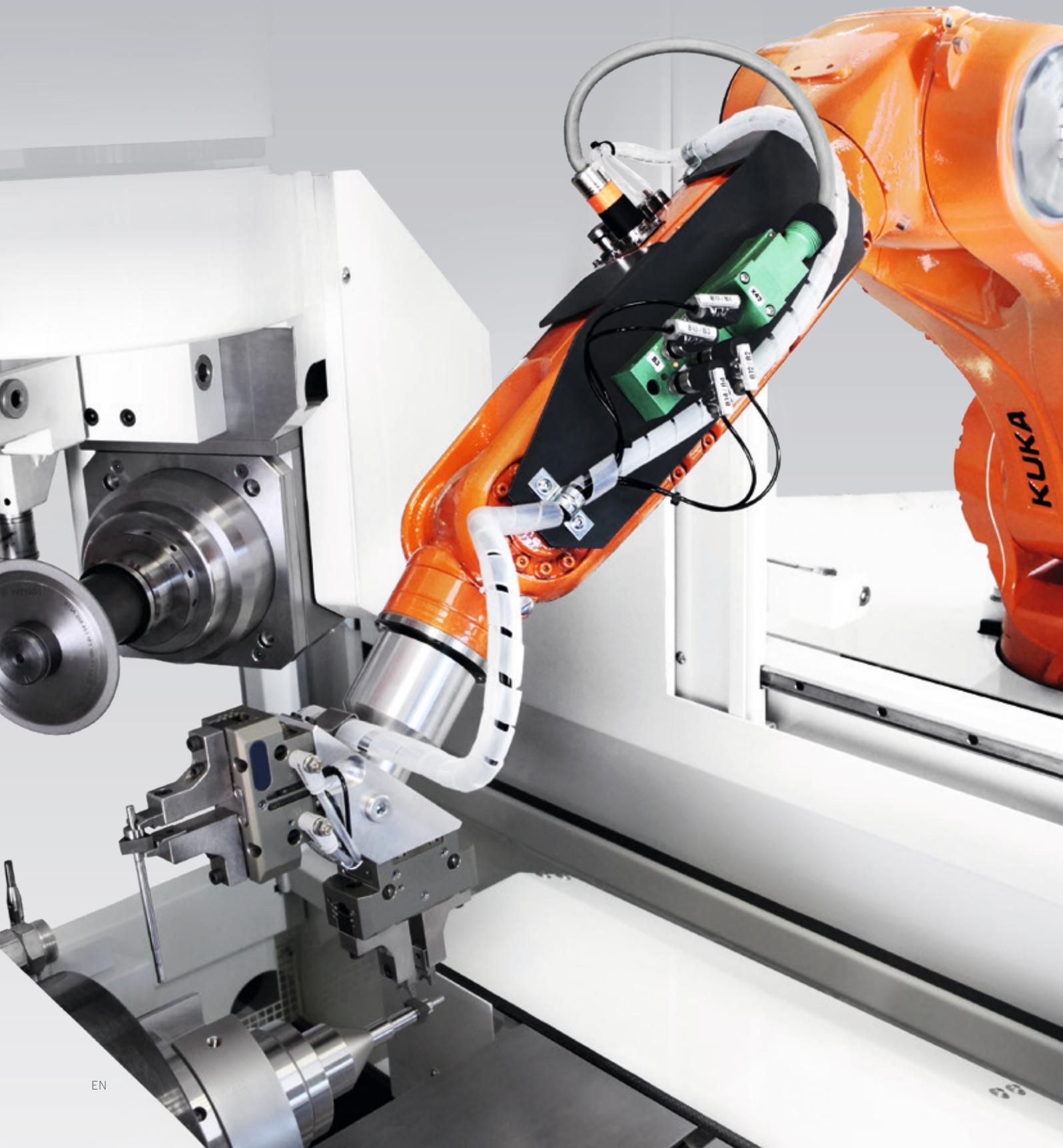


KUKA



Increased productivity for you
_Automation for machine tools





Maximum productivity with KUKA robots

Exploit the available potential of your machine tools 100%.

The key objective of the metalworking sector is clearly defined: despite ever more complex components, produce profitably, efficiently and with high quality – while also offering extremely short delivery times. The challenge is not easy, but we can help you overcome it. With robot-based automation solutions you will secure substantial increases in productivity, maximum return on capital and hence a clear competitive advantage, particularly in times of an acute shortage of skilled workers.

