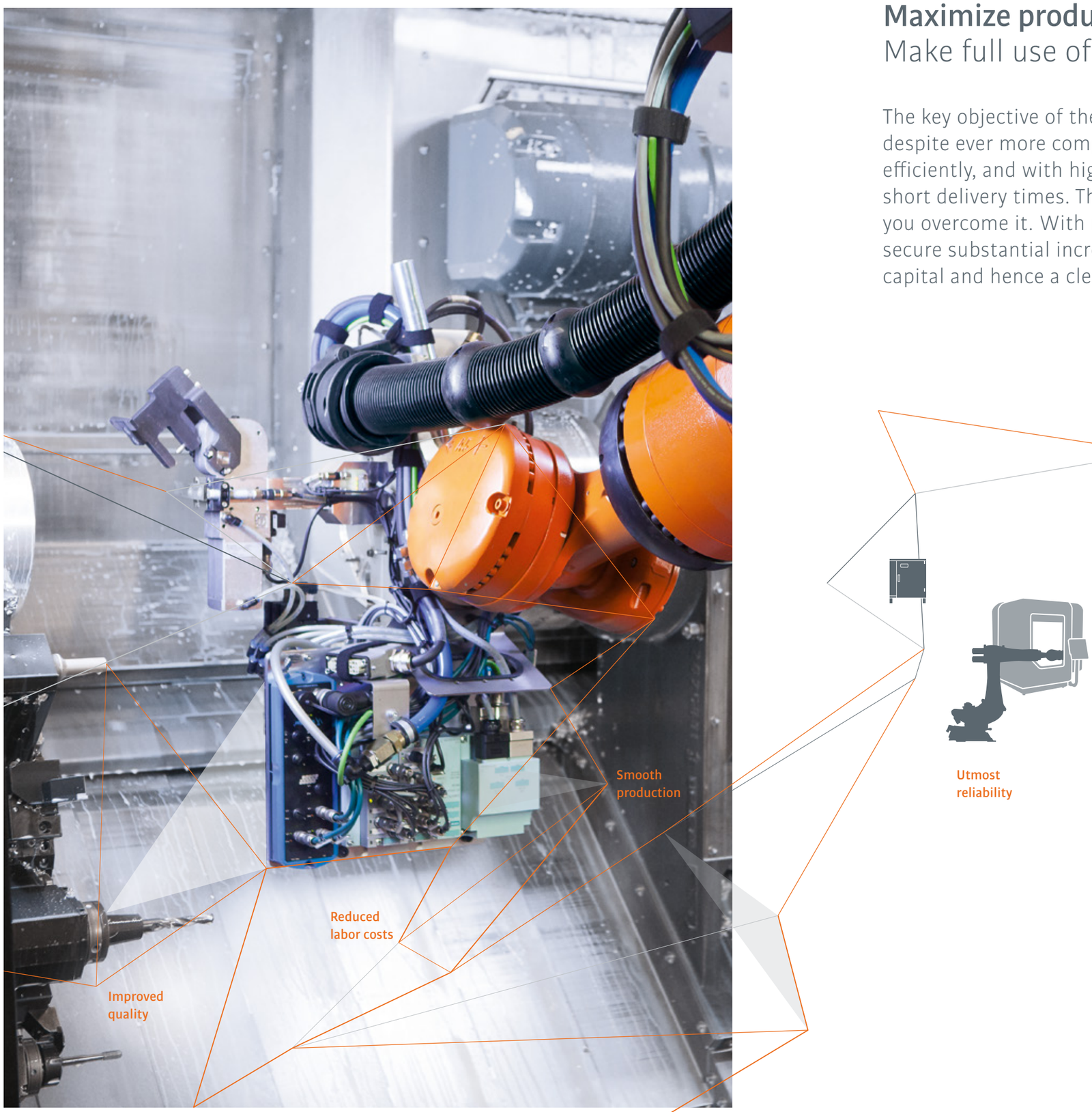
KUKA

Increased productivity for you
_Automation for machine tools

EN

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‹.



Maximize productivity with KUKA robots

Make full use of your machine tools' potential.

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.

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. In this way you can ensure an availability of 99.995%.

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.

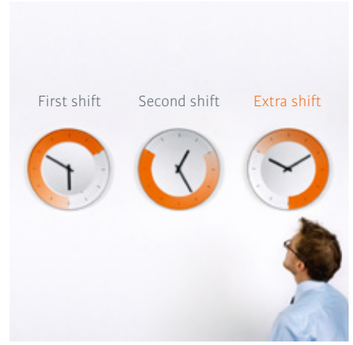
17% shorter machining times
With KUKA robots,
you gain valuable time.

