KUKA

Increased productivity for you
_Automation for machine tools

Generate new potential for growth. Fast, simple, cost-effective.

The metalworking sector is currently undergoing a profound change. Regardless of how the market changes, however, top quality in metal machining will always be the priority. But what if in addition to achieving the required quality you could also record high profitability? Intelligent automation solutions with KUKA give your machine tools the capability to work more precisely, more quickly and more efficiently than ever. Not just sometime down the road, but now. That's because our concepts are integrated into existing production environments. So set a course for increased margins and new market opportunities, starting today and continuing into the future. We call this ›Orange Intelligenz‹.

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.

Optimum throughput

Enables unmanned shifts

Utmost reliability

Increases quality

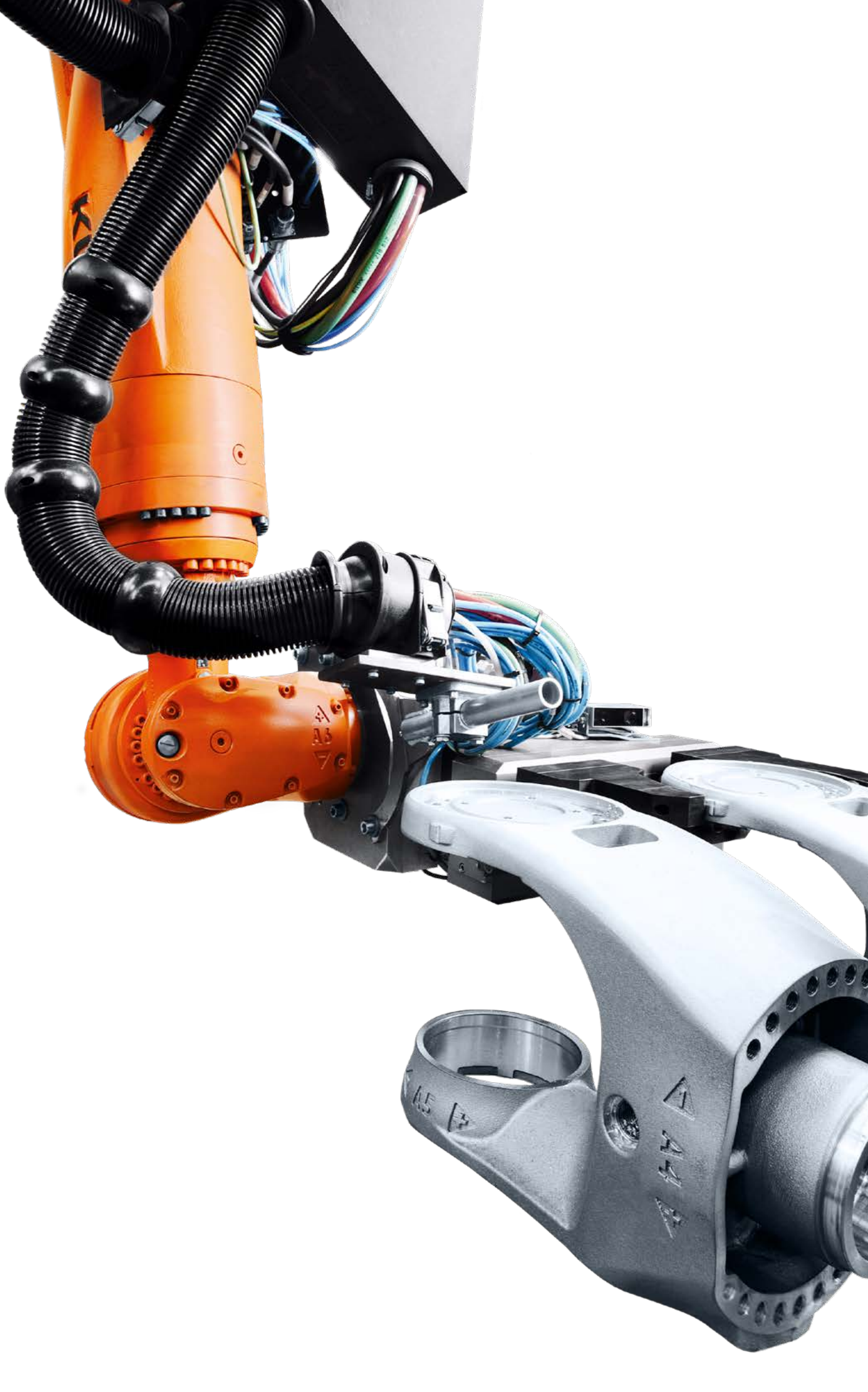
Compensates for skilled labor shortage

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 and deburring. 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.