Increases quality

Compensates for skilled labor shortage

Enables unmanned shifts



Optimum throughput



Utmost reliability

Increase your return on investment

With automation solutions you will produce more quickly and more efficiently. The reject rate will be reduced to a minimum and so will production cycle times; your machine tools will be working to optimum capacity. Unmanned night and weekend shifts can also be tapped without difficulty.

Significantly higher quality

From individual items through to mass production – our robot systems offer you a significant gain in precision. Increasing quality requirements are precisely implemented. Small and complex components can easily be produced.

Flexible, quick and high-performance

With KUKA robots you can address all the essential functions of your machine tools. In addition, you can adapt our robots to each new task with ease. This enables you to deliver to your customers on shorter lead times.

Major competitive advantages

Acquire valuable room for maneuver in the face of high pressure on prices. Small batch sizes down to complex individual components can be produced profitably. To sum up: impress your customers with products of the highest manufacturing standard.

17% shorter machining times

With KUKA robots,
you gain valuable time.

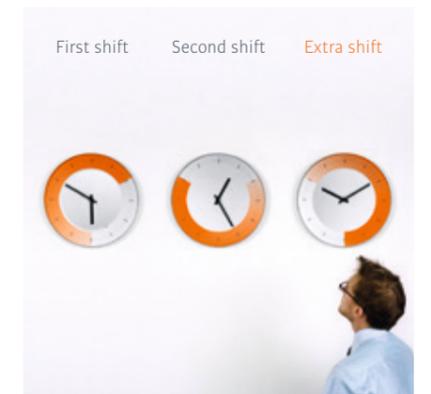
Where the precision of the machine tool is not required, the robot takes over tasks such as drilling. In this way, it reduces the spindle run time per part. In KUKA's own production operations, for instance, this cuts the machining time per component from 48 to 40 minutes at a machining center.

That means a 17% increase in machine productivity. Thanks to the high flexibility, this efficiency can be boosted still further: upstream and downstream processes, such as quality control, can be integrated into the robotic cell.

More than 50% higher throughput

Due to 24-hour operation

KUKA robots – working for you non-stop. Where productivity is concerned, every second counts. KUKA robots enable you to fully exploit the potential of your machine tools day and night. In production, unmanned operation with a robot extends the operating time of a machining center from 16 to 24 hours per working day, seven days a week. Depending on the previous shift model, this means an increase in overall productivity of more than 50%.



Working for you non-stop
KUKA robots never need a break and are always available. They supply your machine tools immediately with new workpieces and enable uninterrupted production.



Precision finishing
Once set up, the robot performs tasks such as drilling or deburring reliably and with the utmost quality – and effectively interruption-free with an MTBF of 40,000 hours.



Reliable, even with heavy components
Even heavy components are loaded precisely, with no risk of damage to the machine or clamping equipment. The machine is loaded with pin-point accuracy, ruling out the possibility of rejects due to incorrect positioning.

KUKA smartPAD, KUKA ready2_pilot and KUKA.HMI

Robot handling easier than ever before

Everything under control

With the 8.4" touch display, the integrated keys and the mouse, you have your robots fully under control at all times. The optional HMI plug-in provides a project-specific graphical user interface which shows only those elements that the machine operator requires for his or her daily work; the training requirement is minimal. Data backups and updates are child's play, thanks to the integrated USB port.

Ready for immediate use

KUKA robots perform machining tasks like machine tools – and can also be programmed in G-code (DIN 66025) like a conventional CNC interface thanks to the optional KUKA.CNC system software. Users understand them straight away, can create programs using a CAD/CAM chain and, after simulation, execute them on the robot without having to compile them into the robot language. Already included in the controller alongside numerous familiar CNC functions: tool radius correction, sister tools and a separate CNC kernel – for maximum path accuracy in every work process.



A full overview
The physical world of the machining cell – with two machining centers, one KUKA robot on a linear axis and four feeder stations – is visualized on the screen of the KUKA smartPAD, thus allowing a full overview of everything that is happening in the cell.



Intuitively operable – KUKA ready2_pilot

Take your robot by the hand and lead it to the position where you want it to be. Simple and intuitive control via a 6D mouse mounted directly on the robot wrist – even the KR titan, the largest and most powerful of the KUKA robots, faithfully follows your motions. The position reached can be saved directly. It's never been so easy to teach robot positions or to move the robot freely in environments where space is limited.

The complete path can even be recorded and saved. Thanks to a quick-release lock the system can easily be transferred from one robot to the next.



