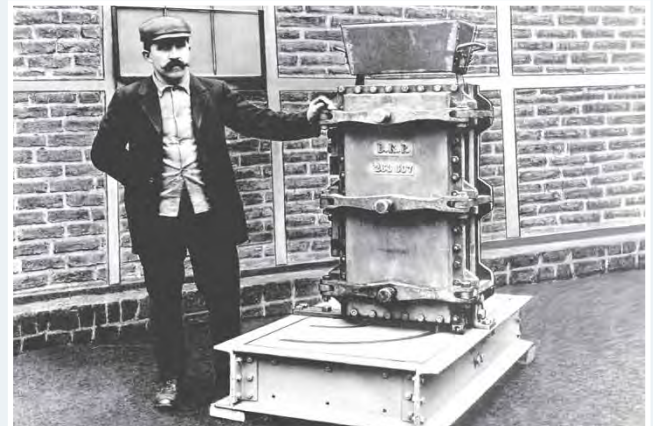
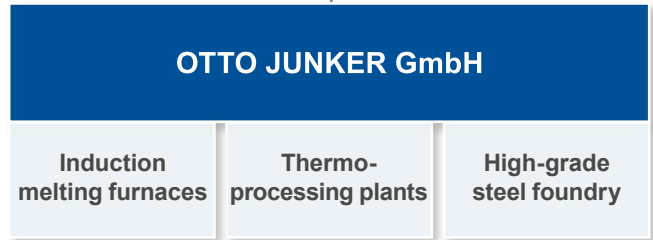
Cutting-edge technology for the metal processing industry

**OTTO JUNKER is a globally leading manufacturer of sophisticated industrial furnace equipment for the metal processing industry, and of ready-for-installation high-grade steel castings.**

More than 650 employees are dedicated to the development, manufacture and installation of our melting, pouring and heat treatment plants for metal processing applications. Our high-grade steel foundry specializes in prime-quality castings and high-precision machining of customer-specific parts.

With a clear focus on technology and innovation leadership, OTTO JUNKER continues to set standards in both its plant and equipment building and high-grade steel foundry activities, remaining committed to excellence in engineering, material properties, process reliability and energy efficiency.

Otto Junker Foundation



**Aside from the development and supply of turnkey industrial furnaces, we are your partner when it comes to casting parts and machining them to outstanding quality standards.**

Our success story goes back to the year 1924 when Otto Junker founded OTTO JUNKER GmbH and started to build water-cooled moulds for making brass rolling slabs — an invention of his father, Andreas Junker. He thus laid the cornerstone for a market leadership that has lasted to this day

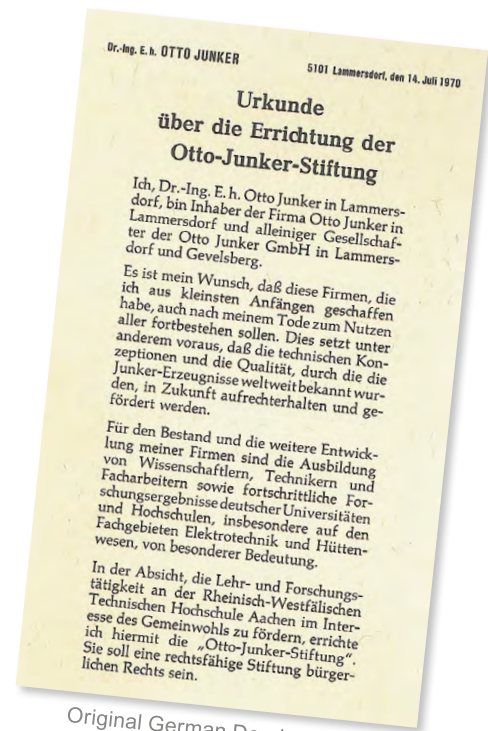
# Otto Junker Foundation

Promoters of science and technology

The foundation established by Otto Junker in 1970, which has remained the sole owner of OTTO JUNKER GmbH since his death, has the chartered mandate of advancing science and technology and of promoting young engineering talent at the Technical University of Aachen (RWTH).