Where accuracy of the machine tool is not required, the robot takes over tasks such as drilling, brushing and deburring of the machine. This 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. On components requiring intensive machining, the robot can also carry out roughing, leaving the machine to take care of the smoothing alone.

50% higher throughput
Achieved by 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 a day. This boosts productivity by a full 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 in operation
Once set up, the robot performs tasks such as deburring and brushing reliably and with the highest level of quality – 40,000 hours and no mistakes.

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.

The KUKA robot portfolio

With such a large selection, there is no need to compromise.

Entrust your automation to high-performance professionals. The KUKA robot portfolio – from the KR AGILUS series to the KR titan series – offers an unequaled breadth of choice which will fully satisfy your needs and desire for an efficient and cost-effective solution.

A full range of possibilities
The KUKA portfolio offers you up to 280 different robot types – from small robots to heavy payload robots.

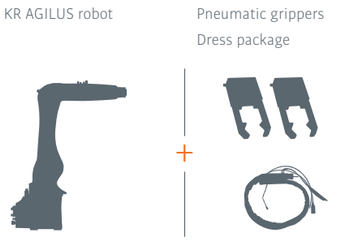
- **A** KR AGILUS series
- **B** KR CYBERTECH nano series
- **C** KR CYBERTECH series
- **D** KR 30-3-Serie und KR 60-3 series
- **E** KR QUANTEC pro
- **F** KR QUANTEC extra
- **G** KR QUANTEC prime
- **H** KR QUANTEC ultra
- **I** KR 360 R2830
- **J** KR 280 R3080
- **K** KR 240 R3330
- **L** KR 500 R2830
- **M** KR 420 R3080
- **N** KR 340 R3330
- **O** KR 600 R2830
- **P** KR 510 R3080
- **Q** KR 420 R3330
- **R** KR 500 R2830 MT
- **S** KR 480 R3330 MT
- **T** KR 1000 titan
- **U** KR 1000 L750 titan

Find out more about the KUKA robot portfolio on pages 18 – 19.

Reach / payload

3,300 – 3,900 mm				H				U
2,900 – 3,300 mm			F	F G H Q	M N	S		T
2,300 – 2,900 mm	D	E	E	J K	I R	L P	O	
1,700 – 2,300 mm	C							
1,100 – 1,700 mm	B							
500 – 1,100 mm	A							
	5 – 50 kg	50 – 100 kg	100 – 150 kg	150 – 250 kg	250 – 400 kg	400 – 600 kg	600 – 750 kg	750 – 1,000 kg

For heavy loads up to 1.3 tonnes
KUKA robots are ideally compatible with machine tools and command an extremely large work envelope.



Options:

- Blow-out nozzle
- Teach-in tip

ready2_grip including gripper

ready2_grip combines a robot and one or two pneumatic grippers in a single package. Pre-assembled, fully wired, tested and delivered ready to use. Worldwide service and spare parts supply service provide full productivity in daily operation. Despite the need, the market had not yet provided a solution. Now there is one – from KUKA.

The production process completely redefined

The combination of a robot and an autonomous platform permits a production process oriented towards maximum productivity, as opposed to a process tied to the positioning of machines in the production hall. Thanks to the integrated laser scanner the platform can navigate fully autonomously. If a person or object is in its path it responds immediately and stops, or seeks an alternate route. It does not rely on any sort of floor markings or guide wires embedded in the floor. If the production process changes, the route of the platform is reconfigured on the PC.

KUKA smartPAD, KUKA ready2_pilot and KUKA.HMI
Everything under control, simple and absolutely effective

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 simple control screen which shows only those elements that the machine operator requires for his or her daily work; the training requirement is minimal. Data archiving and data updates are child's play, thanks to the integrated USB port.