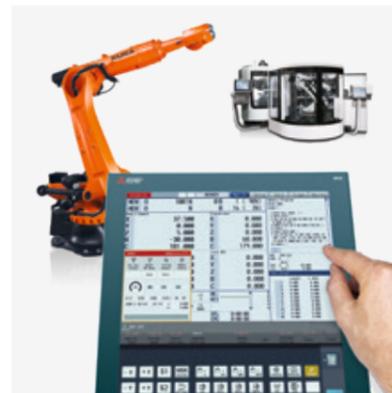
KUKA.PLC mxAutomation

Personnel and machines understand KUKA robots immediately.

KUKA has developed its KUKA.PLC mxAutomation software as the interface between robots and PLC controllers in order to make it as easy as possible for companies and employees to work with their robots. Programming is carried out in the familiar PLC programming environment; operation and diagnosis are controlled easily via the user interface of the automation cell – even without any special robotics knowledge. The incorporation of a KUKA robot into the CNC world, as offered by Siemens® and Mitsubishi Electric, opens up a further range of possibilities: the robot can be operated with the same look and feel as the machine tool – on the control panel of the machine tool. It doesn't get any easier than that.

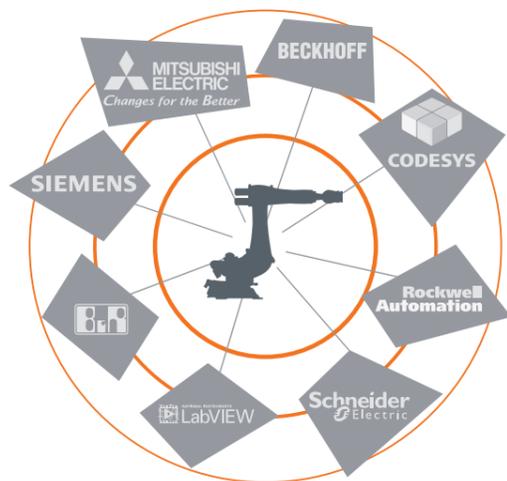
Mastering automation easily and safely

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.



Simple robot control via machine tool

Thanks to digital transformation, machine tools and robots are working ever closer together. The combination of robot and machine control with KUKA.PLC mxAutomation enables KUKA robots to be integrated effortlessly into existing operator control concepts. In this way, the user can very easily operate and program the robot via the control panel of the machine tool.



Your production under control

In all places and at all times

What happened when during a production process? Or rather: when problems arise, what exactly went wrong? The Virtual Shadow developed by KUKA provides rapid answers to these important questions. With this simulation system, it is possible to jump back to any desired process event within seconds – an ideal tool for fault analysis and system optimization.

Simply rewind production sequences

The Virtual Shadow is a dynamically synchronized live 3D representation of a real production system. On the basis of the real signals and axis values, a simulation is generated that exactly represents the motions of the system. At the same time, all the corresponding data are recorded. In this way, it is possible to rewind directly to any point in the production process – a perfect basis for analyzing sequences and error situations quickly and precisely.

Targeted improvement of the system

The Virtual Shadow can be used to optimize not only manufacturing processes, but also the production facilities themselves. The result is better optimization of cycle times, for example, with a positive effect on the overall efficiency of the system.



KUKA Digital Services

Greater transparency, lower process costs and flexible customer orientation

We improve your production – by means of digital transformation. Digitalization opens up new horizons. It optimizes processes and modifies structures. With our Digital Services, we enable you to individually evaluate the data generated by your machines and components – and as a result to boost the availability and performance of your systems. This empowers you to meet all the challenges of the market.

We offer a wide variety of digital service solutions. In most cases, production machines are networked and monitored using remote diagnosis tools. The data are stored in the cloud and evaluated in order to determine performance indicators or derive predictive maintenance measures. We ensure that your sensitive data are protected against unauthorized access while nevertheless remaining fully available at all times.

Analysis at a click – throughout the entire production process

KUKA.Sim

KUKA.Sim is the smart simulation software that enables you to plan your system and robot concepts quickly, easily and individually. Thanks to a reachability check, collision detection and precise cycle time measurement, you can ascertain the feasibility of your project, thus benefiting from greater planning reliability. KUKA.Sim then helps you to present your concept professionally, thereby contributing to its success.

KUKA Xpert

KUKA Xpert is a digital knowledge database covering all KUKA products – accessible from anywhere at any time. KUKA Xpert provides comprehensive technical information for service technicians, planners, programmers, operators and installation personnel. It helps you to solve problems independently, saving precious time.

