KÜTTNER

INDUSTRIAL PLANT MANUFACTURING

IRON & STEEL INDUSTRY

FOUNDRY TECHNOLOGY

NF-METALS RECYCLING

GREEN TECHNOLOGY

ENERGY TECHNOLOGY

PROCESS AUTOMATION

INDUSTRIAL PLANT MANUFACTURING

FUTURE-ORIENTED PLANT CONSTRUCTION FROM A GREAT TRADITION

PLANT TECHNOLOGY FOR THE

- IRON & STEEL MAKING INDUSTRY
- FOUNDRY INDUSTRY
- NON-FERROUS (NF) INDUSTRY
- WASTE RECYCLING INDUSTRY
- GLASS / CEMENT INDUSTRY
- FURTHER ENERGY-INTENSIVE INDUSTRIES

Utilisation of Expertise

We design, construct and assemble the plants for all kinds of industry dealing with large-scale and energy-intensive production. This also covers the ferrous and the foundry industries as well as the green and the recycling industries.

Six decades of experience in plant construction together with hundreds of installations throughout the world give security to our customers for their extensive investments.

The know-how involved with all the numerous projects prove that our engineers are internationally acknowledged experts. They are well-known for putting great emphasis on the realisation of our customer´s individual request.

Our medium-sized business is operated by their owners actively shaping the technological and organisational progress of the Group. Customers benefit twice: from the flexibility of an SME and from short decision ways.

New Developments

Based on groundbreaking processes and specific patents have repeatedly shown that our Group successfully reduces innovation to practice.

Our longtime customers appreciate our willingness to frankly accept suggestions, to tackle tasks committedly, to adapt proven technologies to new applications and to integrate innovation – never being afraid of questioning the status quo.

Close cooperation with famous enterprises such as, ThyssenKrupp Steel Europe AG and e.g. the German Steel Industries Operational Research Instuitute ensures that new processes are not planned and decided entirely theoretically, but from the very beginning consider operational requirements and legislation.

Conservation of Resources

Production efficiency and resources conservation range top priority with all our projects. We reduce environmental load. Stewardship of valuable resources motivates us to close energy and material cycles – on the one hand, by efficient processes, on the other hand by exploiting latent potentials. As examples, see our concepts for the recycling of residuals and for waste heat utilisation.

This is how we contribute to boosting efficacy of large-scale plants, to making production more sustainable, and to reducing carbon footprint.

IRON & STEEL INDUSTRY
FOUNDRY TECHNOLOGY
NF-METALS RECYCLING
GREEN TECHNOLOGY
ENERGY TECHNOLOGY
PROCESS AUTOMATION

KÜTTNER DELIVERING RESULTS

PLANT CONSTRUCTION ON THE HEELS OF FUNCTION

MATERIAL PREPARATION

THERMAL TREATMENT

WASTE-GAS CLEANING

WASTE-HEAT UTILISATION

AUTOMATION

The Team

Our expert teams cover well-versed technologists and project managers of diverse specialisation, thus combining expertise and experience from manifold successful implementations.

Setting high value on a balanced blend of young talents and old hands, our engineers bring together experience and innovative ideas.

The Projects

We always listen to you carefully - no matter whether you talk about optimisation, modernisation or a new plant. We use to systematically respond to our customers, seize their suggestions and find the tailored solution. Talking face to face, discussing technical problems we become acquainted with each other, with our ways of thinking, of working. Thus, we create a common basis.

Introductory to huge investments and developing new technologies, we often use to start with a feasibility study. Thereafter, the first draft of the plant is generated within the context of preliminary design. This happens to take place in as close as possible coordination with the operating departments of our customers.

The Service

Utmost safety is of cardinal importance, especially during start-up - no matter whether an optimised plant or new construction is concerned. This calls for the presence of qualified experts. Küttner is on the ground – worldwide. Our teams include experienced supervisors, electricians as well as automation and process engineers supporting our customers along the entire chain from assembly, function tests, to start-up and final acceptance. We even don´t leave you alone with plant operation. Your staff gets both theoretical briefing and on-site training to become familiar with the new technology!

