

# KÜTTNER

Iron & Steel

Foundry

Non-Ferrous

Energy & Environment

Your partner for

sustainable metallurgical solutions

## Küttner: international competence in metallurgical plant engineering

As an owner-managed group of companies, Küttner specializes in the development and construction of high quality equipment. Our customers benefit additionally from the advantages of our individual solutions, our services, and our EPC expertise in the various industrial sectors; such as the iron and steel industry, foundry industry, non-ferrous, energy and environmental industries.

The diverse challenges in process engineering have allowed us to grow into a strong international group, dedicated to the further development of existing technologies and the development of new processes and technologies.

Explore our group of companies, our diverse services around innovative plant engineering for the industry and numerous examples of successful cooperation with our customers from around the world.

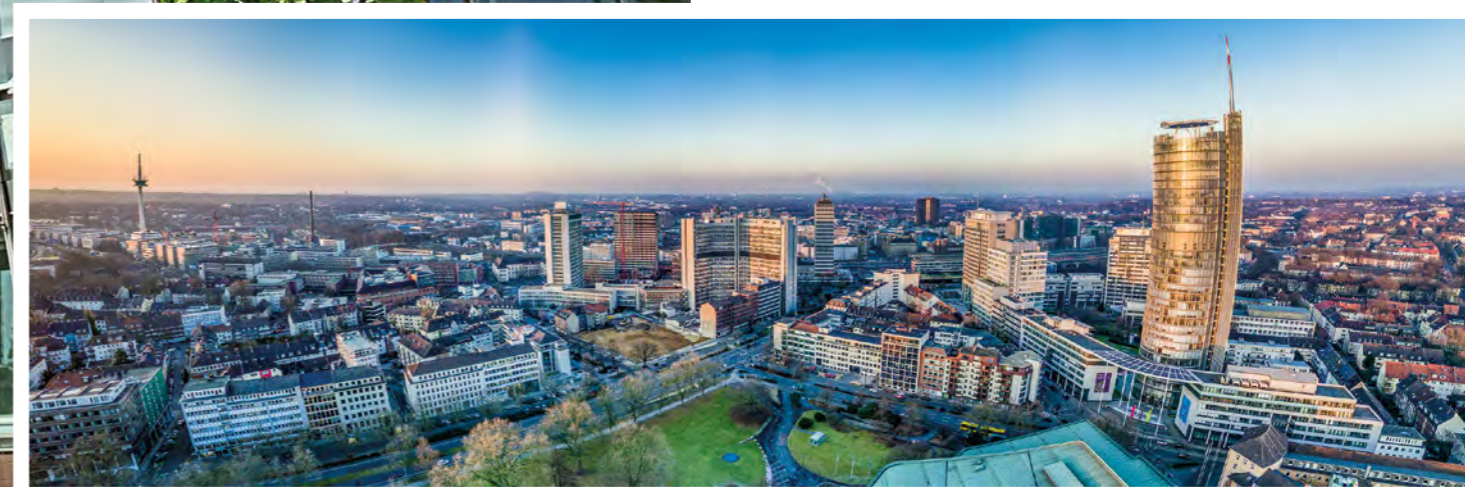


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### Essen: Küttner Group head office

The roots of our corporate group lie in the center of the Ruhr area, the largest metropolitan region in Germany.



# The Küttner Group



Our core competence: turnkey solutions for innovative plant technology with tailor made logistics and necessary ancillary facilities.



## Process oriented plant engineering from a single source

The Küttner Group specializes in the construction of individually designed, high-quality industrial equipment and components. As an EPC contractor, the group also offers planning, procurement, project management and construction management; as well as commissioning and production support from a single source. For the planning and implementation of reliable solutions, the companies of the group work together with a high degree of innovation, partnership and responsibility – every day, all over the world.

### Competence in metallurgical plant engineering

In addition to the steel, foundry and non-ferrous industries, the companies of the Küttner Group also supply other material- and energy-intensive industries. We are constantly developing new and innovative solutions with our customers.

