Rethink efficiency. KUKA robots for the plastics industry.
Best performance: with a wide range of payloads.

The hydropneumatic counterbalancing system allows for infinitely variable – and therefore optimal – coordination of the restoring forces on 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 the world’s first mechanically applied brakes. As a result, they significantly reduce the energy consumption of the motors – even with the shortest of motion pauses.

Space-saving, with a deep reach.

Space-optimized, with a long reach and a vertical extension of 2,480 mm at A4/A5, with low weight and uncompromising accuracy – for optimal integration.
Paving the way for far-reaching possibilities.

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, while 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 exceptionally large down-ward reach. They optimally access the workspace from above. Thanks to their low height, they require minimal space above the robot base.

KUKA robots monitor their workspace by means of safe software. This allows them to also be operated in confined spaces, for example under craneways or in facilities with low ceilings.
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 full energy supply system routed internally. Simple gripper integration and fast reaction – especially for work in confined spaces.

**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 allowing for safely definable workspaces in a dynamic work process which previously had been inconceivable between machines or between humans and machines.

**Ideal choice: also as a cleanroom design to ISO 3.**

Optimized for cleanroom applications in individual production. 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.
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.

Market coverage for small robots:
IMM breakdown according to VDMA

- **over 1,001 t closing force**
  - KR QUANTEC K series

- **401 t – 1,000 t closing force**
  - KR 30-4 KS / KR 60-4 KS

- **101 t – 400 t closing force**

- **under 100 t closing force**
  - KR 6 AGILUS

Integrated energy supply system in the robot arm:
- 6 digital inputs
- 2 digital outputs (0.5 A)
- 3x 5/2-way valves
- 27 V, 2 A usable power supply
- EtherCAT or standard Ethernet (100 MBit)
- Direct air connection (1x supply, 6x outputs)

For rapid start-up:
KR AGILUS interface plate.
- Pneumatic connections (Air 1, Air 2, purging air)
- Resolver input for axes 7 and 8
- Bus connection (100 MBit)
- Motor connection
- Data connection
- Micro EMD
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 maximum energy efficiency. This sustainably conserves valuable resources and minimizes the cost risks inherent in rising energy prices.

95 %

less energy consumption.

The KR C4 control system.

The KR C4 concept is revolutionary. For the first time, Robot/Motion 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.

The KR C4's integrated energy management provides standby modes and includes an Ecomode. 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.

* in standby mode and Ecomode
The KUKA smartPAD brilliantly demonstrates, on a large, high-resolution anti-reflection touch screen, just how simple robot operation can be. Intelligent, interactive dialogs provide the user with those operator control elements that are currently required. This makes work easier, faster, more efficient and simply smarter all-round.

**Ease of Use**

0% need to adapt: personnel and machines understand KUKA robots immediately.

**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 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 in G-code (DIN 66025) thanks to the KUKA.CNC interface. Users understand them straight away, and 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.
The plastics industry defines thousands of tasks. Each one of them can be optimized with KUKA.

Whether for hybrid materials, injection-molded, blow-molded or thermoformed food packaging or medical products; when mounted 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 wherever the highest hygiene standards apply.

**In the machine:**
Space-saving robotic dispensing cell for the application of 1- and 2-component systems.

**In the system:**
Floor-mounted robot unloading a tube blow molding machine.

**Next to the machine:**
Combined injection molding and foaming system for the manufacture of products with sealant application.

**Next to the machine:**
The solution with KUKA robots makes it possible to manufacture lightweight components without the need for an expensive special system.
In the system:
Combined system for injection molding and subsequent labeling with digital printing technology.

In the machine group:
Combination of shelf-mounted robots for unloading an injection molding machine from above and floor-mounted robot for insertion of clips and screws.

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

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

6-axis high-speed machine:
Linear units and turntables are loaded during their non-productive time by fast KR AGILUS small robots. For superior flexibility in component variance.

On the machine:
Space-saving integration into injection molding for complex finishing tasks and packaging.

Source: FPT   Source: KraussMaffei   Source: bielomatik Leuze
Every application requires a specialist. That’s why KUKA has built them all.

**KR AGILUS series**
The small robot series with unparalleled performance at the highest of speeds is also available as a waterproof variant.

**KR 16 series**
With its minimized disruptive contour and streamlined design, it saves valuable space and reaches 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.

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

Intelligent accessories
KUKA media supply unit
Enables flexible connection of pneumatic and electrical control chains. The standards can be freely selected: Profinet, EtherCAT and Profibus.

K-Box
Varies the length of the dress package depending on the robot position. The K-Box also minimizes the disruptive contour, leading to reduced wear.

KR 30/60-4 KS series
With its long slim arm, the KR 60 L16-2 KS is the perfect robot for confined workspaces.

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

Positioners from KUKA
Our positioning technology closes the gap between automation and your success. Our technology is continually being improved and updated.

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.
The KR QUANTEC K: An investment that pays for itself.

Fewer service intervals.
One service interval instead of six. And due only after 20,000 operating hours. On an average of €1,250 per service assignment, the KR QUANTEC K saves €6,250 in maintenance costs.

Long service life.
With linear gantries, the cost of a new investment is due after only five to seven years. With the KR QUANTEC K, due after twelve years.

Low basic costs.
Comparison based on the automation of an injection molding machine with 2,000 t closing force or higher, with subsequent component processing and packaging.

TCO analysis:
An overall TCO analysis reveals many further advantages of the jointed-arm robots compared with linear gantries. For example, flexible adaptation to new production processes or increased profitability of the production systems thanks to a sustainable robot availability of 99.995%.