The Basis: Quality

We never compromise as far as our compliance with quality specifications is concerned. Whatever we do, we strictly stick to both, important management systems for quality assurance as well as safety and health in the workplace directions.

We are free in choosing our subsuppliers, hence, we prefer to select them from a pool of long-lasting proven partners. Strategic partnerships with hand-picked contractors enable us to keep serving our customers on high levels in the long run.

IRON & STEEL INDUSTRY

FOUNDRY TECHNOLOGY

NF-METALS RECYCLING

GREEN TECHNOLOGY

ENERGY TECHNOLOGY

PROCESS AUTOMATION

IRON & STEEL MAKING INDUSTRY

FROM COAL AND ORE TO HOT METAL

CONVEYING | GRINDING

STAMPING | CHARGING | PUSHING | QUENCHING

STABILISATION | CLASSIFICATION

SINTERING | COOLING

EMISSIONS' CAPTURE

WASTE GAS CLEANING

Innovative Processes

Ground-breaking technology and plants by Küttner are in operation throughout the entire production chain of iron and steel making – from coking plants and ore dressing to rolling, many of them having been developed in cooperation with leading steelmaking companies.

Coke Making Technology

Coal preparation of distinguished German coking plants is by Küttner. This covers logistics to the coal tower and coke classification plants. Thanks to new involvements, it is now also possible to offer stamping equipment for the preparation of lower-grade coal, machinery for the operation of coke ovens, for charging, pushing out, coke transfer and quenching.

Raw coke after quenching is taken over to be graded to fractions optimum for blast furnaces.

Sintering Plants

Küttner provides a well-proven system for process gas purification for large sintering plants separating particles, SOx, HCL, Hf, dioxin and heavy metals. The convincing solution distinguished by optimum operational conditions and minimum maintenance costs! Accurate external moisturing of the additives markedly reduces the water consumption of the plant. Küttner also offers small turnkey sintering units including conveying and preparation technology, carousel-type sintering plants or sintering belts, process gas cleaning as well as heat recovery from the cooler and process dedusting. Capacity may amount to up to 500,000 t/a.

Materials Handling and Preparation

Ever since, materials handling and preparation covering all raw materials of the iron and steel works have been amongst our core competence. Küttner looks back on profound expertise and experience as far as the different material and conveying properties of raw and charge materials, such as coal, coke, sinter, ore, scrap etc. are concerned.

IRON & STEEL MAKING INDUSTRY

FROM HOT METAL TO STEEL

GRINDING | DRYING

FLUIDISING | INJECTING

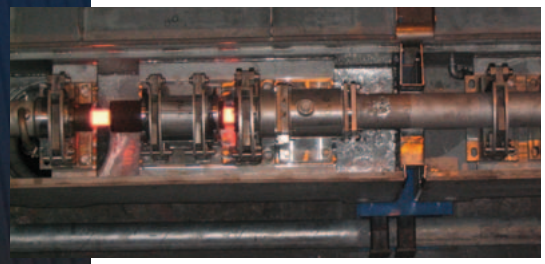
AGGLOMERATION | SMELTING

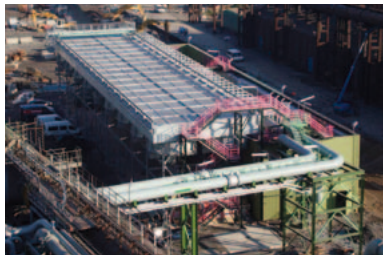
GAS PURIFICATION | WASTE HEAT UTILISATION

STIRRING | INJECTION

ALLOYING | HOMOGENISING

ROLLING | CUTTING | COILING





ENERGY MANAGEMENT ENVIRONMENTAL ENGINEERING

CAST HOUSE

DUST EXTRACTION AND FILTERING

COWPER

FUELS PRE-HEATING

BLAST FURNACE

WATER RECOOLING

BOF

SECONDARY DEDUSTING

STORAGE AND DISSIPATION OF HEAT

PCI® Pulverised Coal Injection

Equipment covering the whole area from pit coal mixture to injection lance make Küttner technology and market leader: the systems feature low consumption of coke, media and energy.