To this day, well over 100 research projects have been funded by the Foundation. It allocates substantial sums in grants and prize money for the Otto Junker Awards conferred in recognition of outstanding degree theses every year.

The Otto Junker Foundation thus ranks among the largest private sponsors of the Technical University of Aachen (RWTH).



Original German Deed of Trust



Since 1982, the Otto Junker Foundation has been OTTO JUNKER GmbH's sole shareholder.

Every year, the Foundation honours RWTH students for outstanding academic achievements at the Faculty of Geo Resources and Materials Technology - Metallurgy and Materials Engineering Group - and at the Faculty of Electrical Engineering & Information Technology.

# Induction melting and thermoprocessing

## Melting, pouring and heat treatment solutions

Today's products increasingly call for the use of new metals or materials with significantly enhanced properties. The process of producing such materials requires special industrial furnaces.

Here OTTO JUNKER offers the perfect solution for virtually any purpose – from stand-alone equipment units to highly sophisticated, complete lines with extensive add-on features.

Furnaces and plants made by OTTO JUNKER are used wherever the aim is to make high-precision forgings and castings or to turn out quality semifinished products such as plate, strip, foil, profiles or tubes of various metals.

For all this, we are committed to the ongoing improvement of our equipment's energy efficiency, process reliability and reproducibility of technological parameters. As a system supplier, we advise you on the integration of entire systems or individual units into existing manufacturing workflows.

In addition, we carry out conversion and upgrade projects on older systems to bring them up to the most advanced level of production technology while enhancing efficiency at the same time.

**Systems supplied by OTTO JUNKER define the state of the art and are successfully in use in the foundry and semifinished product industries all over the world.**

### We support you ... through your system's entire lifecycle



#### Analysis & advice

We listen closely, ask critical questions, analyse and define the specific requirement profile together with yourselves, and develop alternative concepts.



#### Planning & development

Development engineers from the various disciplines, relying on the most advanced methods, will plan, calculate and simulate a solution matching your specification perfectly.



#### Testing facilities

In the case of novel objectives or plant concepts, computing and simulation results will be duly validated using test equipment and prototypes before the final design is commenced.

## Our plant & equipment range

|   |                                  | Sand casting      |           | Semifinished products (nonferrous) |               | Special metallurgical applications |
|---|----------------------------------|-------------------|-----------|------------------------------------|---------------|------------------------------------|
|   |                                  | Steel / Cast iron | NF metals | Extrusion works                    | Rolling mills |                                    |
| <b>INDUCTION MELTING FURNACES</b><br>for ...  | Melting                          | ✓                 | ✓         | ✓                                  | ✓             | ✓                                  |
|   | Holding                          | ✓                 | ✓         | ✓                                  | ✓             | ✓                                  |
|   | Pouring                          | ✓                 | ✓         | ✓                                  | ✓             | ✓                                  |
|   | Vacuum treatment                 | ✓                 | ✓         | ✓                                  | ✓             | ✓                                  |
| <b>FUEL-FIRED MELTING FURNACES</b><br>for ... | Aluminium                        |                   | ✓         | ✓                                  | ✓             |                                    |
| <b>THERMOPROCESSING PLANTS</b><br>for ...     | Homogenizing                     |                   |           | ✓                                  | ✓             |                                    |
|   | Quenching and tempering          |                   | ✓         | ✓                                  | ✓             |                                    |
|   | Intermediate and final annealing |                   |           | ✓                                  | ✓             |                                    |
|   | Heating                          |                   |           | ✓                                  | ✓             |                                    |



### Manufacture

At our manufacturing sites we merge high technology with the skills of the craftsman.

The manufacture of high-quality equipment, 'made by OTTO JUNKER' is ensured by employees who bring exceptional expertise and capabilities to their tasks.



### Installation & commissioning

Our specialists will install your plant professionally and on schedule - regardless of the nature of your new plant, upgrade, conversion, retrofit or expansion project.



