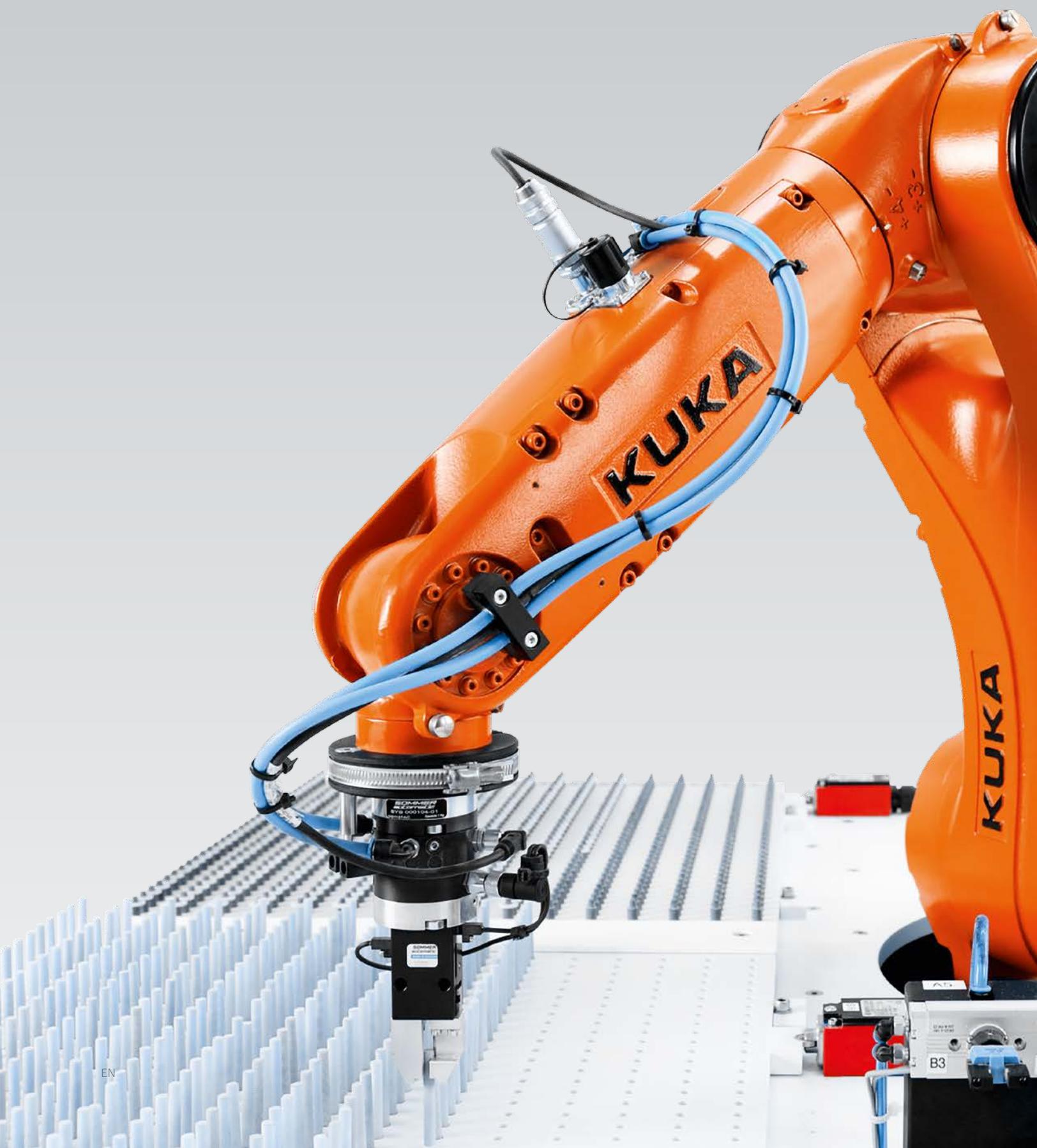


KUKA



Rethinking efficiency
_KUKA robots for the plastics industry





A step ahead of industrial change Intelligent KUKA robotics for the plastics industry

The production world of the plastics industry is becoming ever more digital and networked. Future-oriented automation solutions and intelligent robotics from KUKA have a key role to play here. They enable a permanently increasing degree of integration in manufacturing. In this way, more and more process steps can be carried out in a single work operation. Value creation thus increases, while the logistical effort for the transfer of materials decreases. Ground-breaking solutions are leading to growing productivity and making production processes more flexible in the age of Industrie 4.0 and the Internet of Things.