For example: Oxicoal® process makes it possible to increase blast furnace injection rate as well as to reduce coke rate. This development by Küttner allows for the simultaneous coaxial injection of pulverised coal and oxygen into the blast furnace raceway. This makes BF operation more profitable.

OXYCUP® Shaft Furnace

Using Oxycup® shaft furnace technology developed by Küttner, our customers melt down ferriferous residuals, so far un-used, to hot metal of blast furnace quality. The top gas produced is recycled to electricity, whereas slag is re-used as construction material – convincing examples for zero-waste production.

Refining of Hot Metal and Steel

In the fields of decarburisation and dephosphorisation of BOF melts, Küttner´s TBM bottom stirring method employing inert gas is at the forefront. Optimum control of the blowing process is due to the dynamic Level-2 blowing model jointly developed by Küttner and Thyssen Krupp Steel Europe AG.

Küttner´s automatic installations for precise dosing of alloying agents for electric furnaces and ladle metallurgy allow for the optimisation of steel quality simultaneously lowering production cost.

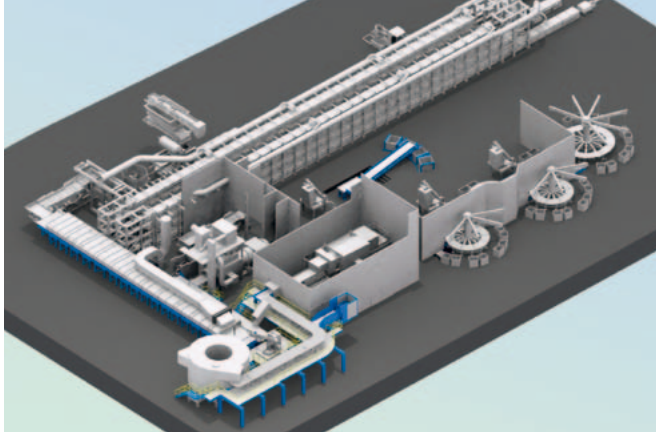
Rolling Mill Technology

MWE Magdeburger Walzwerk Engineering GmbH, subsidiary of Küttner, develops, supplies and modernises small to medium rolling mills for long products. Rolling mills for light sections and wire rod, from descaling lines over rolling stands up to coilers as well as dressing and straightening lines represent their special area of expertise. Service spans the entire range from the project phase and construction via surveillance to delivery and start-up of the plants.

FOUNDRY TECHNOLOGY

GOOD REASONS FOR GOOD CASTINGS...

- CHARGING
- MELTING
- SHAKING-OUT
- SAND PREPARATION AND RECLAMATION
- COOLING OF CASTINGS
- DEDUSTING



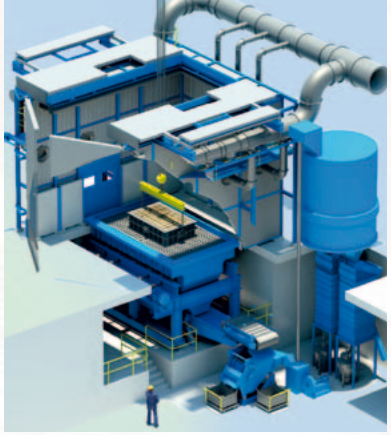
Worldwide, Küttner designs, optimises and modernises turnkey plants from charge make-up over melting, castings handling, up to sand reclamation. Holistic design in good coordination with the components pave the way for smooth and efficient material and work flow throughout the foundry.

Backed by decades of experience, our engineers know the important details of the layouts, thus they are ready to choose the best solution.

Cupola Technology

With more than 450 implemented cupolas, Küttner set standards for energetically optimum melting. High metallurgical flexibility of modern hot-blast furnaces makes it possible to do without pig iron, but allows the use of cheap ferriferous material. Küttner developed versatile solutions for the utilisation of waste heat, e.g., for core sand drying, heating networks with neighbouring companies, and power generation.

Appropriate design of a cupola with matching hearth and siphon as well as the respective equipment for oxygen injection results in optimum exploitation of all charge material. Subsequent iron refining even gains advanced cast-iron grades.



Serial Production of Green Sand Castings

Moulding sand of top quality is obtained by employing Küttner equipment: robust coolers, mixers and troublefree conveyors.

