



KUKA

Fitting the mold.

Robots for the foundry
and forging industry.



With their heat-, corrosion-, alkali- and acid-resistant coating, KUKA Foundry robots are optimally equipped for the harsh working environments in the foundry and forging industry.



The specially-developed Foundry wrist with corrosion-resistant V2A materials is dustproof, waterproof and certified with protection rating IP67 for the entire life cycle of the robot.

300 kg

pure handling power:

KR QUANTEC F series. The strongest

in their payload category.

The basis for high performance and process reliability in hot surroundings.

Metal – red-hot, molten or solid. From intricate light alloy components to large-format steel parts: the KR QUANTEC F series masters all disciplines from sand casting and die casting to permanent mold casting and even the handling of heavy molds and finished components. It effortlessly handles payloads of up to 300 kg. The extremely robust and maintenance-friendly design makes it a sound investment for the future.

On request, all KUKA robots based on the KR C4 controller can be controlled directly via the Siemens® SINUMERIK operator panel of your machine – simply and with no need for special knowledge of robotics.

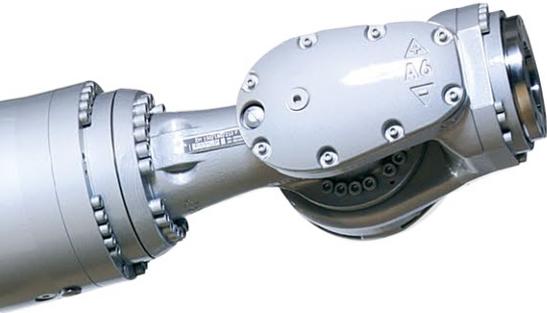


48

cool robot types.

In service wherever

things hot up.



Heat, dust, aggressive fluids: When the going gets tough for human workers, tough KUKA robots get going – with outstanding performance in continuous operation. Based on many years of experience in the foundry sector and in the automotive industry, KUKA is now offering a unique range

of 48 high-performance robot types – the KR QUANTEC F series. With protective coatings resistant to alkalis, acids, heat and corrosion, they permanently meet the requirements of protection ratings IP65/67. They are available as floor-, ceiling- and shelf-mounted robots and for payloads from 6 to 1,300 kg.

KR QUANTEC F: the advantages at a glance

- _____ Ideal combination of high payload capacity and small footprint
- _____ Fast and reliable – even for complex tasks
- _____ Availability: virtually 100%
- _____ Optimized cycle times
- _____ Process reliability
- _____ Assured productivity
- _____ Easy integration of peripheral devices, e.g. deflashing presses and grippers





Shelf-mounted robots
with superior dynamism –
up to 270 kg.

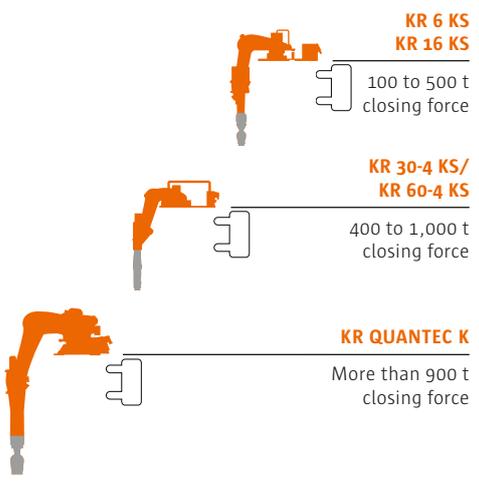
The KR QUANTEC K-F series offers the right shelf-mounted robot for every machine, with maximum reaches of up to 3,900 mm. For efficient loading and unloading, finishing and assembly of parts, they offer a decisive edge in dynamism, flexibility and cost-effectiveness for optimal automation processes.

LIGHT. KUKA shelf-mounted robots stand out for their low weight and volume. They can be installed directly on machines with minimum effort, thereby saving space.