As a technological pioneer, KUKA is playing a decisive role in shaping this transformation. The KUKA portfolio is thus extremely wide-ranging and highly differentiated and completely covers the specific requirements of the plastics industry. At the same time, it offers permanent security of investment and a forward-looking ability to be integrated into both the production world of today and the Smart Factory of tomorrow. We call this ›Orange Intelligenz‹.

KR QUANTEC K

Greater productivity, simple integration, high flexibility

With robots from KUKA, you profit from greater efficiency, greater cost-effectiveness and greater flexibility. Start laying the groundwork now for future-oriented automation solutions.

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 mounting base hole pattern. 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 vertical space.



Space-saving, with a deep reach. Space-optimized, with a long reach (vertical extension of 2,480 mm at A4/A5), with low weight and uncompromising accuracy – for optimal integration.



More space for your success: the virtual protected space. KUKA robots monitor their workspace by means of safe software. This means that they can also be operated in confined spaces, for example under cranes or in facilities with low ceilings.



Best performance with different 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 during downtime. KR QUANTEC robots are equipped with mechanically applied brakes. As a result, they significantly reduce the energy consumption of the motors – even during the briefest pauses

Source: Kendrion (Villingen) GmbH

Reach / payload

4,100 mm							
3,900 mm		F					
3,700 mm	A		G				
3,500 mm		B		H			
3,300 mm			C		I		
3,100 mm				D		J	L
2,900 mm					E		K
	90 kg	120 kg	150 kg	180 kg	210 kg	240 kg	270 kg

A KR 90 R3700 prime K
 B KR 120 R3500 prime K
 C KR 150 R3300 prime K
 D KR 180 R3100 prime K
 E KR 210 R2900 prime K
 F KR 120 R3900 ultra K
 G KR 150 R3700 ultra K
 H KR 180 R3500 ultra K
 I KR 210 R3300 ultra K
 J KR 240 R3100 ultra K
 K KR 270 R2900 ultra K
 L KR 270 R3100 ultra K

KR CYBERTECH

Redefining performance in the low payload category

World's largest series of models in the low payload category. Model variety from KUKA is the key to automation solutions that uncompromisingly meet requirements. The KR CYBERTECH robots offer incomparable performance and power density in the low payload category. With robot types perfectly tailored to individual customer requirements for handling and continuous-path applications covering a wide range of tasks in the plastics industry, KR CYBERTECH robots are

setting a new standard that will make the difference. Combining this with their compactness and minimal disruptive contours, they are able to work in all areas that were previously closed to conventional robots. From confined spaces to large distances – installed on the floor, wall or ceiling, or at any other angle – the KR CYBERTECH robots can master a wide range of different requirement profiles in any desired installation position.

Reach / payload

2,400 mm										
2,200 mm										
2,000 mm		D				G				
1,800 mm	A			E				H		
1,600 mm		B				F			I	
1,400 mm			C							
1,200 mm										
	6 kg	8 kg	10 kg	12 kg	14 kg	16 kg	18 kg	20 kg	22 kg	

A KR 6 R1820
 B KR 8 R1620
 C KR 10 R1420
 D KR 8 R2010
 E KR 12 R1810
 F KR 16 R1610
 G KR 16 R2010
 H KR 20 R1810
 I KR 22 R1610

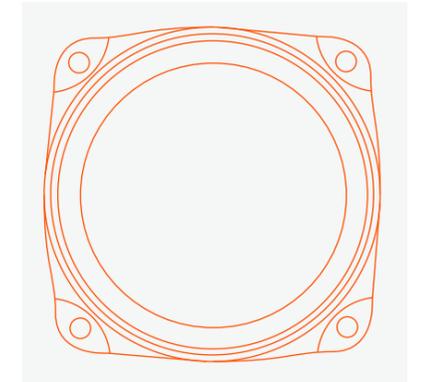


ø 67 mm: the most streamlined in-line wrist in its payload category. Simply unique. With an interference radius of just 67 mm, the KR CYBERTECH nano handling robots have the smallest in-line wrist in their class. Worldwide. It enables work to be carried out in positions that are inaccessible for other robots.