### Driver of innovation, continuous development

We push forward technological progress and pass it on to our customers. In cooperation with the experts of well-known research institutions and universities, we use our metallurgical and procedural expertise to implement innovative ideas in high quality production plants.

### Customized engineering services

Through concept and feasibility studies, as well as engineering services, we develop complete process and plant solutions in coordination with our customers – technically and commercially transparent. The individual construction of special equipment, and the focus on optimization of industrial processes and plants, supplement our core competence in the traditional business fields.

## Planning and realization from one source

### Convincing overall solutions through C-EPC contracts

Küttner offers turnkey solutions for innovative process technology including the necessary ancillary equipment with tailor-made logistics. For a transparent procurement practice, we use C-EPC integrated planning and realization contracts with convincing advantages.



Fastest type of project execution (planning / assignment / implementation time)



Client can use his ideas flexibly (technical concept / selection of suppliers)



Responsibility for scheduling, execution and budget compliance with the contractor

### International cooperation

With a partnership based, trusting relationship with our customers, we ensure the exchange of knowledge, new ideas and wishes; which are reflected in the result of our services to the benefit of our customers. This is a well-proven approach, which we also cultivate within the worldwide Küttner Group.

### Quality with added value

High quality, innovative and reliable solutions, which we develop at the request of our clients, bring competitive advantages and generally make a sustainable contribution to the climate for people and the environment.

### Experience for new solutions

The long-standing international know-how of the Küttner Group is the starting point for future-oriented innovations in plant construction. New developments such as virtual commissioning support, the use of "digital twins" and remote maintenance are based on our decades of experience in various industries.

**1949**  
founded as  
engineering office

**15**  
locations worldwide

**in 10**  
countries

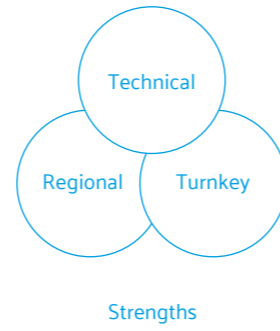
**> 500**  
employees

### Contribution to industrial future operation

Through innovative, efficient processes and reliable technical solutions the Küttner Group gives sustainable impulses in various areas of industry and markets around the world. A development that also leads by the increasing digitalization to more transparency and better forecasts. With our engineering we go in every way with our customers and make a significant contribution to a sustainable production of our customers, also in the future.

#### Strengths

- › Sound technological competence along the entire metallurgical value chain
  - › Comprehensive engineering expertise (Brown/Greenfield)
  - › Comprehensive portfolio of special equipment
  - › High digital competence
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- › Responsible management team
  - › Strong know-how for project execution
  - › Established HSEQ management
  - › Many years of recognized industry experience
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- › Very experienced in international project management
  - › Flexible through local representations in the key markets

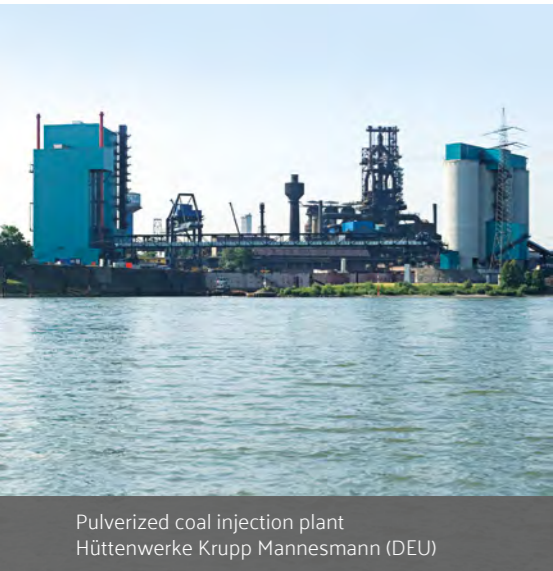


Starting as an engineering company, today the Küttner Group is a highly experienced, globally active metallurgical specialist with a high degree of innovation.