### Training & after-sales service

Upon completion of the commissioning process, customer personnel is trained on site.

Moreover, our customers benefit from regular maintenance, an extensive spare parts stock and 24-hour emergency support.

# Induction melting furnaces

... for the foundry industry

In the field of induction furnaces for the cast iron, steel, aluminium as well as copper industries, our success rests on a broad furnace portfolio addressing the most diverse applications.

## Melting

- Medium-frequency coreless induction melting furnaces
- Mains-frequency coreless induction melting furnaces
- Vacuum-type coreless induction melting furnaces
- Channel-type induction melting furnaces

## Holding

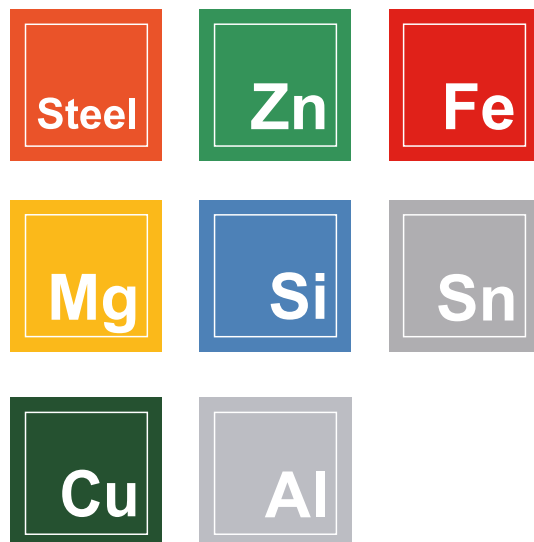
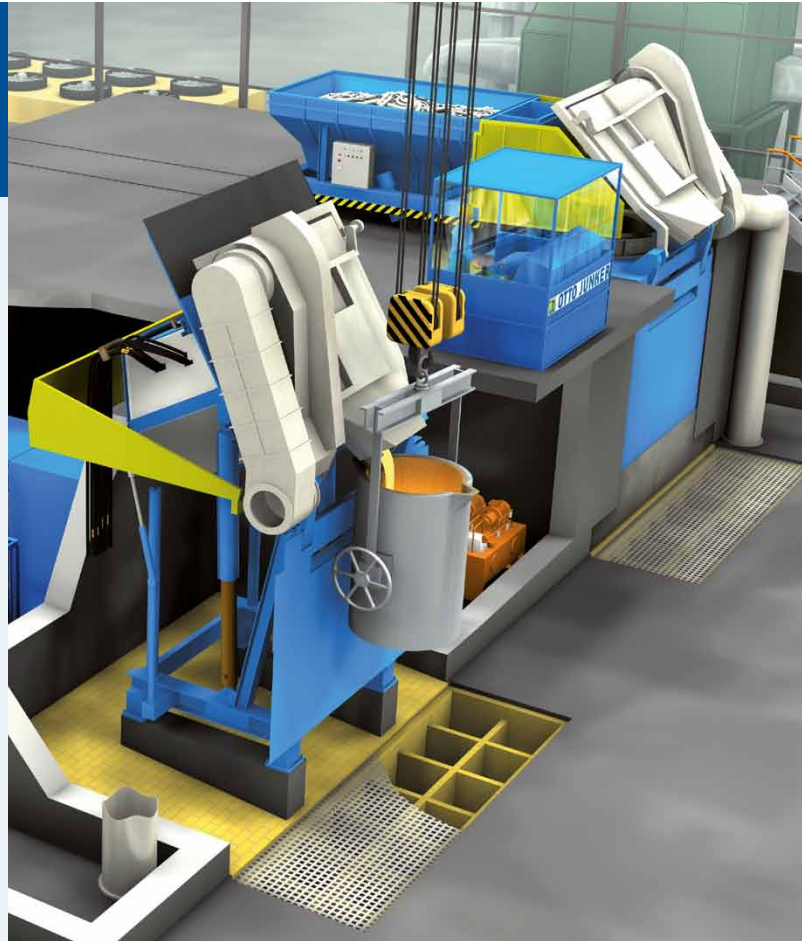
- Coreless induction furnaces
- Channel-type induction holding furnaces