360°: maximum performance in every installation position. The standard versions of all KR CYBERTECH robots are suited to any installation position.

Compact footprint. As standard. All KR CYBERTECH robots have an identical, compact base frame. For more robot integration options and utmost flexibility in machine management.



Fast and accurate. As an entirely new development, equipped with many innovative technical details, the KR CYBERTECH generation convinces with the highest precision in the low payload category. With their repeatability of 0.04 mm, the robots can exploit their strengths to the full, even at high speed, offering impressive dynamic performance and optimal motion characteristics throughout the entire workspace.

Small footprint, long reach. Extremely compact dimensions create space in plastics production facilities. The KR CYBERTECH robots are light and incredibly streamlined, and combine maximum performance with minimal disruptive contours. They can thus tap new workspaces, cover long distances, and have a large workspace to the rear and a long downward reach.

Extensive portfolio. KR CYBERTECH robots offer maximum versatility for greater economical flexibility. The fine payload intervals from 6 to 22 kg and the perfectly coordinated robot types mean that you can always select the robots that meets your requirements 100% – for maximum performance and minimum investment and energy costs. Also available as a cleanroom variant.

Powerful in every situation. With KR CYBERTECH robots, there are virtually no limits to automation concepts. This is because the robots perform high-precision work in any desired installation position, in confined spaces or over long distances, on the floor, wall, ceiling or at any other angle.

KR AGILUS

Cost-effective performer with extremely compact dimensions

The KR AGILUS small robot series is the cost-effective alternative to conventional automation systems. They are more efficient, flexible and maintenance-friendly, while meeting the highest standards in the plastics industry.

High speed. When it comes to handling tasks, especially those involving quick and precise movements, KUKA small robots demonstrate one of their greatest strengths: extreme speed. This produces impressive results with minimal cycle times.

Precision. Where high repeatability and exactitude are required, KUKA small robots are in their element. They enable manufacturing quality at the highest level. Thanks to their robust design, they work with constant precision throughout the work envelope.

Symmetrical mechanical design. Thanks to its symmetrical design, the KR AGILUS takes full advantage of its work envelope. It can be integrated into the smallest of spaces and safely operated there.

Integrated energy supply system. For extremely streamlined contours, the small robots from KUKA have their entire energy supply system routed internally. Simple gripper integration and fast reaction – especially for work in confined spaces.



Convincing in any position: The KR AGILUS series is ideally suited for installation on the floor, ceiling or wall. Brakes in all axes also provide maximum safety and energy efficiency.



Integrated energy supply system. This is routed internally in the KUKA small robots, thereby saving space. It includes EtherCAT/ EtherNet (bus cable), three 5/2-way valves (compressed air), direct air line and inputs/outputs.



The ultimate in cleanliness: also as a cleanroom design to ISO 2. Optimized in individual production for cleanroom applications. Enhanced through the use of top-quality materials, optimized seals and smooth surfaces, KUKA robots meet the strict criteria of DIN EN ISO for cleanrooms.



Reach / payload

Reach	3 kg	6 kg	8 kg	10 kg
1,100 mm				D H
1,000 mm				
900 mm		C F		G
800 mm				
700 mm		B E		
600 mm				
500 mm	A			

A KR 3 R 540
 B KR 6 R700 fivve
 C KR 6 R900 fivve
 D KR 10 R1100 fivve
 E KR 6 R700 sixx
 F KR 6 R900 sixx
 G KR 10 R900 sixx
 H KR 10 R1100 sixx



Delivery in just three weeks. The new KR AGILUS sixx Pack from KUKA.

Your choice from the proven KR AGILUS series: KR 6 R700 sixx, KR 6 R900 sixx or KR 10 R1100 sixx. Combined with software, a preconfigured controller and an operator control unit, that's an unbeatable team. Best KUKA quality, best terms, shortest possible delivery time.



Virtual protected space: KUKA.SafeOperation.