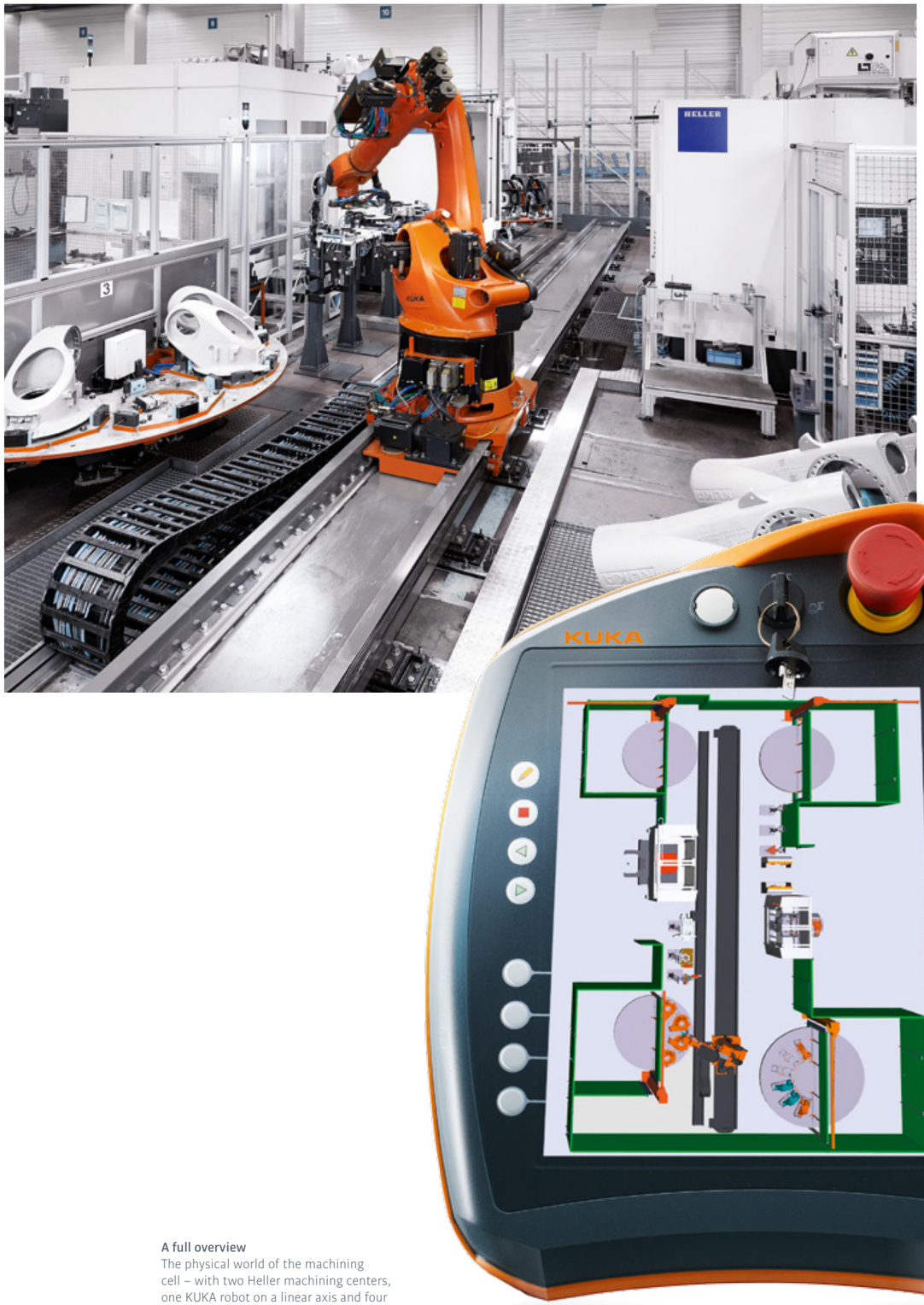
Ready for immediate use

KUKA robots perform machining tasks like machine tools – and can be programmed like them too in G-code (DIN 66025) thanks to the KUKA.CNC interface. Users understand straight away; they 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. Tool radius correction, sister tools and many other familiar CNC functions are included.

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.

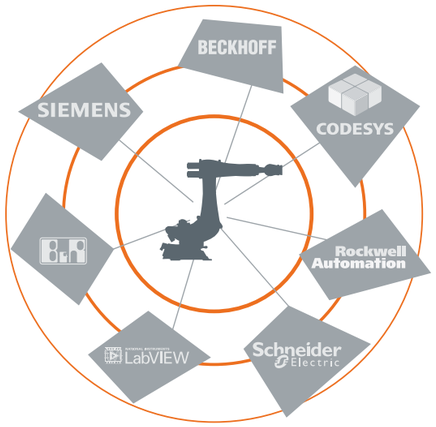


A full overview
The physical world of the machining cell – with two Heller machining centers, one KUKA robot on a linear axis and four feeder stations – is visualized on the screen of the KUKA smartPAD, thus allowing a full overview of everything that is happening in the cell.

