



## ROBOTIC SYSTEMS

Efficient Production Automation even in the  
Rough Environments!





Handling-Robots for cast copper anodes: Temperature at reception 800°C

Robust - precise - intelligent.

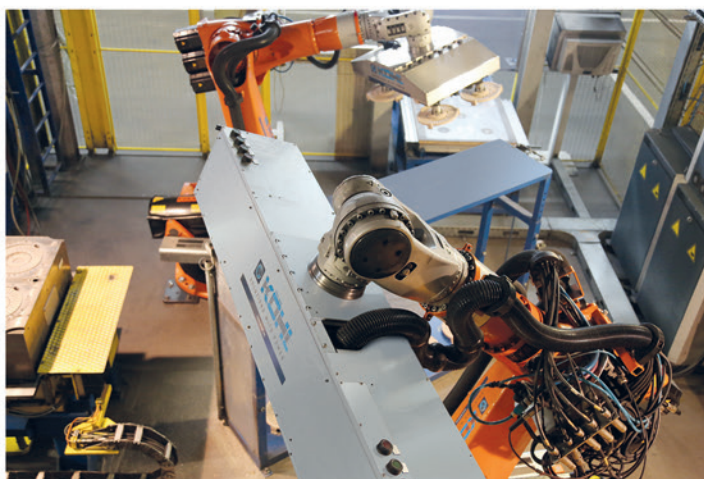
KÖHL system solutions protect your investment in processing equipment!

Rough production conditions exist in the steel and heavy metal industry as well as in foundries. High exposure to dust and dirt and extreme heat requires stability and robustness from the process automation while providing precision and sensitivity at the same time.

With a high level of industrial knowledge, KÖHL bundles these requirements to perfectly-matched systems. In observation of current rules and regulations in terms of protection for personnel,

machines and emission, KÖHL develops and realizes handling and automation systems that ensure higher manufacturing quality. From modernization to completely new systems, KÖHL is the production optimizer for the heavy-duty industry.

Highly developed industrial robots, gripper systems, peripheral equipment and innovative controls round out our portfolio of capabilities.



Grit-handling with 5-servo-axes-gripper

#### KÖHL AUTOMATION PORTFOLIO

- ▶ Development and realization of custom-designed handling and automation systems
- ▶ Highly developed industrial robots
- ▶ Intelligent gripper systems
- ▶ Custom-designed peripheral equipment
- ▶ Ergonomic Software-tools
- ▶ Innovative controls

#### Your Benefits:

Reduced production costs, increase in production rates, and optimized product quality.





Setting robot at a refractory press



Crankshaft-handling at the cooling line and storage towers



Loading and unloading of a blasting system



Spray robot to the forge for cooling and spraying of separating agent

Specific tasks that are recognized as being particularly difficult to automate, are challenges that KÖHL is looking for. We respond with well thought out complete systems that make your automation processes efficient and calculable - each and every day, beginning with the investment.

## The most difficult tasks effectively resolved.

Even the most extreme cases that originate from collaborative development projects are mastered, such as robot workcells to overhaul a ladle tank, where flushers and sliding plates are changed automatically.

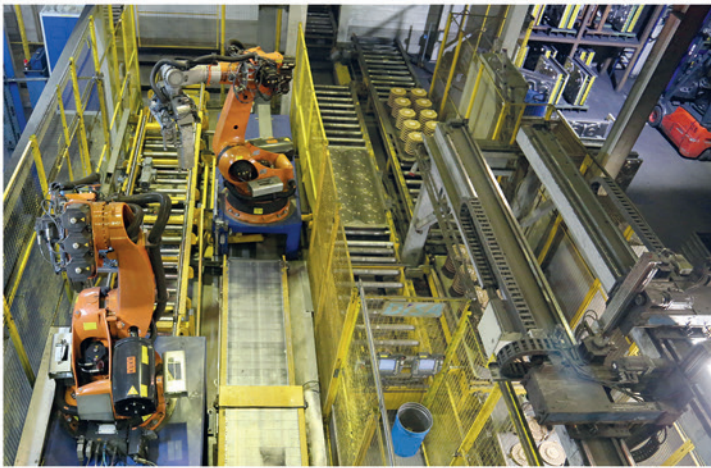
KÖHL's concepts of handling measurement probes that record the quality of the molten steel are also implemented in steel manufacturing. Copper anodes weighing 600kg and having a temperature of 800°C are taken by the KÖHL systems directly from the casting mold and stacked.

## Sensitive Handling - from blank to forging to quality control.

The KÖHL system automation covers the entire production process in the forming steel industry. As an industry expert with well-founded know-how, we master the specific requirements extremely efficiently by an intelligently networked and smooth operating system architecture.

The linking of forging presses, application robots to apply protective and functional coatings to product and forged engravings or molds, as well as the handling of sand cores from the core shooter to being inserted into the cast mold, are some of the examples included in the KÖHL automation solutions. Our portfolio of capabilities is completed with solutions for quality inspection with optical and acoustic measurement systems, for palletizing and packaging for dispatch.





## KÖHL PERIPHERY SYSTEMS

- ▶ Adapted gripper technology
- ▶ Periphery & robot protection systems
- ▶ Fixture construction & special conveyor elements
- ▶ Measuring systems, systems for quality inspection
- ▶ Protective fence systems & safety installations
- ▶ Controls with visualization
- ▶ BDE-connection
- ▶ Packaging systems



## Intelligently networked and robust transport systems for the steel and heavy metal industry.

The optimization of information and material flow is one of the core competences of KÖHL. The service spectrum comprises the entire transport logistics for the efficient production automation in the steel industry. These include roller conveyors, belt or synchronous belt systems up to special metal slat conveyors. The conveyor systems are equipped, among others, with pallet magazine technology, alignment and fixing stations, test or measuring equipment for in-line quality assurance or for storage systems.