KUKA IIoT Suite

The KUKA IIoT Suite is a cloud platform solution offering secure, comprehensive end-to-end service for your asset management in all branches of industry. You, too, can rely on our tried-and-tested technology architecture and our unique security concept.

KUKA Connect

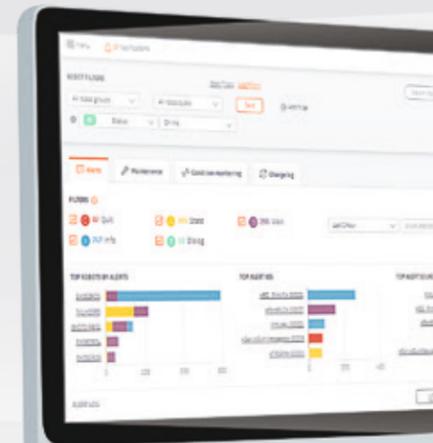
KUKA Connect is a smart, cloud-based analytical software package that enables you to operate your robots even more efficiently. The range of functions is easily accessible and is continuously being expanded, allowing you to reduce unplanned downtimes, eliminate faults more quickly and be aware of the exact status of your robot fleet at all times.

KUKA VCS

KUKA Visual Commissioning System is a web-based application for evaluating important process data of the PLC/robot. The visualized data can be used to evaluate errors, performance data, technical availability and cycle times of the production systems in a user-friendly manner.

Visual Components

The Visual Components 3D simulation is used worldwide for major planning and decision-making processes. The easy-to-use product features an open architecture and unique simulation of complete production sequences – a key element for the analysis, optimization and visualization of entire production lines, including the virtual commissioning of production facilities.



KUKA Service

Custom-tailored offerings – for maximum availability of your production systems

With KUKA Service, you have direct access to 100% manufacturer expertise. Your decisive advantage: maximized system efficiency. After all, we do not just talk about proactive service, we live it. Our experts help to avoid unplanned downtime, with multiple benefits for you – maximum availability of your systems and increased service life of your KUKA robots.

KUKA College: Avail yourself of specialist knowledge – from the experts who developed and built the robot

Optimally qualified employees ensure that your production runs smoothly. Their valuable know-how is based on practice-oriented specialist knowledge that needs to be topped up continuously. To this end, make use of the wide variety of individual training programs offered by our KUKA College.



KUKA College at home on every continent:
Avail yourself of our practice-oriented specialist knowledge wherever you need it.
All details available at college.kuka.com



Always state-of-the-art:
Prepared for every challenge in production with the innovative know-how of KUKA experts.



KUKA 24-hour hotline support – at your side around the clock, 365 days a year

Whenever you need our support – you can reach us around the clock. Our experts specialize in precise telephonic fault analysis and provide rapid self-help assistance. We also offer reliable remote diagnosis tools – directly on your system controller.



Local presence and rapid emergency response – thanks to the extensive KUKA customer service network

When it comes to the crunch, only one thing counts: reducing downtime to a minimum. For this reason, our service specialist will set out from one of our service centers within two hours in an emergency – with the required spare parts – in order to carry out on-site repairs.



Preventive maintenance management – the safest way to ensure cost-effective production

From regular maintenance to system optimization – there is no substitute for the technical expertise of our experts. They know KUKA robots and automation solutions inside out and can therefore find appropriate solutions quickly – before costly downtime arises.



Highest spare parts availability on the market

As one of the world's leading automation providers, KUKA has a lot in store for you: every service center in Germany stocks a comprehensive range of spare parts. We also offer repairs with exchange deliveries and spare parts availability of at least ten years.



Enjoy all the advantages of a KUKA contract customer right from the start.

With the maximum availability of your systems in mind, we offer customized packages for service and maintenance tailored to your requirements. Profit from a unique range of consultancy and support services of the highest quality – as a KUKA contract customer.