Sinter process gas cleaning  
thyssenkrupp Steel (DEU)



Pulverized coal injection plant  
Hüttenwerke Krupp Mannesmann (DEU)



Coke transfer machine Ruukki (FIN)

Screening | Breaking | Mixing | Agglomeration  
Grinding | Drying | Injection | Charging  
Exhaust gas cleaning | Heat recovery | Dedusting

Efficiency and cleanliness  
along the process route


With our team of experienced former plant managers, process engineers and plant designers, we are passionate to analyze tasks in the metallurgical industry together with your operators and maintenance staff, in order to develop sustainable solutions. This holistic approach makes us your strong partner.

**United know-how and implementation strength**

As a neighbor of the metallurgical plants of the Ruhr area, Küttner has built a variety of facilities for the processing of raw materials and coal, coke, ore, sinter, pellets, and other challenges in the metallurgical industry. For coking plants, sinter plants, mills and casting houses, we simulate efficient systems for emission detection and heat recovery. In addition, we integrate tailor made-detection systems, heat exchangers and dedusting systems in your plant environment.

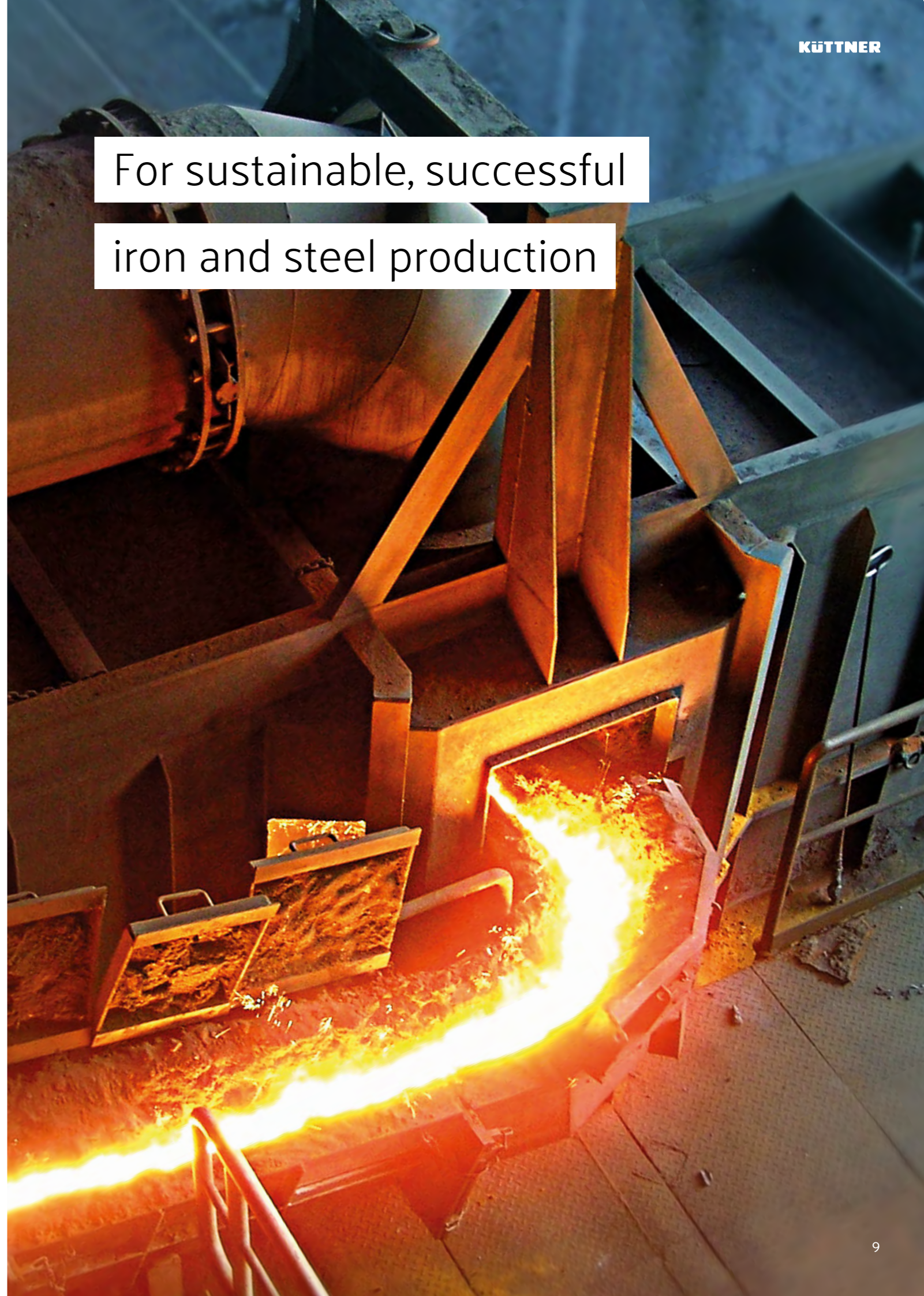
**Added value for blast furnaces**

For blast furnaces we offer convincing solutions for the raw material and energy input, as well as the control of the blast furnace. As specialists, we have been building stock houses and blast furnace charging systems, coal and oxygen injection systems for decades. We are using waste heat for efficient hot blast production, and are able to reliably assess furnace behavior using a knowledge-based simulation tool. For the recycling of residual materials of integrated steel mills, we have implemented our own OXYCUP® shaft furnace process several times.

 Overview of important references