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

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 %.

KUKA smartPAD, KUKA.Handguiding with ready2_pilot and KUKA.HMI. Robot handling easier than ever before.

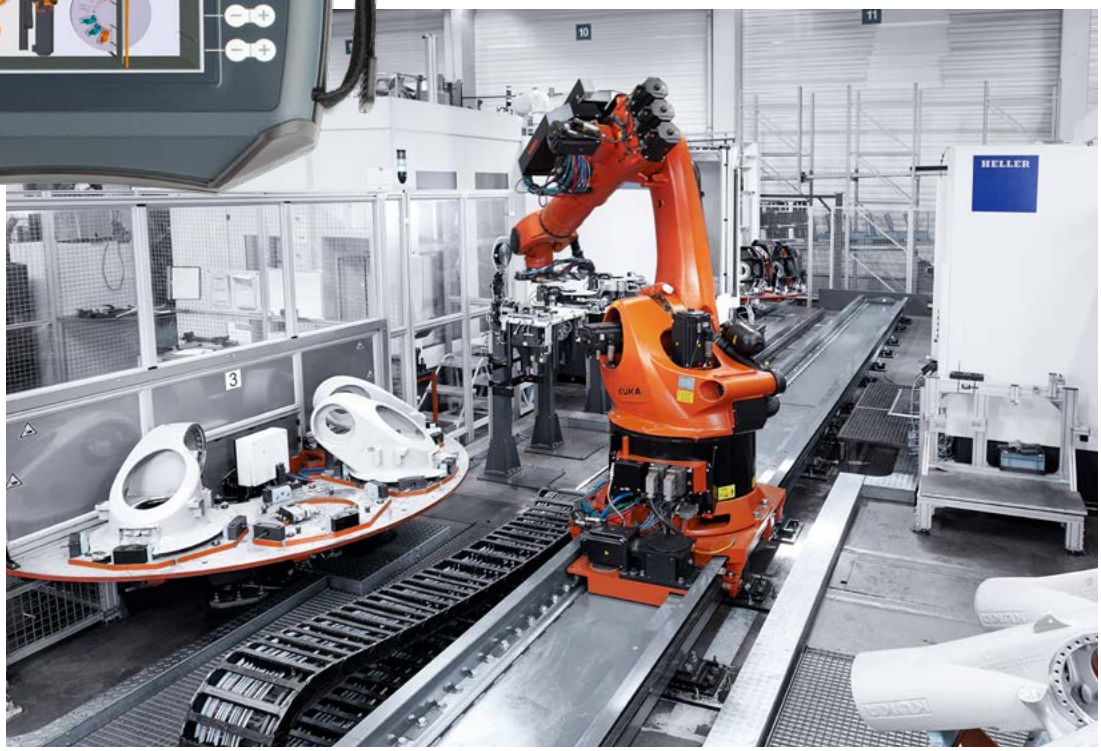
Everything under control. With the 8. 4" touch display, the integrated keys and the mouse, you have your robots fully under control at all times. The optional HMI plug-in provides a project-specific graphical user interface which shows only those elements that the machine operator requires for his or 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.

Intuitively operable – **KUKA.Handguiding with 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.

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.



KUKA.PLC mxAutomation. The convenient, universal interface makes KUKA robots extremely easy to operate.

Native programming interfaces make for simple programming and integration of KUKA robots into your machine environment. Our KUKA.PLC mxAutomation control software is ideal for all interfaces.