KUKA.PLC mxAutomation

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 performed in the familiar PLC programming environment; operation and diagnosis are performed easily via the user interface – even by those with no special knowledge of robot programming. The incorporation of a KUKA robot into the SINUMERIK world, as offered by Siemens®, 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 central programming
With KUKA.PLC mxAutomation, programming can be carried out on the controller and control panel of the machine.

Operation via a panel
KUKA.PLC mxAutomation allows easy control of the KUKA robot in the familiar environment of the user interface of the machine tool.

KUKA SmartProduction
Continuous control and maximum safety

The leap into automation was not easy, but it has paid off for your company. Now all you need is software for the easy and reliable digital networking of all of your robots and machines in order to meet your requirements and increase profits. KUKA SmartProduction provides continuous access to all process-relevant data via a smartphone or computer. This means you will be ready for Industrie 4.0.

Real added value for your production and your employees

KUKA SmartProduction allows you to access and evaluate your usage and consumption-related production data from anywhere and at any time – right down to the smallest detail. Designed for maximum freedom, this important tool can be incorporated into the hardware environments in your production, irrespective of the manufacturer and sector.

Access to relevant data at any time and from any place

Everything in focus, worldwide
KUKA SmartProduction allows you to digitize all relevant processes and offers you flexibility in calling them up. The leap into the cloud provides you with access to the latest information from anywhere in the world.

Immediately rectify machine downtime
KUKA SmartProduction provides you with a complete overview of your production, wherever you are. At any time you can call up data on relevant deviations that indicate future problems, allowing you to analyze and rectify the situation.

Everything under control with one click
KUKA SmartProduction allows you to use your mobile phone or computer to zoom in on the production situation. That's a real plus for you and your employees. You no longer need to be on the spot in order to keep production under control.

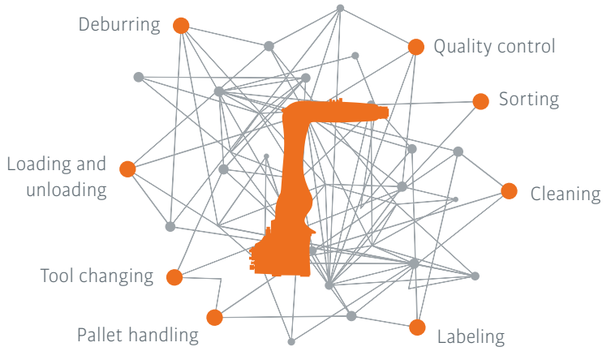
Continuously increase productivity
KUKA SmartProduction offers you an analysis of your production cells. You are thus in a position to achieve continuous improvement in the effectiveness of your production.

A full overview of your assets
KUKA SmartProduction allows you to control and regulate in detail your entire production – right down to individual robots or machines.

Automation for machine tools
Use robots to tap their full potential

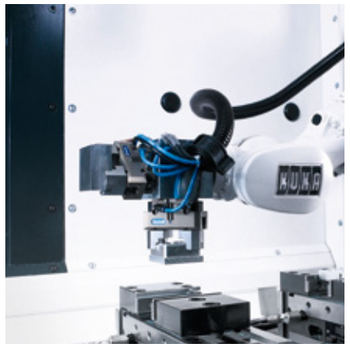
There is potential for productivity and profitability in every manufacturing step. KUKA robots allow you to make full use of that potential, because they can automate a large number of processes. As well as the established tasks of loading and unloading machines, other tasks such as deburring, marking, measuring and tool changing can be added. You can increase productivity still further by linking different machines by means of a robot. This enables you to fully exploit their capabilities.

Scan here to see KUKA robots in motion:



Pallet handling
Even the smallest of batches – right down to a batch size of one – can be productively automated with robots; by using pallets and zero-point clamping systems, like in this cell from Hermle, for example, for parts weighing up to 1,000 kg.