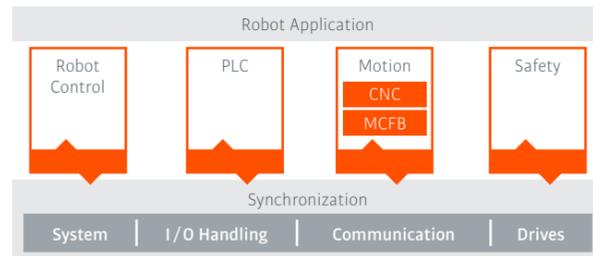
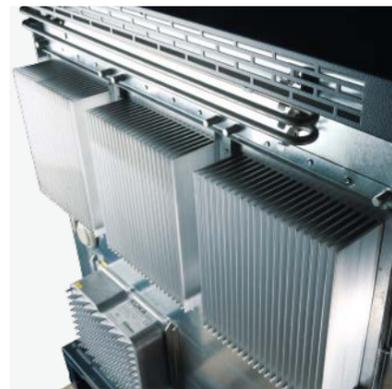
KUKA.SafeOperation enables protected spaces to be freely defined in the software. These can be flexibly adapted to the required process. For previously inconceivable, safely definable work-spaces in dynamic work processes. Between machines or between humans and machines.

KUKA KR C4

One intelligent system controls all

KUKA KR C4 – one system controls all. Robot, motion, sequence, process and safety control: the KR C4 unites all the control tasks for the efficient use of robots in a single, smart system. With maximum energy efficiency. This sustainably conserves valuable resources and minimizes the cost risks inherent in rising energy prices.

The KR C4's integrated energy management provides standby modes and an Eco mode. These reduce the energy consumption by up to 95 %, for example by reducing the robot velocity or through programmable brake systems which maintain the robot's position without any impact on energy consumption. The energy consumption can be simulated and calculated even in the engineering phase. During operation, the energy consumption can then be displayed and verified on the control panel. KR C4 means efficiency with transparent energy consumption. This forms the basis for energy saving certification with tax advantages (ISO 50001).



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.

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.

KUKA smartPAD

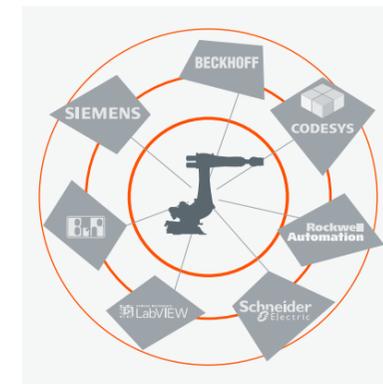
Makes robotic applications in the plastics industry really simple

Robot operation made easy: The KUKA smartPAD brilliantly demonstrates, on a large, high-resolution antireflection touch screen, just how simple robot operation can be. Intelligent, interactive dialogs pro-elements that are currently required. This makes work easier, faster, more efficient and simply smarter all-round.



Teach pendant

- 8.4" clear touchpad display for KUKA.VisionTech & KUKA.HMI Zenon ...
- Integrated USB connection
- Eight jog keys: four or six keys for KUKA plus two extra keys
- 6D mouse
- Hot-pluggable



Mastering automation easily and safely. Intelligent robotics from KUKA also means that the integration, programming and control of the technology are kept as simple as possible. Operation using KUKA.PLC mxAutomation is considered to be a real game-changer. It enables safe and error-free work with automation solutions using a sophisticated concept that requires no extensive training or in-depth specialist knowledge.

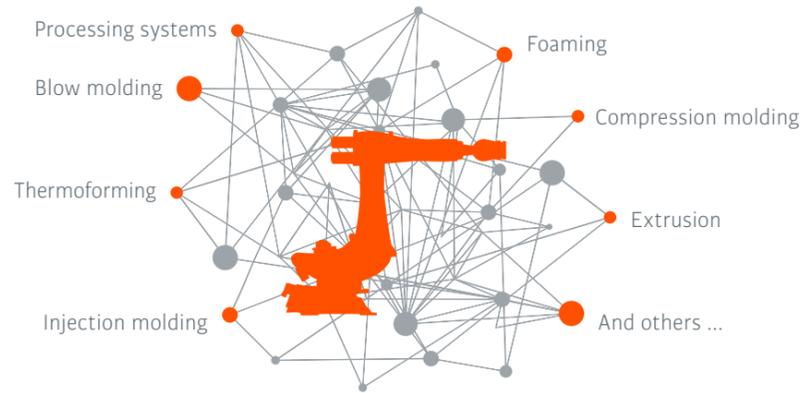
Operation with little knowledge of robotics: thanks to KUKA.PLC mxAutomation. The convenient, universal interface makes KUKA robots extremely easy to operate. KUKA.PLC mxAutomation allows a KUKA robot teamed up with plastics machines to be visualized, operated, programmed and set up in the same system that the user is familiar with from the plastics machine environment. And all this using the plastics machine's control panel.