FAST. Thanks to their low moving mass, KUKA shelf-mounted robots achieve a high dynamic performance and very short cycle times. This enables higher productivity and cost-effectiveness with rapid payback.

RELIABLE PLANNING. KUKA robot families have an identical hole pattern on their mounting base. This allows different KUKA shelf-mounted robots to be used on machines of different sizes without any additional planning measures.

DEEP REACH. KUKA shelf-mounted robots are designed for an especially large downward reach. They optimally access the workspace from above. Thanks to their low height, they require little space above the robot base.



Source: Korfion (Villingen) GmbH

Best performance: with a wide range of payloads.

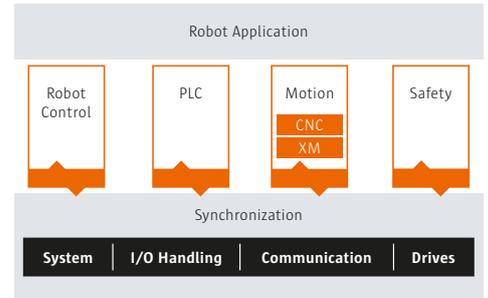
The hydropneumatic counterbalancing system allows for infinitely variable – and therefore optimal – adaptation of the restoring forces to the masses moved. It ensures outstanding dynamic performance and maximizes the energy efficiency of the robots at the same time.

Energy-saving boost: mechanically applied brakes.

Conventional robots consume large amounts of energy to hold their position in space when stationary. KR QUANTEC robots are the first in the world to be equipped with mechanically applied brakes. As a result, they significantly reduce the energy consumption of the motors – even during the briefest pauses in motion.

Four dedicated control modules in one control system.

The KR C4 concept is revolutionary. For the first time, RobotControl, MotionControl and LogicControl are seamlessly and interactively integrated with control modules for Safety and CNC. Automation solutions based on the KR C4 are thus considerably more intelligent, flexible and scalable.



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Control system: the KR C4, open for the perfect solution.

KUKA KR C4 – one system controls all. Robot, motion, sequence, process and safety control: the KR C4 unites all the control tasks for efficient use of robots in a single, smart system with passive cooling and without proprietary hardware. Extremely robust and future-proof, it offers security of investment – and that in the harshest of conditions.

Many options

- _____ Foundry robots
- _____ Handling robots
- _____ Finishing
- _____ Positioners
- _____ Logistics

Whether communicating via field bus systems such as Profinet, Profibus, Ethernet I/P, DeviceNet or Ethercat, or via Ethernet with higher-level systems – the KR C4 is a veritable communication talent. This ensures that the KR C4 can be integrated simply into existing infrastructures. It naturally also makes child's play of controlling external axes and the synchronization of complex work processes, e.g. at presses, hammers and casting machines. At the same time, the electronic components are safely protected against dust and dirt by means of an atmospheric overpressure in the housing.

And what's more: with its integrated energy management, the KR C4 enables up to 95% savings in energy consumption*.



Especially low-maintenance – without filter mats.

The passive heat exchange system of the KR C4, with separate air circulation in the inner and outer zones of the controller, allows low-maintenance operation even in dusty environments. Entirely without filter mats.



* In standby modes and Eco mode.

100% specialized: molding, casting and machining. KUKA robots can do almost anything.



Source: Siemens®

Operation with little knowledge of robotics: thanks to KUKA.PLC mxA.

The convenient, universal interface makes KUKA robots extremely easy to operate. Interacting with the Sinumerik Run MyRobot software package from Siemens®, KUKA.PLC mxA allows a KUKA robot teamed up with production machines to be visualized, operated, programmed and set up in the same system that the user is familiar with from the production machine environment. And all this using the production machine's control panel.



Fast programming: thanks to familiar interface with KUKA.CNC.

KUKA robots perform processing tasks like production machines – and can be programmed like them too in G-code (DIN 66025) thanks to the KUKA.CNC interface. Users understand them straight away, can create programs using a CAD/CAM process chain and, after simulation, execute them on the robot without having to compile them into the robot language. Already included: tool radius correction, sister tools and many other familiar CNC functions.