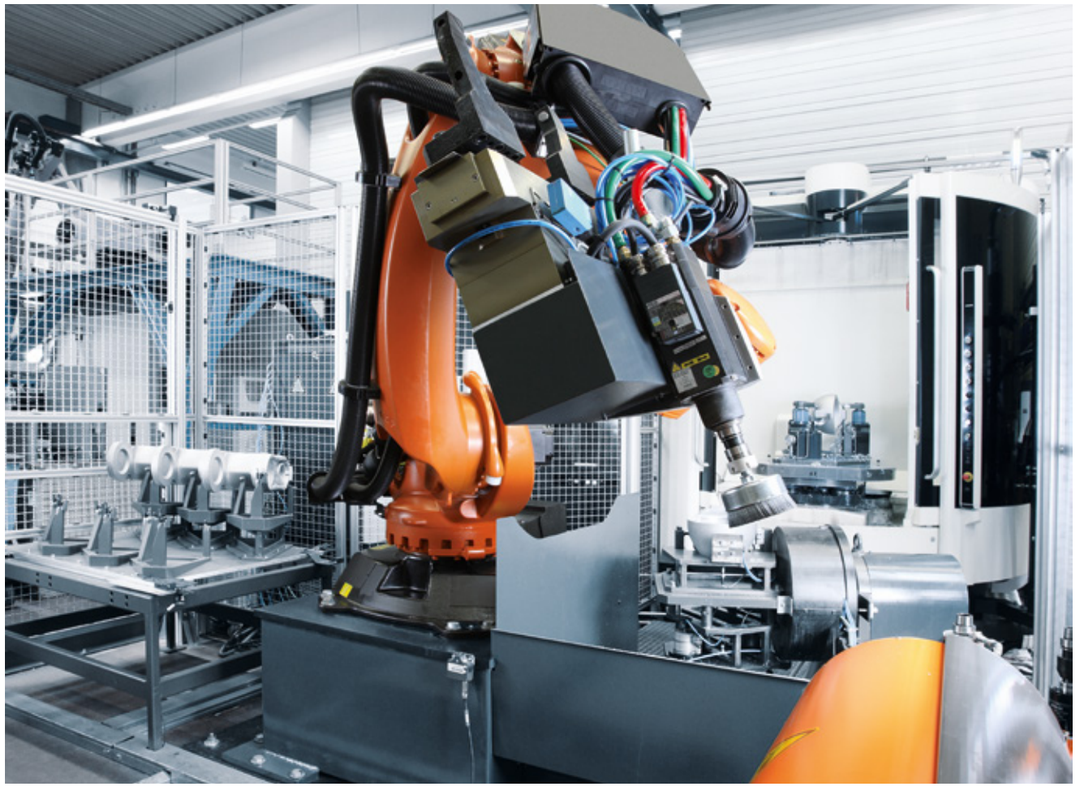
Deburring
KUKA robots can intelligently supplement machine tools by taking over simpler tasks with less demanding performance requirements – such as deburring for instance.



Machining from six sides
On this DMG 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.

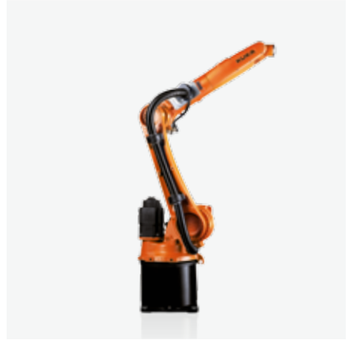
Tool changing
In the case of large-scale tool magazines, robots support the handling of tools, e. g. in the 'Tool Arena' of KUKA system partner Demmeler. This means there are no limits to your productivity even where 400 tools or more are required.

Measurement
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.

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

KUKA ready2_grip and KUKA ready2_pilot
KUKA ready2_grip for handling tasks can be integrated immediately into production as a pre-configured application package. On the basis of many years' work we have developed an intuitive teaching device, which we offer with the ready2_pilot package.

KR C4
The KR C4 controller is the all-rounder for the automation of tomorrow. It reduces costs in integration, maintenance and servicing. At the same time, the KR C4 sustainably increases the efficiency and flexibility of the systems – thanks to common, open industry standards.

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
The KR QUANTEC is characterized by maximum dynamic response coupled with extreme stiffness and high performance. With its perfect balance between payload capacity and reach, there is no other product like it on the market – it offers maximum performance from every position.

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 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 function and technology packages
These give robots the capability of performing the functions relevant for your industry within an automation solution.

KUKA Service – Working day and night for you

Service quality plays a decisive role in efficient production sequences – over the entire life cycle of the product. To be able to provide you with this efficiency, we have made Customer Service one of our main disciplines – with global presence, a worldwide network of system partners, proven best practice concepts and 24-hour support. The main objective of our services is always the competitive advantage to your company.

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