- #1 Injection of H<sub>2</sub>-rich gases for an environmental friendly hot metal production
- 99,9 % Sinter process gas dedusting thyssenkrupp Steel
- ~50 MW Dedusting and heat recovery at a sinter cooler
- 20.000 I/O New blast furnace automation system
- 150 Pulverized coal injection plants
- 100 Blast furnace stock houses and charging

For sustainable, successful  
iron and steel production



# Intelligent and sustainably effective systems



Charging | Melting | Treatment  
Sand reclamation | Molding | Separation

Quality, availability, traceability

Rely on a holistic high-quality plant construction, that supports you to open new potentials in productivity and sustainability. We accompany you: from the detailed planning, to the realization in time, up to the successful initial commissioning with new construction projects as well as the optimization of existing plants.

**Holistic competence**

In our more than 70-year history, we have realized numerous major projects as general contractor or EPC contractor for our international clientele. These include new construction as well as modernization projects, for jobbing and automobile foundries, specialists in large casting, and centrifugal casters.


**Transparent planning, responsible building**

Depending on the chosen implementation concept, we do not only apply for individual packages. We also offer package solutions consisting of molding plant, sand preparation, and cast cooling; or as furnace integrator for automatic crane and charging systems, alloying equipment, charging vehicles, dedusting systems and recooling systems.

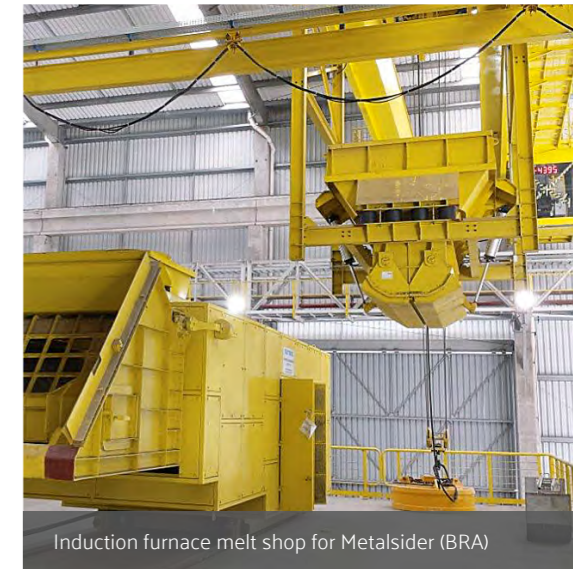
In addition, we act as a general contractor for complete foundries, where we supply key equipment of our own design and integrate third-party works such as core shooter, shot, blasting and filtration systems.