## Pouring

- Pressurized pouring units with stopper control system
- Pouring furnaces with channel-type or coreless inductor
- Dosing furnaces

**We supply induction furnaces for melting, holding and pouring any of the following:**

- Cast iron and steel
- Copper-based materials
- Aluminium-based materials
- Magnesium
- Silicon
- Silver
- Zinc
- Tin





# Thermoprocessing plants

... for the semifinished products industry

In our diversified range you will find the ideal furnace system for virtually any heat treatment process for nonferrous metals.

We supply thermoprocessing plants to our customers in the aluminium and copper industries, mainly for the following types of operation:

- Rolling mills  
(slab, plate, sheet, strip and foil manufacturers)
- Extrusion works  
(billet, rod, tube and profile manufacturers)
- Casting shops (aluminium)
- Forging plants (aluminium)
- Aluminium casthouses

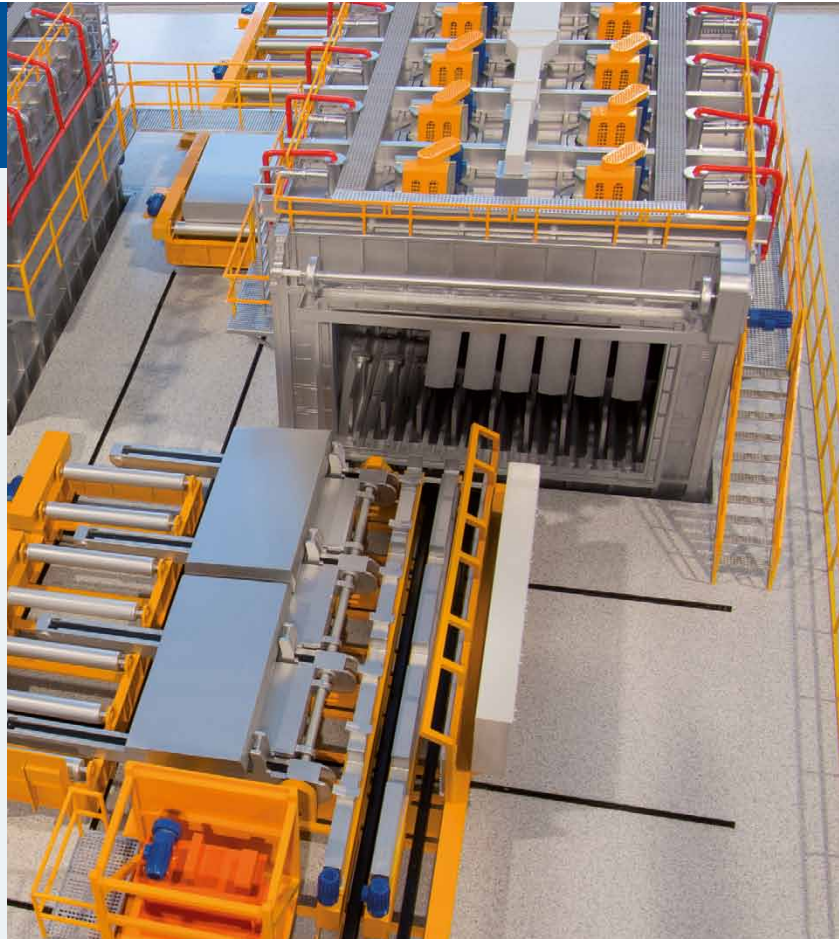
These industries rely chiefly on the following OTTO JUNKER products:

- Reheating and homogenizing furnaces  
(continuous or batch type)
- Annealing, heat-treating and ageing furnaces  
(continuous or batch type)
- Degreasing, annealing and pickling lines
- Tin-coating lines and
- Gas-fired melting and pouring equipment for the aluminium casthouse

The above range is rounded out by surface treatment and coating systems.

Depending on the task and furnace type, electrically heated or gas-fired solutions can be used.