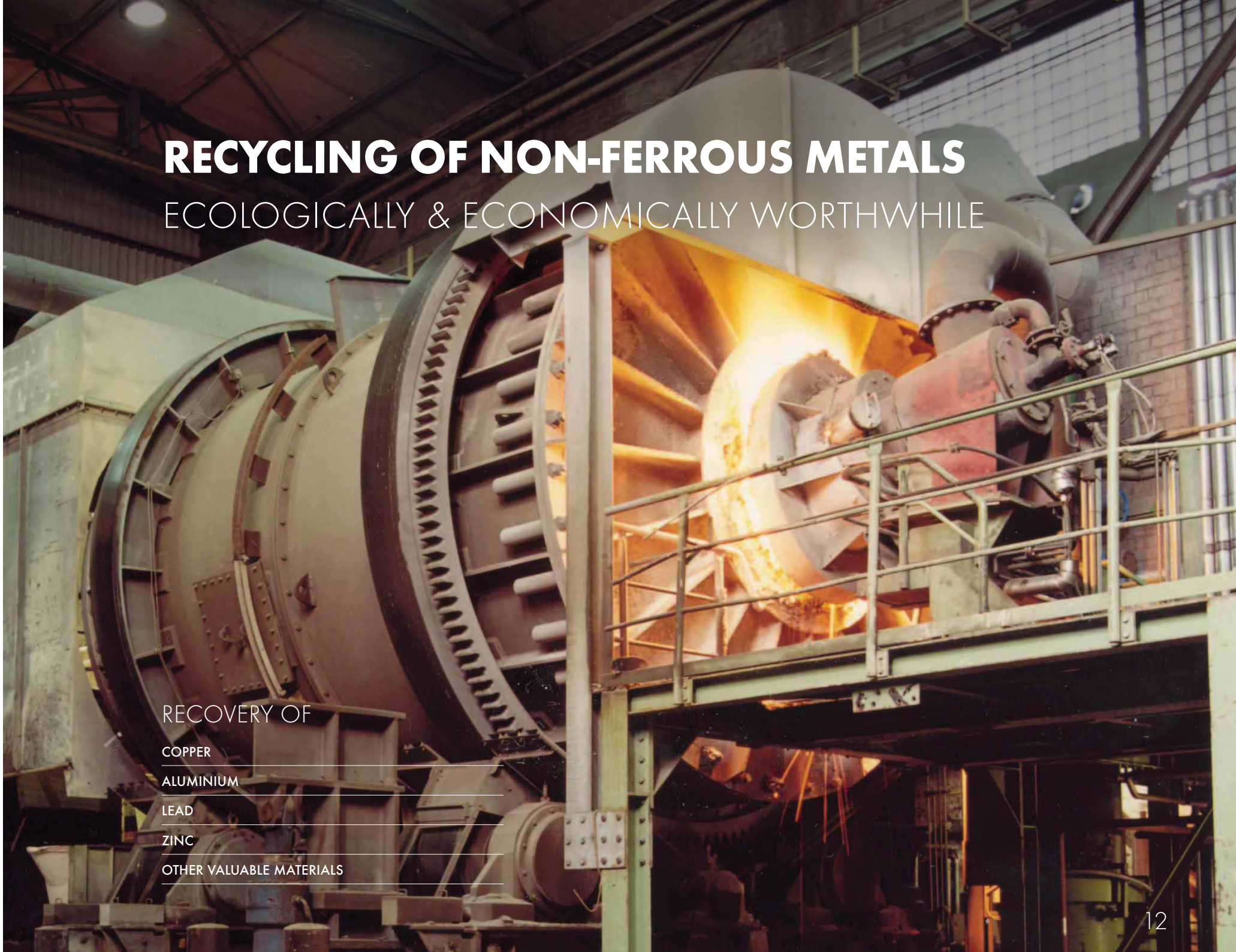
Avoiding any damage of the castings, the design considers careful conveyance, minimum drop heights, consistent occupancy of the coolers, efficient utilisation, to get the products ready for dispatch at low rejects.