Optimal casting quality: with the technology package KUKA.Slip-Casting.

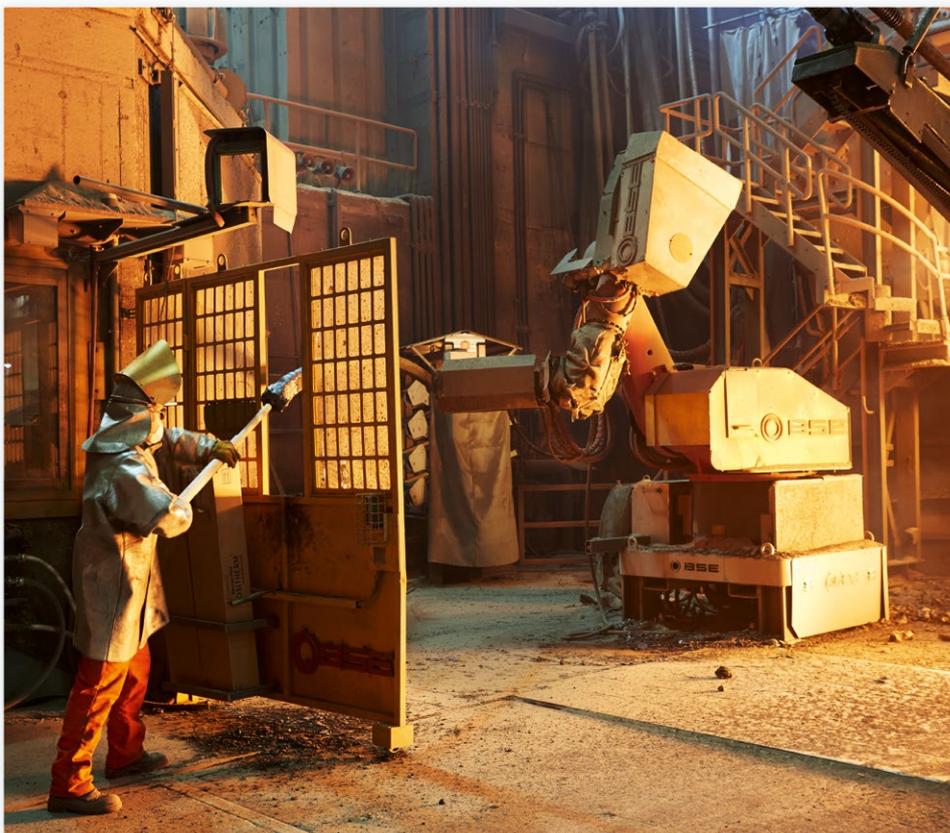
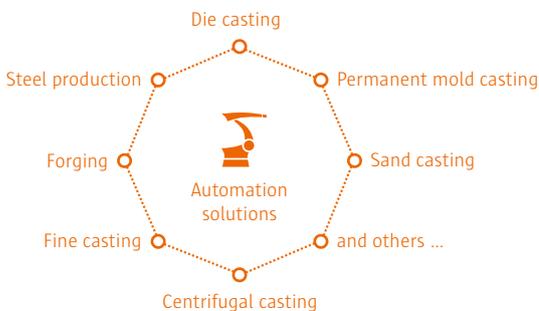
KUKA.Slip-Casting enables the robot to perform simple, precise tracking of a tilt-pour permanent mold casting machine. It controls the positioning of the pouring ladle exactly and doses the flow of molten aluminum into the mold with the utmost precision. The result: top casting quality due to low-turbulence pouring processes.

KUKA robots: all-rounders in the world of the foundry and forging industry.

The foundry and forging industry gives a new face to many raw materials. KUKA robots help here, with a wide range of highly efficient automation processes, installed on, in or next to the machine. From sand mold production, casting and forging to surface finishing, they increase the quality and efficiency of manufacturing processes and protect your employees against hazardous production influences such as heat, dust or gases.