With the KUKA.PLC mxAutomation control software, it is possible for external controllers to command KUKA robots on the basis of elementary motion instructions. This provides an easy route to implementing a central, customer-friendly operator control concept for robot-controlled production machines.

The outstanding kinematic and safety-relevant functions of the KUKA controller remain fully available since the mxAutomation command interpreter of the KR C4 communicates the PLC commands to the path planning module, which sets the robot in motion with the accustomed precision and reliability.

Simple programming. With KUKA.PLC mxAutomation, the user requires minimal knowledge of robot programming. The mxAutomation function blocks allow the KUKA robot to be commanded within the familiar PLC programming environment.

High flexibility. If the requirements in production are changed, the appropriate modifications or expansions can be implemented at any time with mxAutomation-based operator control. The flexibility made possible by using robots with regard to processing new series of parts or performing additional tasks is made available for the operator in his customary environment.

Simple control. The combination of robot and machine control with KUKA.PLC mxAutomation enables KUKA robots to be integrated effortlessly into existing operator control concepts. The robot can therefore also be controlled via the customary human-machine interface. Teach pendants for the machine can be used for setting the robot as well, provided appropriate safety precautions are implemented. A good integration example in this context is the incorporation of KUKA robots into the Sinumerik world on the basis of mxAutomation for S7, as offered by Siemens®.

SIEMENS
BECKHOFF
Rexroth Bosch Group
B&R A member of the ABB Group
CoDeSys
Lenze
Schneider Electric
Allen-Bradley by ROCKWELL AUTOMATION
MITSUBISHI ELECTRIC
Rockwell Automation

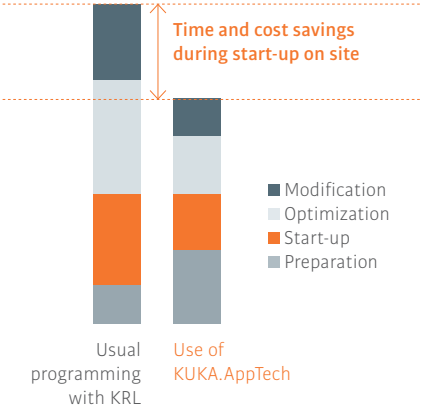
KUKA.AppTech. Reach your goal faster with established standards.

Our option package provides the common thread in application programming with defined interfaces, ready-made program structures and modules.

KUKA.AppTech includes

- Proven station and component program templates
- A comprehensive library of customizable and expandable function blocks
- PLC function and data blocks for seamless, optimized PLC programming for common PLC manufacturers

With KUKA.AppTech as the company standard, you save valuable time since the program logic and operator control concept are always identical.



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.