Investment Castings by No-Bake Process

Here, Küttner offers the full sand treatment system at one stop. The continuous mixer in modular design satisfies by its sturdy construction, being user-friendly and economical. This is reflected by the quality of the sand mixture and simultaneously minimised consumption of binder and hardener.

Proven components by Küttner are available for shaking-out and reclamation. Shake-out grids are designed for loads up to 100 t.

Reclamation is based on Airlift, our conveying system combining fluid-bed and continuous blowing injection technology, putting through up to 25 t of sand per hour and line.

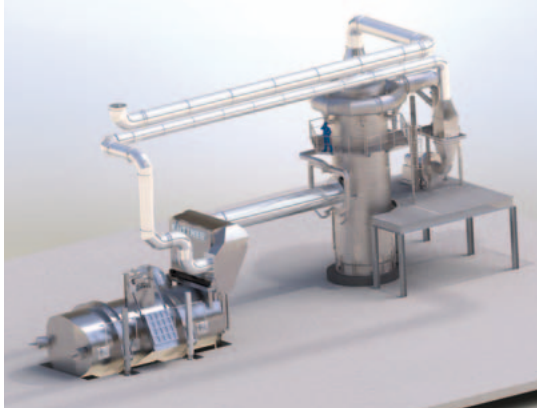


RECYCLING OF NON-FERROUS METALS

ECOLOGICALLY & ECONOMICALLY WORTHWHILE

RECOVERY OF

- COPPER
- ALUMINIUM
- LEAD
- ZINC
- OTHER VALUABLE MATERIALS



Closing valuable Material Cycles

Recovery of copper, aluminium, lead, zinc and noble metals is gaining more and more importance - ecologically and economically. Küttner and its Non-Ferrous Team, accordingly, work out holistic solutions for smelting aggregates in the NF-industry.

These processes help to economically close material cycles in regenerating supposed wastes and so-called end-of-life products, and recirculate them.

Holistic Solutions

Küttner's service includes studies, design, project work, and implementation of plants for the recovery of copper, aluminium, lead, zinc, and further valuable materials.

Holistic solutions for the recycling of NF-metals comprise all process steps from conveyance over smelting up to waste gas purification and heat recovery.

GREEN TECHNOLOGY

WASTES – VALUABLE RAW MATERIAL

SAVING LANDFILL COSTS

RECOVERING VALUABLE MATERIALS

PRODUCING GAS AND ELECTRICITY

REDUCING CO_2

Waste Treatment Plants

Domestic and industrial wastes, biowaste as well as sewage sludge represent a significant resource for the recovery of many valuable materials. The latent energy can further be converted to gas, electricity and heat.

Waste treatment plants by Küttner solve problems occurring with the management and logistics of wastes as well as recycling, simultaneously making garbage treatment a profitable area of activity - economically and ecologically.

Mechanical Treatment

Prior to material and energetical recovery, mechanical treatment is required. Our linecard comprises all process steps of reconditioning wastes: screening, sifting, separating, breaking and mixing.

Biological Treatment

Fermentation reactors by Küttner allow for the generation of an all-round biogas from the microorganisms contained in the organic constituents. This is further converted to electricity and heat in, e.g., a combined heat and power unit (CHP), or it is directly fed into natural gas supply.

In case of all-natural biogenous residuals and after composting, it is possible to use the starting material as fertiliser.

Purified Off-gases for cleaner Air

Off-gases from industrial processes, as commonly generated in primary and chemical industry, may bear substances forbidden to escape into environment.

Küttner has attended to these problems in launching a wide series of flue-gas purification equipment. Employing this, customers rest assured to act green meeting legal requirements.