The heat treatment can be performed under protective atmosphere to prevent oxidation in the case of sensitive alloys.



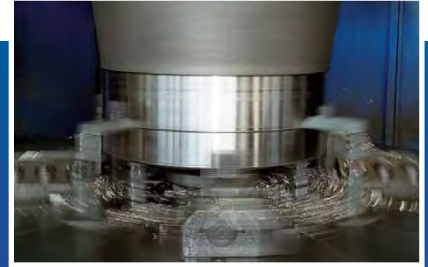
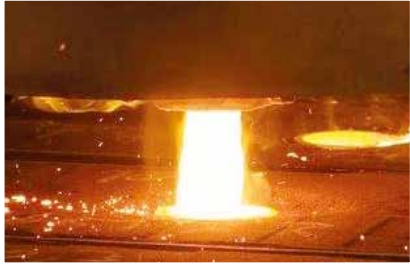
Al

Cu

Sn

# High-grade steel foundry & machining center

Prime-quality castings and high precision machining



**OTTO JUNKER has unique expertise in the manufacture of high-alloyed stainless steel castings for the most diverse applications.**

Decades of experience and accumulated craft skills, combined with the most recent scientific findings and technologies, guarantee the superior quality of our castings.

Accordingly, our high-grade steel foundry has progressively evolved into a system supplier of complete solutions for technologically sophisticated castings, and a premium partner for your high-precision machining needs.

In cooperation with key technical institutes and the Foundry Industry Association, we keep working towards the improvement of materials and process engineering.





The products of our high-grade steel foundry are used wherever ultra-exacting demands are placed on the corrosion, heat and wear resistance of castings.

e.g., in the following industries:

- Chemical industry
- Pharmaceuticals
- Foodstuffs
- Environmental
- Power generation
- Marine technology
- Aerospace
- Semiconductors
- Research and development
- Other high-technology segments

## Overview of our services

### Engineering and consulting

- Customer and part-specific advice on process-optimized casting design and choice of materials
- Advice on the type and extent of machining operations to be performed on castings
- Value analysis of components from a casting and machining technology viewpoint, conducted jointly with the customer
- 3D CAD design and 3D pouring simulation
- Definition and specification of testing and acceptance conditions
- Optimization of high-performance casting materials

### Production capabilities

- Production of high-alloy castings up to max. unit weights of 10 metric tons of iron, nickel and cobalt-based alloys
- Induction and vacuum melting technology
- Machine and manual moulding equipment
- Machining resources
  - Fully air conditioned high-precision milling centers (2 x 3 m clamping surface)
  - Vertical boring and turning mills (6 m clamping diameter)
- Assembly department

### Testing and acceptance

- Destructive and non-destructive materials testing
- Corrosion laboratory
- Materials analyses with mass and optical emission spectrometers, in addition to gas analyses
- Radiographic testing (up to approx. 70 mm penetration depth in steel)
- Crack testing
- Measuring techniques relying on the use of air-conditioned measuring equipment and laser trackers
- Acceptance and certification according to any of the following:
  - DIN ISO 9001:2008, AD2000 W0 + HP0
- Norsok approval for materials 4A, 5A, 6A
- Customer-specific acceptance procedures

# Research and Development

Always one step ahead

Advancement and optimization of process and equipment technology

**Further development of casting materials employed**

**Innovative technologies involving the use of new materials and processes**

Narrowing of quality tolerances

Enhancement of process reliability and repeatability of technological parameters

**Simulation of complete production workflows to design new (or optimize existing) production facilities.**

**Improvements in energy efficiency, occupational safety & health and environmental protection**

Refinement and optimization of computerized order handling processes

Both in plant and equipment manufacturing and in high-grade steel foundry technology, we know the needs of today's markets and keep adjusting to tomorrow's demands in a forward looking manner through our long-term development activities.

In doing so, we can draw on a vast pool of knowledge and experience and target our investment on the most advanced technologies for research, development and manufacturing, thereby continuously redefining the limits of application and performance capability.