**Industrial automation**

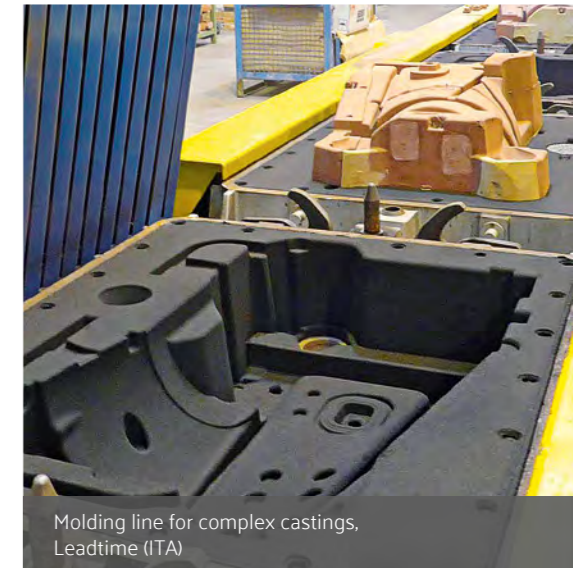
As a plant manufacturer, Küttner has managed production orders at an early stage and used information consistently for analyses and reports. With the Life-Cycle app, Küttner has created a new simulation and documentation tool that allows data to be used consistently from commissioning to maintenance. Data analysis also increasingly allows predictions about real (rest) lifetimes and process changes.

 Overview of important references

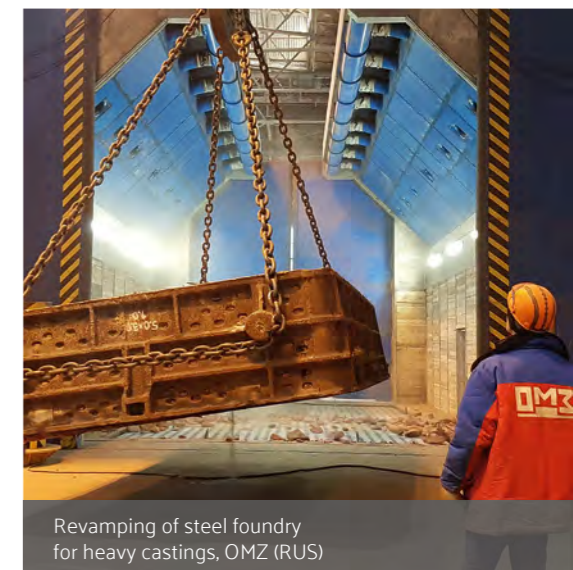
- 100 Charging systems for electric furnaces
- 500 Hot blast cupolas
- 200 Green sand preparations
- 150 Automatic molding lines
- 20 No-bake molding lines
- 150 Centrifugal casting machines
- 50 Special systems



Induction furnace melt shop for Metalsider (BRA)



Molding line for complex castings, Leadtime (ITA)



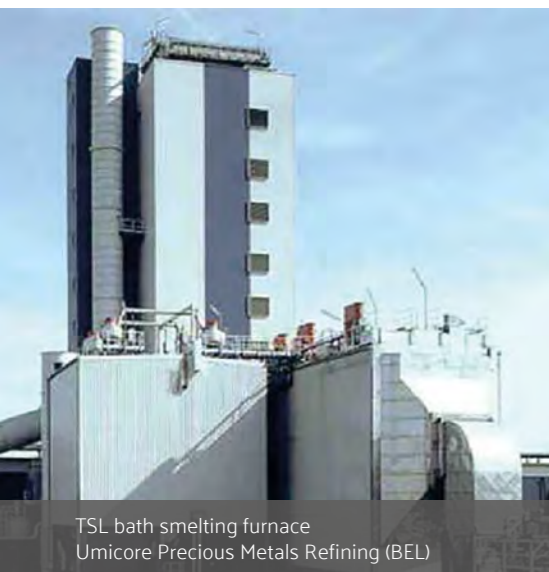
Revamping of steel foundry for heavy castings, OMZ (RUS)