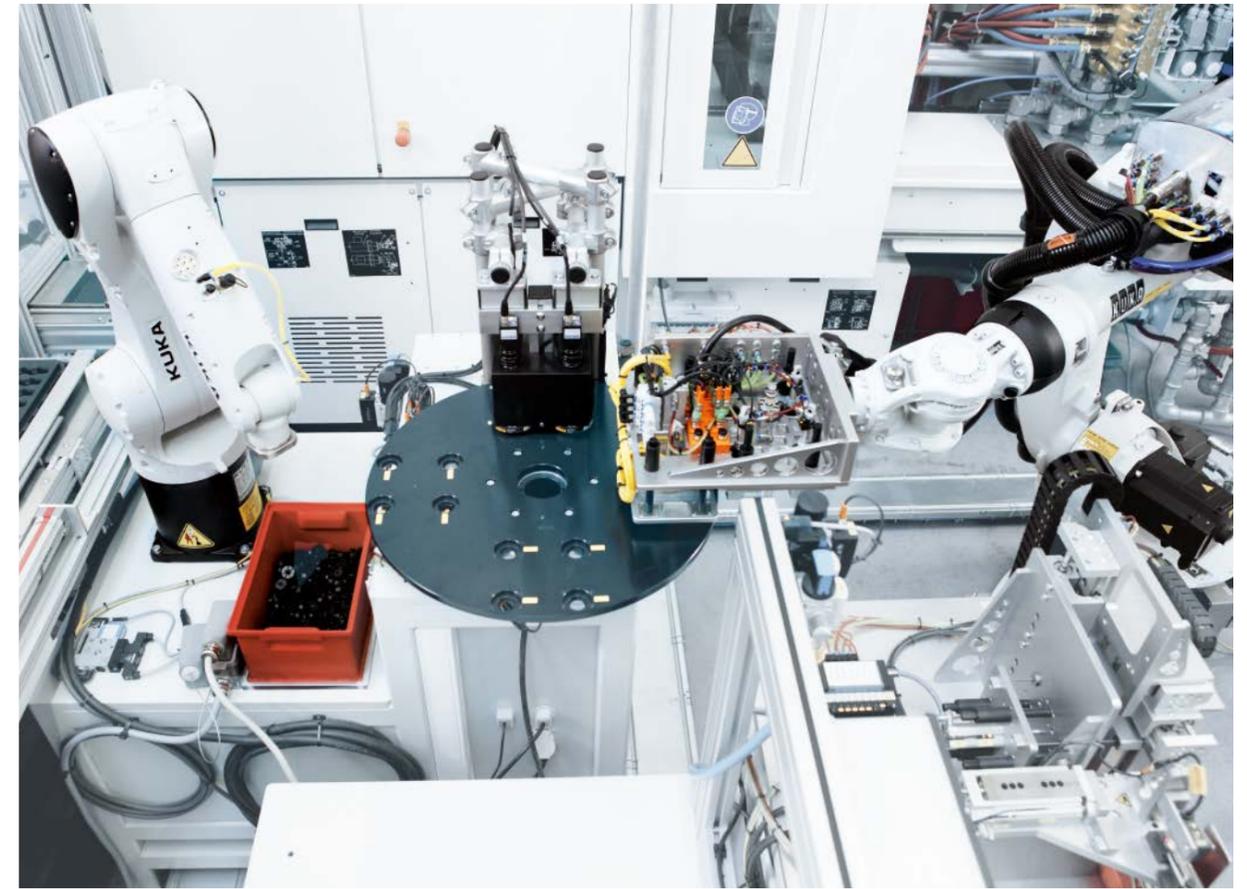
Ready for immediate use: familiar interface for fast programming. KUKA robots perform processing tasks like plastics machines – and can be programmed like them too in G-code (DIN 66025) thanks to the KUKA.CNC interface. Users understand them straight away, can create programs using a CAD / CAM process 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.

Intelligent automation solutions

In all areas of the plastics industry



Whether for hybrid materials, injection-molded, blow-molded or thermoformed food packaging or medical products; whether on, above or next to the machine – KUKA robots increase your efficiency with utmost precision. This means that processes are more intelligent, cycle times are faster and downtime is reduced. In industrial production as well as in confined, germ-free spaces and where ever the highest hygiene standards apply.