Scan here to see
KUKA robots in motion:
www.kuka-robotics.com



Robots in extreme operation:

A specially protected KR 500 F helps steel workers with sampling and temperature measurement tasks. Fast, uninterrupted measurements with freely programmable customer-specific lance motions and increased safety.



Light exercise: The KR 1000 titan F unloads steel blanks weighing up to 400 kg with a consistently high cycle time and without breaking into a sweat – even in the case of forged parts with a temperature of 1200 °C.



Example of a process chain from the molten metal through to the ready-to-install part in the sand mold.

Handling of die-cast parts:

The KR QUANTEC makes child's play of unloading complex structural components from a die-casting machine.



Core package assembly in confined spaces:

KR 210 F robots assemble 14 different core packages without the need to change gripper. The universal gripper driven by 2 servo axes is operated directly from the robot controller.

Linked drop forging process:

Handling of forgings with a temperature of up to 1250 °C at a fully-automatic press line for truck wheel hubs. KUKA robots enable a doubling of output and the production of parts that could not be manufactured manually.

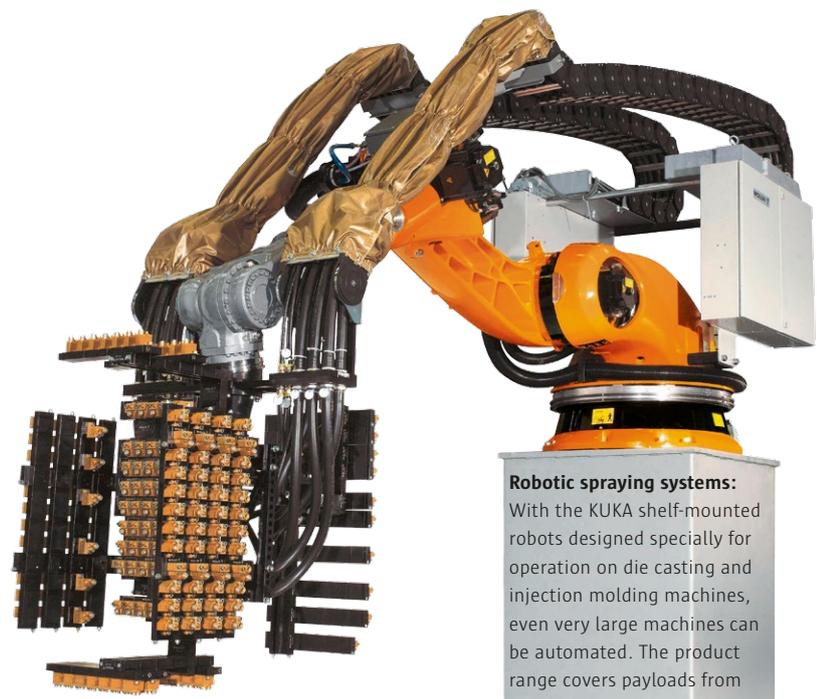


Flexible contact casting:

A KR 1000 titan guides the casting ladle, containing molten iron at a temperature of 1400 °C, to the molding box with maximum flexibility. The pouring position is freely selectable.

Perfect dipping process:

Precision and freedom of motion are preconditions for optimal layer formation in slurry-dipping and sand-coating of pattern clusters.



Robotic spraying systems:

With the KUKA shelf-mounted robots designed specially for operation on die casting and injection molding machines, even very large machines can be automated. The product range covers payloads from 16 to 270 kg and reaches of up to 3,900 mm.

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KUKA robot families.

And everything that makes your production more efficient.



KR AGILUS series

The small robot series with unparalleled performance at the highest of speeds is also available as a waterproof variant (IP67).



KR 16-2-F series

With its minimized disruptive contour and streamlined design, it saves valuable space and reaches any point, even in confined spaces.