New refining furnace/modernization of gas cleaning Aurubis (DEU)



Complete pyrometallurgical plant Weser-Metall (DEU)



TSL bath smelting furnace Umicore Precious Metals Refining (BEL)

Roasting | Melting | Refining  
Treatment | Pouring | Granulating  
Gas cleaning | Heat Recovery

State-of-the-art technology, simulation, holistic solutions, tailor-made

Thermoprocessing plants in non-ferrous metallurgy must meet completely individual requirements. That is why our specialists develop the system concepts closely together with our customers. Thus, the industry's special raw material knowledge meets our broad process and plant know-how. The result: tailor-made, sustainable plant solutions – in new buildings, as well as in the optimization of existing plants.


**Joint development and realization**

Together with our customers, we develop the processes and plan possible plant configurations. Our interdisciplinary teams help with this: For example, specialists from the fields of metallurgy, process engineering, mechanical engineering, electrical engineering and plant engineering bring their respective know-how into the cooperation.

For the realization we are then available to the customer as an EPC supplier: both with our own state-of-the-art technologies and also with customer technologies. Thus, the responsibility for appointments and budgets always remains in one hand right from the start. If desired, we also support our clients in finding suitable partners for financing.

**Comprehensive solution portfolio**

Based on the tailor made metallurgical process plants, the overall system configuration with material and raw material logistics, exhaust gas management system, and product logistics is developed individually with the customer and with technology and cost transparency.

 Overview of important references

- 140 kt/y** Lead-based slag recycling Weser-Metall

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- > 99,9 %** KTRC refining furnace for precious metals

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- > 95 %** Equipment of a secondary copper plant with bath smelting and refining furnaces

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- 20** APC-systems for the highest demands