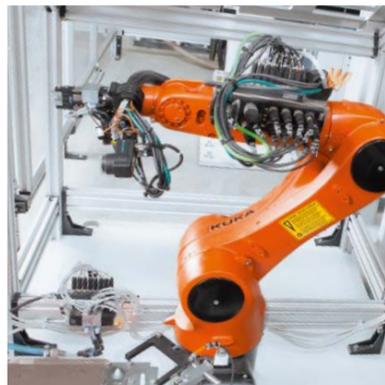
In the system: innovative and flexible robot swarm for individual machining of blow-molded tanks

On the machine: KUKA QUANTEC shelf-mounted robots for efficient loading, unloading and finishing



In the system: a space-saving KR AGILUS positions itself and accesses the assembly fixture from underneath

In the system: precise milling of overdimensional plastic pipes



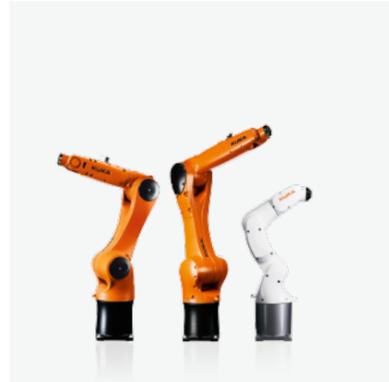
Use the QR code and see the robots in motion.

When it comes to the manufacture of complex injection-molded plastic components, KUKA robots demonstrate utmost precision, reproducibility and speed.



As varied as the world of plastics production

The KUKA robot portfolio



KR AGILUS series

The small robot series with unparalleled performance at the highest of speeds is available in different variants for different areas of application.



largest series in the low payload category

KR CYBERTECH series

The broad range of models sets new standards in handling and CP applications. It offers incomparable performance and power density in the low payload category.



KR 16 series

With their minimized disruptive contour and streamlined design, this series save valuable space and reach any point, even in confined spaces.



KR QUANTEC series

This series stands out for its maximum dynamism, extreme stiffness and high performance combined with low weight. Optionally available with a linear unit.



KR 30/60-4 KS series

With its long streamlined arm, the KR 60 L16-2 KS is the perfect robot for confined workspaces.



largest series in the shelf-mounted robot category

KR QUANTEC K series

KUKA shelf-mounted robots are designed for an especially large downward reach. They optimally access the workspace from above.

All-round solution competence

Controller, software and add-ons



EUROMAP E67 interface

It regulates the safe signal exchange on the basis of a standardized dialog between the machine and the robot.



KR C4 and KR C4 smallsize-2 robot control system

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



Positioners from KUKA

Our positioning technology closes the gap between automation and your success. Our technology is continually being adapted to current developments.



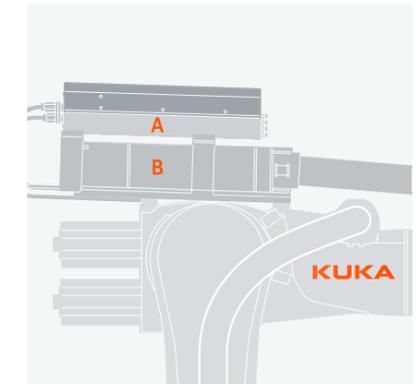
KUKA Milling package

This application module is a high-precision robot equipped with spindle, software, controller and frequency converter – tested and adapted to plastics processing.



KUKA function and technology packages

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



A KUKA media supply unit

Makes it possible to flexibly connect pneumatic and electrical control chains. The standards can be freely selected: Profinet, EtherCAT and Profibus.

B K box

Varies the length of dress package depending on the robot position. The K box also minimizes the disruptive contour, thus ensuring reduced wear.



www.contact.kuka-robotics.com



www.facebook.com/KUKA.Robotics



www.youtube.com/kukarobotgroup



Twitter: @kuka_roboticsEN

Details provided about the properties and usability of the products are purely for information purposes and do not constitute a guarantee of these characteristics. The extent of goods delivered is determined by the subject matter of the specific contract. No liability accepted for errors or omissions. Subject to technical alterations.
© 2016 KUKA Roboter GmbH