ENERGY MANAGEMENT/ UTILISATION

PRACTISED ECOLOGY

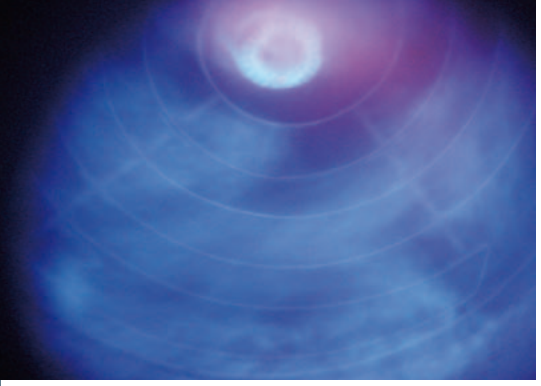
HEAT EXCHANGE

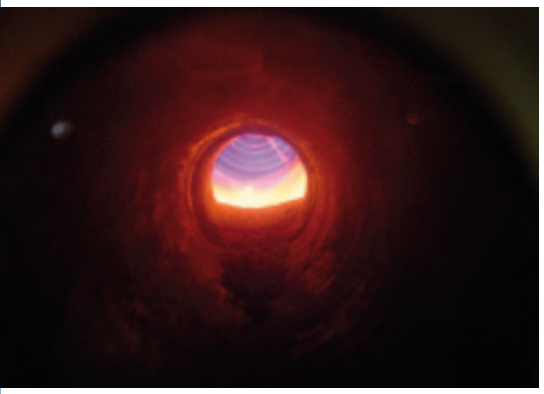
HEAT DISPLACEMENT

HEATING | DRYING | COOLING

POWER GENERATION

SUBSTITUTION OF ENERGY SOURCES





Utilisation of Residual Heat

Waste heat from industrial processes represents the biggest energy resource of the world. Utilisation of residual heat is green practice!

Consistent utilisation of, so far, lost energy gains valuable primary energy, thus drastically prolongating the availability of natural energy resources. Utilisation of residual heat is green practice on both counts, energy savings and zero emissions.

Küttner breaks new grounds in the utilisation of waste heat, especially in those industries converting huge amounts of energy and material: energy not required in the place where being generated is either used for heat generation in other works segments or converted to electricity.

From waste heat utilisation across heat displacement and recooling up to the generation of electricity, Küttner offers different concepts for implementation. The result: consumption of primary energy is drastically reduced in fresh-air pre-heating, post-combustion of exhaust air, drying of cores and painted castings, heating of foreign processes and buildings. This holds for many industrial plants.

Core components of many systems prove Küttner developments: the heat exchanger Ecostat, e.g., employing heat pipes, as well as Ecoflow for the displacement and distribution of heat.

For sustainable Interaction with Environment

Fossile fuels becoming short, tomorrow´s energy is hidden in biowaste, also called biomass. Continuing to efficiently make use of this waste heat represents one of the greatest environmental challenges Küttner tackles – not only for reducing global carbon footprint.

Küttner numbers amongst the trend setters in this area: For a couple of years, we, together with the Department of Energy and Environmental Process Engineering of Siegen University, have been developing new processes for the substitution of fossil fuels. The so-called IPV process is one result for integrated pyrolysis and gasification of biomass. It produces synthetic gas from biological residuals and wastes.

PROCESS AUTOMATION

RELIABLE PROCESS CONTROL

PLANNING

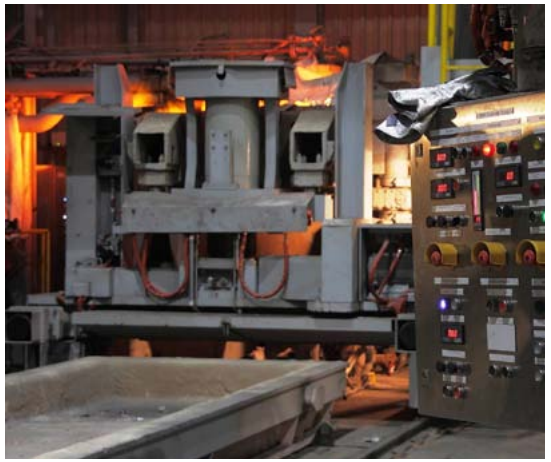
AUTOMATION

INSTRUMENTATION

CONTROL

ADJUSTMENT

VISUALISATION



Engineered Solutions for Automation

Processes running in Küttner plants are complex - no matter whether iron & steelmaking, foundry or waste industry are concerned. Efficiency and reliability range top priority in designing control systems. The benchmark: maximum qualification for day-to-day operation under harshest industrial conditions.