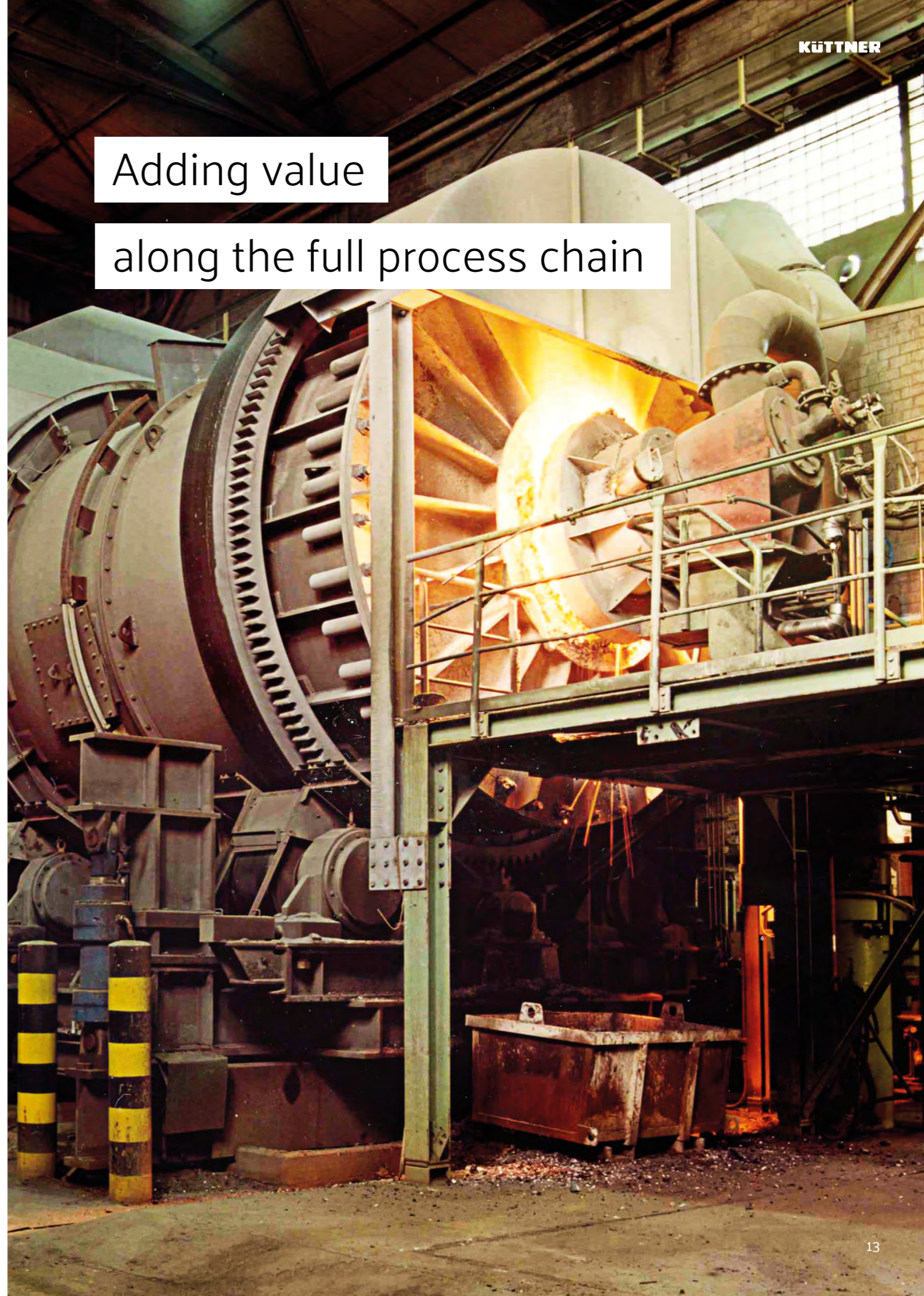
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- 50** Concept engineering for metallurgical process chains

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- 100** Material Handling Systems

Adding value  
along the full process chain



# More energy efficiency and environmental protection

Nano coating | Water filter | Backwashing  
Wast/Sludge incineration | Gas cleaning  
Heat exchange, displacement, export

## Sustainable use of resources

In energy and environmental technology, Küttner manages the thermal utilization of residues and sludges, the use of industrial process heat and wastewater treatment. Our teams master mass and energy balances not only for the metallurgical processes of steel industries, but also for other energy intensive industries such as the cement, glass and chemical industries; as well as power plants, compressor stations, municipal utilities, and mines.

### Intensive research, tailor-made engineering

From the identification of potentials for the utilization of sewage sludge, to the use of process heat and the purification of wastewater, we develop tailor-made solutions and the essential components, or even complete systems.

### Special process for your industry

In the field of energy and environmental technology, we are active through our own process development, like in the fluidized bed technology for sewage sludge incineration; and through the adoption of developed technologies such as energy technology, or the purification of industrial wastewater.

Therefore, we can look at a large amount of completed facilities and references, as well as current innovative flagship projects in the relevant areas of application.

## Overview of important references

Up to 20 MW therm.	ECOFLOW systems
Up to 50 MW therm.	ECOSTAT Heatpipe systems
Up to 50 MW therm.	Recooling system
Up to 20 MW el.	Steam turbines
Up to 25 MW therm.	Fluidized bed for sewage sludge incineration
	Open pit mines waste water filtration



PFA coated heat exchanger for use in corrosive media, CPC (TWN)



Thermal utilization of municipal sludge, City of Mainz (DEU)



Filtration of mines waste water, Dwarsrivier Chrome Mine (ZAF)



# Digitalization in industrial processes



With the „digital twin“ the automation can be adjusted before on-site commissioning starts. It uncovers and fixes weak points and anticipates a large part of the on-site commissioning virtually.