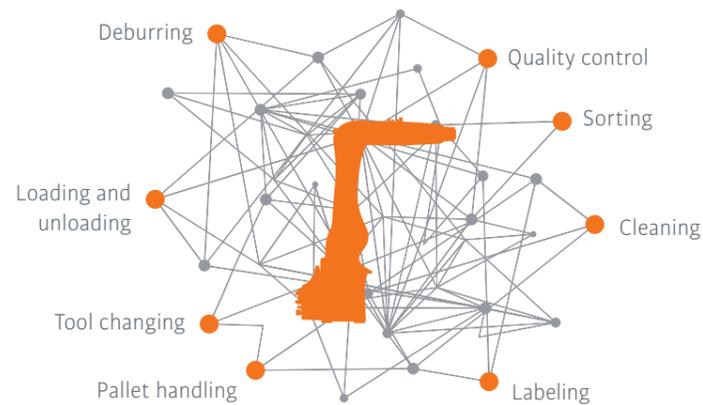
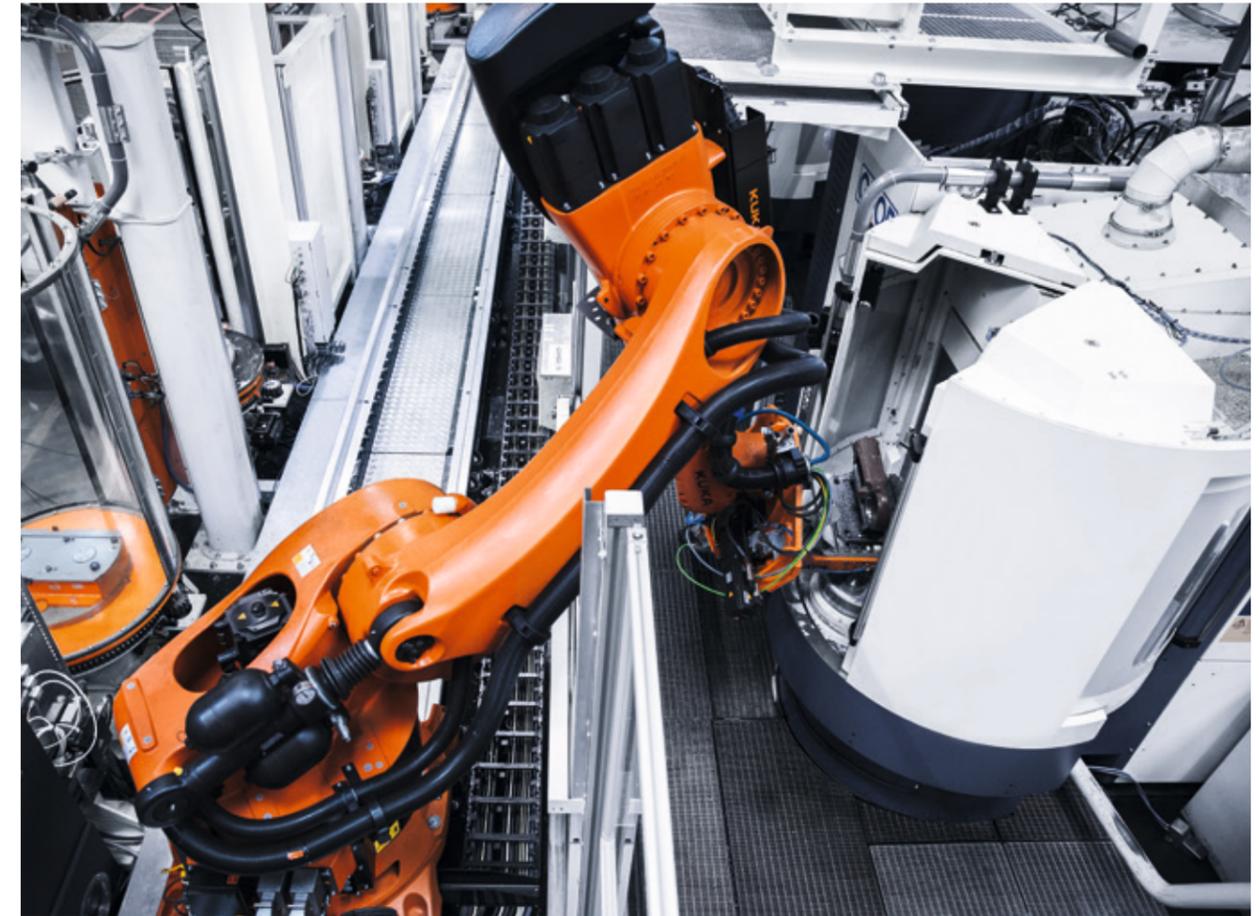
Automation for machine tools

Use robots to tap their full potential.