KR 30/60 F series

The highly practical, tried-and-tested equipment of this series is ideally adapted to the requirements of foundry applications.

F = foundry version



Intelligent accessories



KR C4 and KR C4 compact robot control system

Both cabinet designs fit perfectly into existing machine environments. The open architecture places virtually no limits on technical integration.



KUKA control panel: KUKA smartPAD

Enables simple, intuitive operator control of complete systems via touch panel with context-sensitive floating windows.

All the robots in the KUKA robot family, both large and small, are characterized by their high performance and robustness. They are also energy-efficient and a sound investment for a wide range of different production applications in the foundry and forging industry. Whether standard, shelf-mounted or heavy-duty robots, which can be used extremely flexibly

thanks to the floor or ceiling mounting options, there is a suitable KUKA robot for every task and every production variant. The product range is rounded out by linear units. These, of course, are also suitable for either floor or ceiling mounting. They feature long travel distances, high torque and special covers for harsh environments.



KR QUANTEC F series

Leaner, faster, more robust: the new Foundry robot of the QUANTEC series requires less space, thus saving valuable production area. Optionally available with a linear unit.



KR FORTEC F series

Strong, flexible, agile. The perfect choice for handling heavy parts. With a uniquely wide variety of models for payloads up to 600 kg, this series redefines the heavy payload range.



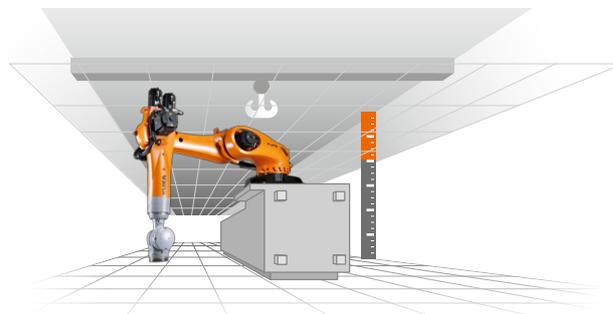
KR 1000 titan F series

With a payload of up to 1300 kg, distances of up to 3.2 m are covered. Precise handling of engine blocks, steel beams and XL workpieces is made easy.



KUKA function and technology packages

They give robots the capability of performing the functions relevant for your industry within an automation solution.



More space for your success: the virtual protected space

KUKA robots monitor their workspace by means of safe software. This allows them to also be operated in confined spaces, for example under cranes or in facilities with low ceilings.



KUKA Milling package

A high-precision robot equipped with spindle, software, controller and frequency converter – tested and tailored to machining. The KUKA.CNC option enables direct programming and operation via G-code.

KUKA – Your strong partner.

Quality made in Germany, creativity and the utmost commitment to customers: at KUKA, this has been the basis for decades of exceptional technology, helping you to decisively optimize your processes. We were the pioneers in the world of robotics, and now we are global leaders in innovation. Our passion is finding future-oriented solutions to make even complex automation tasks simple. Whatever you want to do, and whatever the specific task involved: you can implement it with KUKA. And thanks to close cooperation with our experienced KUKA system partners, that applies to every industry. We strive to turn your ideas into reality. Use our edge to drive your success.



KR QUANTEC F series

KR 1000 titan F series

Robot variants	11	2
Max. reach	2,901 mm to 3,901 mm	3,202 mm to 3,601 mm
Rated payload	90 kg to 270 kg	750 kg to 1,000 kg
Rated suppl. load, arm/link arm/rotating col.	50 kg/-/-	50 kg/-/-
Pose repeatability	±0.06 mm	±0.01 mm
Number of axes	6	6
Installation position	Floor	Floor
Variant	Foundry F	Foundry F
Robot footprint	830 mm x 830 mm	2,000 mm x 2,000 mm
Weight (excluding controller), approx.	1,180 kg to 1,229 kg	4,690 kg to 4,740 kg
Ambient temperature	+10 °C to +55 °C	+10 °C to +55 °C

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