In addressing these challenges, we rely on the potential of our experienced employees, the know-how gained over many years in industrial furnace manufacture and foundry operation, and the commitment of the experts staffing our development units.

Our close cooperation with the various departments of the Technical University of Aachen (RWTH) and the FH Aachen University of Applied Science affords us direct access to the latest scientific findings and methods.

In all, this approach ensures a successful and innovative equipment development and optimization of casting quality.

**All products made by OTTO JUNKER conform to the highest standards and reflect the state of the art in advanced production technology.**

# Qualification and training

## Progress through knowledge

Our employees are our strength.

Accordingly, OTTO JUNKER attaches great importance to the training of young people and the focused and ongoing development of our employees. We pursue these activities with a high degree of commitment and to high standards.

With around 30 apprentices in technical and commercial training, OTTO JUNKER makes a determined effort to foster the vocational education of career entrants.

As a forward-looking company, our aim is to train skilled personnel who can remain permanently employed in our company upon completion of their training.

**Continuous HR development and the transfer of knowledge and experience forms a key basis of our success.**



Concurrently with our traditionally close relationship with the Technical University of Aachen (RWTH), a mutually beneficial cooperation with the FH Aachen University of Applied Sciences / Dept. of Mechanical Engineering and Mechatronics has been in place for years.

Students prepare their degree projects with the supervision and support of OTTO JUNKER's diverse technical departments. This way they not only demonstrate their self-reliant practical competence but also contribute important suggestions and ideas towards the continuous improvement of OTTO JUNKER's manufacturing operations.

In quite a number of cases, the programme has given rise to candidates obtaining permanent employment in the company.



With the OTTO JUNKER Academy established in 2014, our company additionally offers regular practice-oriented training programs for plant and equipment operators and new customers.

# Responsibility for people and the environment

A system for success



**Bringing our economic, ecological and social responsibility into balance and safeguarding that equilibrium is an ongoing process to which we remain continuously dedicated.**

Manufacturing processes in our foundry and plant building business, with their direct effects on the environment, energy and occupational health and safety, are of particular interest in this context.

With the introduction of an integrated management system (IMS), OTTO JUNKER has opted for a forward looking method of implementing occupational health and safety standards in addition to environmental protection measures.

Based on the standards

- ISO 14001 (environmental management),
- ISO 50001 (energy management),
- OHSAS 18001 (occupational health and safety management),
- ISO 14062 (design consistent with environmental requirements), as well as CE specifications,

the IMS ensures that corporate workflows are effectively designed and continuously improved to comply with market, customer, government and societal needs.

By developing and producing advanced, energy-saving furnaces, we provide a major economic and ecological benefit to our customers.

Thus, OTTO JUNKER's melting and thermoprocessing plants deliver energy savings of up to 30 % over conventional technologies and furnaces.

**Energy management, environmental protection and occupational health and safety are key corporate governance criteria at OTTO JUNKER.**



# OTTO JUNKER worldwide

Close to the customer – close to your project

## OTTO JUNKER GmbH group companies

### GERMANY

OTTO JUNKER GmbH  
52152 Simmerath-Lammersdorf

### INDUGA

Industrieöfen und Giesserei-Anlagen GmbH & Co. KG  
52152 Simmerath-Lammersdorf

### OTTO JUNKER Solutions GmbH

52152 Simmerath-Lammersdorf

### CHINA

OTTO JUNKER Metallurgical Equipment (Shanghai) Ltd.  
200090 Shanghai

OTTO JUNKER Metallurgical Equipment (Shanghai) Co., Ltd.  
Beijing Office, 100814 Beijing

### USA

JUNKER, Inc.  
West Chicago, IL 60185

Otto Power LLC  
Almont, MI 48003

### CZECH REPUBLIC

JUNKER Industrial Equipment s.r.o.  
68001 Boskovice

### UNITED ARAB EMIRATES

OTTO JUNKER GmbH - Middle East Office  
Dubai

Subsidiaries, cooperation partners and agencies in more than 40 countries enable customers to access OTTO JUNKER products and services quickly and easily.