Relevant data in real time

PLC and robot signals make for transparency

All components under control

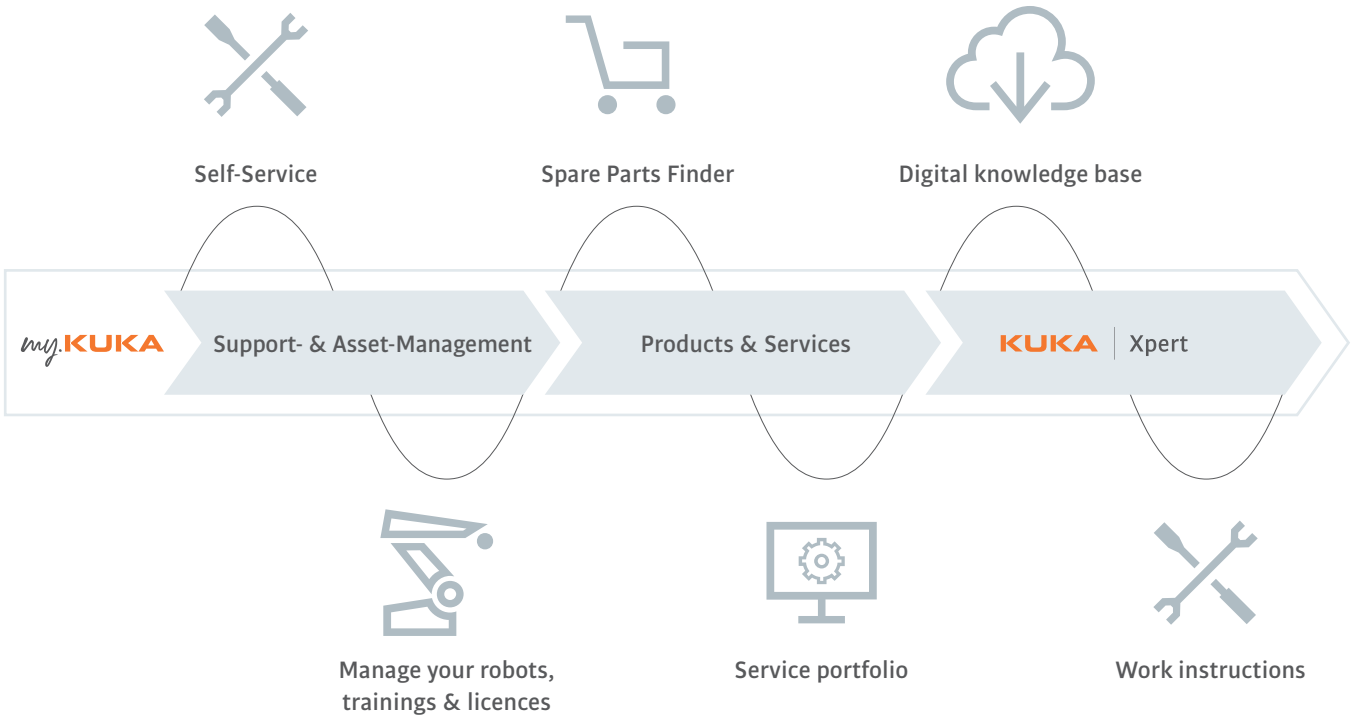
Pinpoint analysis of the error source

KUKA Digital Touchpoints.
Your digital connection to the world of KUKA.

Create your support requests online and view the processing status. Remain up to date at all times and promptly receive the support you need.

Use the Spare Parts Finder to quickly and easily select and order the spare part you need for your robot.

The KUKA Xpert digital knowledge base provides comprehensive technical information, such as instructions and documentation for your KUKA products.



Register your KUKA products quickly and easily online and receive access to complete product documentation. Manage your KUKA licenses and stay up to date on employee training and development.

The digital product catalog provides you with a comprehensive overview of our service portfolio, spare parts and our digital products. Buy products directly online or submit a quotation request.

Get 24/7 direct access to work instructions as well as to fault diagnosis and troubleshooting options for your KUKA assets.

Analysis at a click. Throughout the entire production process.

KUKA.Sim. 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. The 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 iiQoT. This 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 Global Customer Service.
To maximize your success.

Our business does not end with the sale of a robot. We offer a wide range of services for the robot, stretching from the decision phase for automation to training, programming, maintenance and refurbishment of used machines.

All products offered by Customer Service were designed with one goal in mind: maximizing your success. And we bring our passion and enthusiasm to this endeavor.

We are always there for you – whether you need technical assistance or advice on the optimal maintenance philosophy or production optimization.

Hotline
customerservice@KUKA.com

Hotline. The KUKA Hotline provides expert assistance for technical challenges regarding the robot. A globally standardized ticket system enables seamless collaboration, no matter where the robot is located. Use my.KUKA.com in conjunction with the KUKA Hotline for an even faster response time and greater transparency.

Consulting
customerservice@KUKA.com

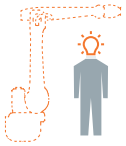
Consulting. Our Customer Service consultants will advise you individually on site and deliver customized solutions that meet your exact requirements. With the right answers regarding spare parts, maintenance, programming & optimization as well as retrofits, the consultants ensure your success.

www.my.KUKA.com
my.KUKA

Self-Service with my.KUKA. my.KUKA.com is a powerful self-service platform. Registering your robot fleet gives you access to tailored product documentation and the Xpert database for fault analysis including valuable work instructions. Beyond this, my.KUKA links your robot fleet to the KUKA marketplace – thus making the search for the right spare parts or available services a breeze.