There is potential for enhancing productivity and profitability in every manufacturing step. KUKA robots allow you to make full use of that potential, because they can automate a large number of processes. As well as the established tasks of loading and unloading machines, other tasks such as deburring, marking, measuring and tool changing can be added. You can increase productivity still further by linking different machines by means of a robot or a mobile platform (AGV). This enables you to fully exploit their capabilities. With KUKA, you avoid cross-vendor interfaces since all solutions are available from a single source.



Scan here to see KUKA robots in motion:



Linking machines
KUKA linear units considerably enlarge the workspace of your system and can be seamlessly integrated into the process sequence.

Everything from a single source
KUKA offers articulated robots, matching linear units, linear robots and mobile platforms as well as mobile robots.



Loading and unloading workpieces
On this DMG Mori machine with two clamping stations, the workpieces are machined from no fewer than six sides. The robot loads and unloads the workpieces, moving each one to the optimal machining position.



Tool change
In the case of large-scale tool magazines, robots support the handling of tools, e.g. in the "Tool Arena" of KUKA system partner Demmeler. This means there are no limits to your productivity even where 400 tools or more are required.



Measuring
Integrated measuring stations in the automation cell provide almost instantaneous information about the machining quality.

The spectrum of KUKA robots

Exactly the right size and function for you



KR AGILUS
The KR AGILUS enables you to tap new fields of application through its versatility. Irrespective of the installation position – whether on the floor, ceiling or wall – it offers utmost precision in confined spaces thanks to its integrated energy supply system and service-proven KR C4 controller. This robot is a WP variant specially designed for use within machine tools.



KR CYBERTECH nano
The specialized process robots of the KR CYBERTECH nano product family are perfectly tailored to handle small components. Benefit from maximum diversity for greater economical flexibility with minimum investment and energy costs.



KR CYBERTECH
These powerful and compact multi-function robots are specialized in handling applications. KR CYBERTECH also convinces through greater integration density and minimal disruptive contours.



KR 1000 titan PA
The world's first robot for payloads up to 1,300 kg – with high dynamic performance and short cycle times. Without a parallelogram and deployable on a linear axis for mobility.



KUKA mobile robotics
Mobile robots can be used in any production environment and thus offer maximum flexibility for industry. KUKA provides a wide-ranging portfolio for every sector – from manually relocatable to autonomously navigating solutions.



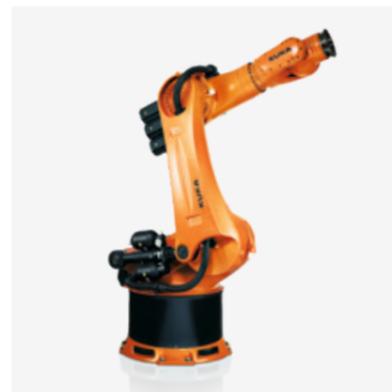
KUKA mobile platforms
With maximum flexibility, unlimited mobility and autonomous navigation – mobile automation solutions from KUKA find the way to their destination with unerring certainty even within highly complex production environments. With or without heavy loads.



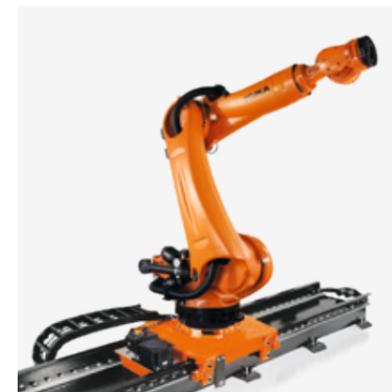
KR 30-3 und KR 60-3
These 6-axis industrial robots with jointed-arm kinematics offer precision and versatility. They also have high path accuracy and perfect positioning behavior.



KR QUANTEC
Added together, the innovative features of the KR QUANTEC impress with maximum performance in any production environment. With its digitized Motion Modes, the future-proof robot can be adapted to specific tasks in a matter of seconds.



KR FORTEC
Strong, stronger, KR FORTEC. KUKA rounds out the heavy-duty segment with the KR FORTEC series. The technically sophisticated robots handle payloads of 360 to 600 kg with high precision, and are best suited for new cell concepts and linear units.



KUKA linear units
KUKA linear units are available in various sizes and payload categories, according to the robot series to be installed on them.



KR 80L linear robot
Thanks to its service-proven drive components and modular structure, the KR 80L linear robot impresses in work envelopes from 0.75 m³ to 225 m³. Due to its minimal disruptive contours, it is also optimally suitable for linking work processes.



KUKA Milling package
This application module is a high-precision robot equipped with spindle, software, controller and frequency converter – tested and adapted to machining many different materials.



www.kuka.com/contacts



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