## Controls and automation from one single source by the process expert

We merge process know-how with a complete package of electrics and automation tailored to your needs.

### With virtual solutions to full control

New production processes and flexible process technology place ever increasing demands on electrical and automation systems. Based on our broad process know-how, we merge them into an integrated overall package that meets your requirements – to precisely control even the most complex production processes and to optimize them in a comprehensive manner.

### Digital twin as a success factor for your smooth commissioning

Your entire process chain is digitally modeled. With a “digital twin” we test the interaction of the complete electrics and automation with the system components. We put the system into virtual operation and thus guarantee steep start-up curves.

### Küttner Digital Operations: Industry 4.0

As a partner to the process industry, we repeatedly find that complex processes often cannot be captured in rules or physical models. Statistical algorithms and machine learning ensure that future events can be predicted with sufficient accuracy based on your historical and current process data. Together with you, we will raise your data assets. We combine metallurgical and process know-how with modern methods of data mining.



# Services around your processes



## Our service for you

Küttner supports companies and operation personnel with spare parts, quick assistance through remote maintenance and on-site operations in the plant.

### Service from the process expert

For over 70 years, Küttner has been accompanying its customers throughout the entire life cycle of their plants. We are available with spare parts, modernizations and upgrades, tailor-made maintenance, and special training. Our remote service plays a special role here. We are able to log on the live systems and are available to you directly, quickly and continuously. We are also dedicated to being available on-site for you. With that in mind, we support you with the fastest possible problem solution.

### Fast and direct spare parts service

Via [service@kueettner.com](mailto:service@kueettner.com) - our service hotline - we provide you quickly and straightforward with the required spare parts. You are personally assisted by our employees to ensure smooth order processing and high-quality, on-time delivery.

Our employees are committed to ensuring that you have the right spare parts readily available. In the process, we work out the package that is right for you.

Whether these are standard parts or plant-specific production parts: our service covers all competences.

### Küttner remote service and maintenance

**Direct connection and best support for our customers - fast, easy, secure.**

We bring your industrial plant to our office so that our experts can provide you with the best possible support: via secure access, which is ideally adapted to your security requirements, we carry out remote maintenance, upload updates, or assist with extensions and changes. This increases your plant availability and increases your productivity.

Today, modern industrial plants have a high degree of automation with a corresponding software component, which leads to increasingly complex systems. At the same time, the expectations of plant availability and productivity increase. Unplanned outages cause high costs and therefore have to be minimized. This requires regular maintenance and service from professionals.

Küttner knows your plant engineering and holds specialists in different disciplines available.



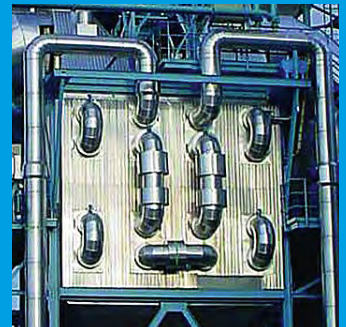
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## Iron & Steel

Efficiency and cleanliness along the process route

The Küttner Group offers a wide variety of tailor-made solutions: from small conversion projects – to the provision of complete units – to the construction of entire process chains – supplemented by special solutions and system integration.

## Foundry

Quality, availability, traceability

Benefit from holistic solutions that can be perfectly integrated into your existing foundry and open up new efficiency potentials for your processes – starting with a concept that is geared to your individual requirements.

## Non-Ferrous

Process simulations, holistic solutions, tailor-made systems

We accompany you as a partner with full transparency of the technical solution and cost, from the first process idea to the construction of your new complete system. We specialize in recycling raw materials and brownfield integration into existing plant structures.

## Energy & Environment

Sustainable use of resources

For years, we have been cleaning process gases and using the waste heat from energy intensive processes. Increasingly, we are also dealing with the treatment of wastewater.