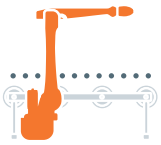
KUKA Customer Service.
Benefit from our portfolio.

Upgrade & Refurbish. A timely upgrade or refurbishment ensures the sustainable use of robotic automation. Depending on your operating parameters and requirements, experts from KUKA renew your system – from selective upgrades to renewal of the entire robot system. This assures a second life cycle of your investment.



Plan & Select. The optimal choice of the robot type and the implemented technologies lays the foundation for successful robot automation. Simulation, feasibility studies and test setups by our KUKA technology experts reduce risks and guarantee minimum planning times.

Setup & Program. In the Setup & Program phase, KUKA technicians undertake the programming work, develop intelligent application solutions and ensure smooth installation of the robots. We do everything to make sure that every start of production is successful and that the quality is right.



Operate & Maintain. Availability, performance and quality are the key factors in successful production. Our preventive maintenance and flexible service levels – along with a guaranteed supply of spare parts – assure high availability of your robot. Qualified performance checks by KUKA experts additionally identify optimization potential in terms of performance and quality.

KUKA College. The easiest and most modern way to work with robots.

KUKA leaves nothing to chance in this area and offers state-of-the-art methods for the training and development of your employees.

Your company benefits from your employees' capability to
- successfully implement the project through correct planning and assessment of risks.
- ensure targeted programming and implementation.
- increase productivity and safety in your system.
- respond quickly and efficiently to production changes.

KUKA College supports your employees from beginners to experts with an intelligent combination of digital media and practical in-person training – a powerful learning platform that can be expanded with customized training as needed.

In-person training at KUKA College
50:50 theory/practice combinable with online modules

Certified trainers Highly qualified
and evaluated

Online
E-learning modules and interactive online webinars from the comfort of your own home

On-site training sessions
We come to you, anywhere & anytime

Digital Learner Platform
Digital support through videos, tutorials and self-study modules throughout professional life

Modern training environment
Certified Colleges – worldwide

Custom-tailored workshops
Training modules tailored exactly to your individual requirements

Xpert
Knowledge base – Expertise on demand

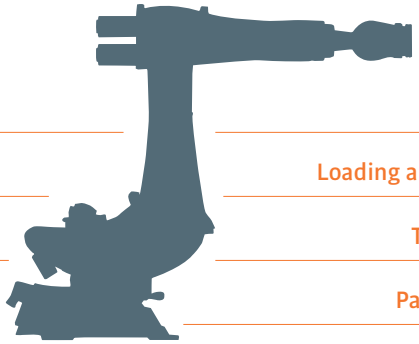
Automation for machine tools.
Use robots to tap their full potential.

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.

Next level: Tool automation thanks to mobile robotics. From price increases to shortages of skilled labor, industrial companies are under increasing pressure to meet demands for quality, volume and speed. In a pilot project, KUKA and HELLER, a producer of CNC machine tools, have developed a solution to these challenges: A KUKA KMR CYBERTECH automatically loads and unloads machines with tools and provides relief to employees.

The spectrum of KUKA robots.
Exactly the right size and function for you.

LBR iisy
Flexible, intuitive to use, fast to implement and safe in direct contact with human colleagues – the LBR iisy is an all-around cobot for automated production. It combines the know-how, precision and reliability of industrial automation with the intuitive flexibility of a smart device.

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 the new KR C5 micro controller. This robot is a WP variant specially designed for use within machine tools.

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

KR IONTEC
An all-in-one solution: the KR IONTEC confidently masters all production challenges and impresses with the largest work envelope in the medium payload category. It offers perfection in every installation position, utmost dynamic performance and minimum cycle times.

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.

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.

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.

kuka.com/contacts
facebook.com/kukaglobal
youtube.com/kukarobotgroup
twitter.com/kukaglobal
linkedin.com/company/kukaglobal
instagram.com/kukaglobal

www.kuka.com

BB | machine tools | EN | 06 | 0922