From field level to production planning, from sensor systems up to the robust control of charge materials preparation, Küttner knows the standards, conditions and options for automation.

Suprasegmentally, numerical models optimise processes aiming at increasing quality and yield; sophisticated software improves production planning. Küttner uses to test processes by simulations and trains staff members on new plants.

Measuring & Control

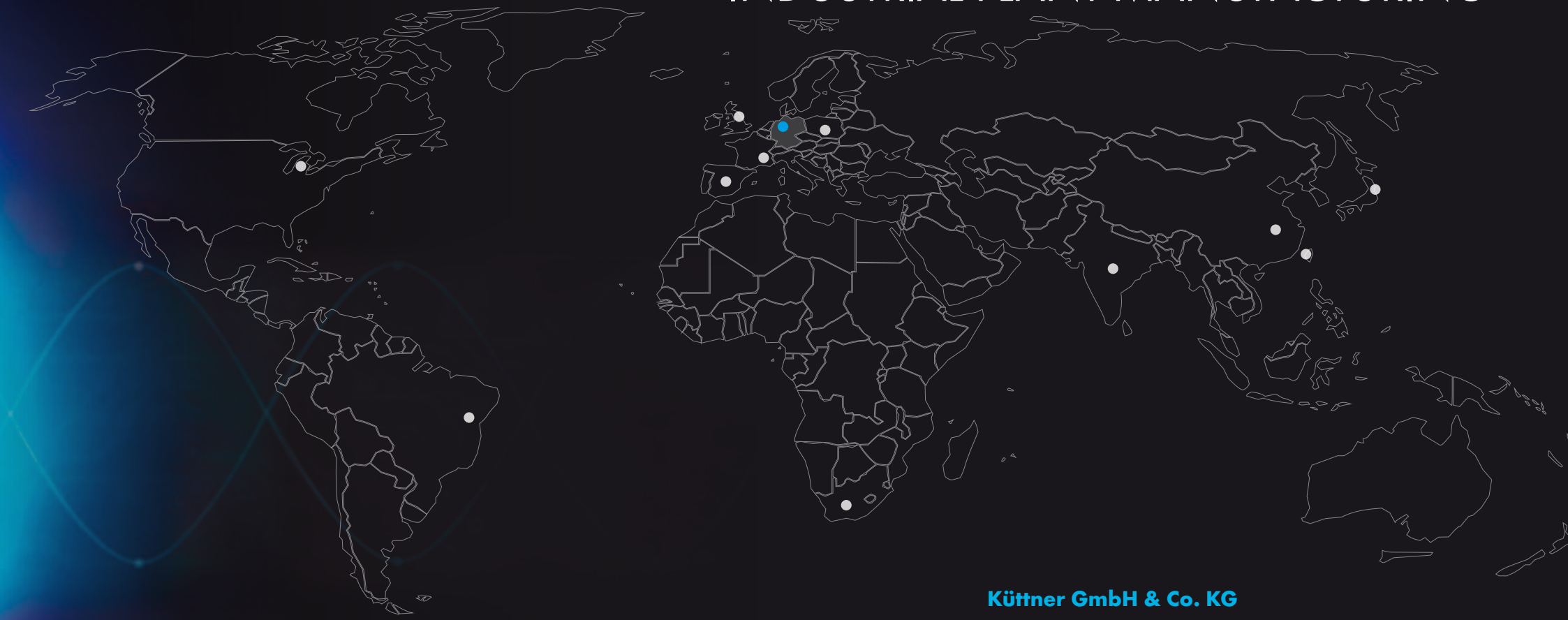
Measuring and control technology by Küttner makes it possible to optimise processes in many places of a works, e.g. dosing of alloying agents into electric furnaces and the automatic operation of transport systems as well as rolling stands.

Data Evaluation

Evaluating input, process and raw data, our in-house development, the „industrial Information Management" (iIM) bridges production shop and office world.

KÜTTNER

INDUSTRIAL PLANT MANUFACTURING



Küttner GmbH & Co. KG

Alfredstr. 28, 45130 Essen

Phone: +49 (0)201 7293 - 0

Fax: +49 (0)201 77 66 88

info@kuettner.com

www.kuettner.com