A control panel with touch-screen is used to program the system. After brief instructions, the operator can easily control, regulate and create new product variations by means of a simple graphic user interface.

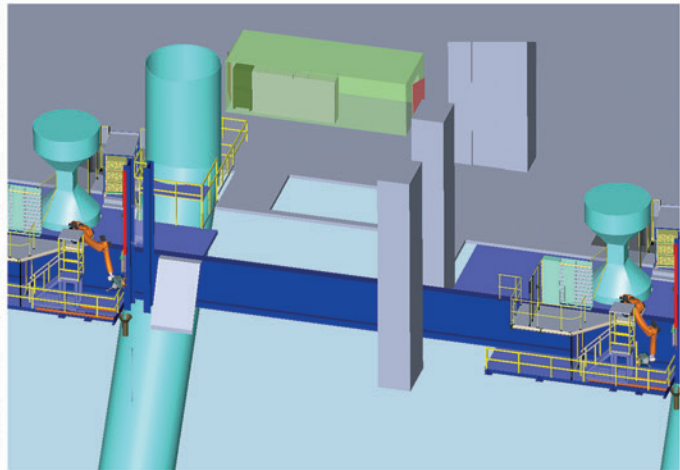
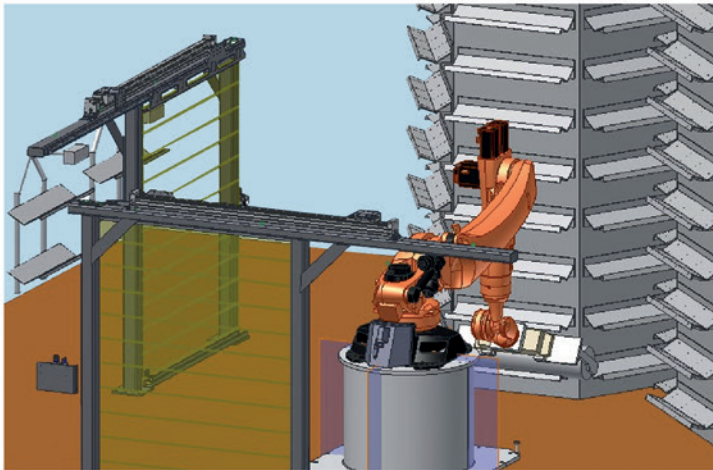
## KÖHL SAFETY TECHNOLOGY

KÖHL protective fence systems offer a wide variety of options to secure the systems and the associated peripheral equipment in compliance with the safety-related standards.

Area entrances for persons, products, product carriers, etc. are secured in accordance with valid machinery directives, and safety-critical interfaces to other equipment on the site are defined.







## Easy to control productivity!

KÖHL attaches particular importance to project planning using simulation tools, the development of new, task-related gripper systems, and innovative automation controls for their handling and automation systems.

### PROCESS-SAFETY THROUGH SIMULATION

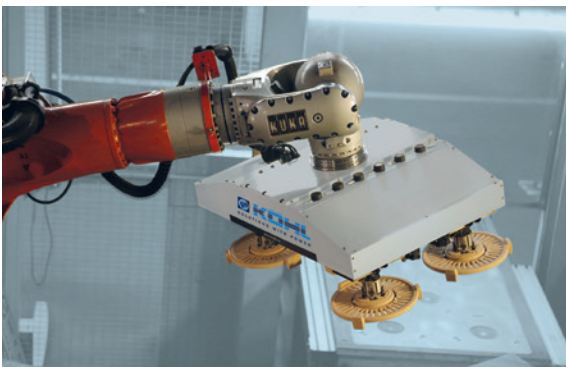
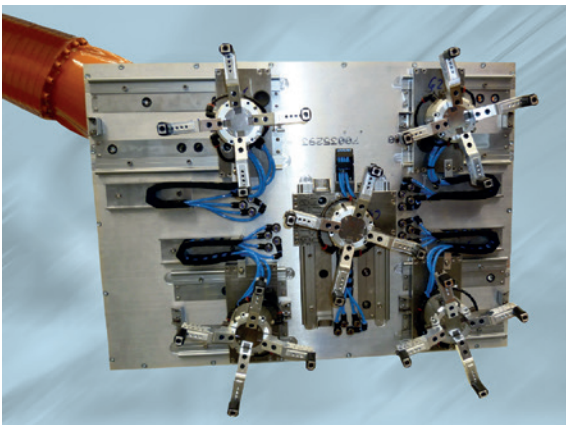
The development of automation is carried out with more exact detail and reliability by using the most modern simulation programs. All possible influencing factors will be taken into consideration and tested before the hardware components are installed.

### SPECIFIC GRIPPER SYSTEMS

KÖHL uses industrial robots with freely programmable controls and flexible gripper systems. The design of the grippers that are adapted specifically to the task is the focal point of the KÖHL automation concepts.

### CONTROLS

The control technology from KÖHL is based on a modular hardware system and an open software architecture which allows for tailor-made programming of the individual requirements. Expansion options allow for controls to be easily adapted to changing or completely new production tasks. This guarantees flexibility in the production.



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Additional information