A marvel of productivity for bending processes.

KUKA

WORKING IDEAS

ROBOT AND PRESS PROGRAMMING COMBINED: KUKA BENDTECH.

The KUKA BendTech software has been developed specially to meet market requirements for bending technology. It can be used with all major press controllers. Robot functions, such as fetching, bending, lifting and repositioning, are synchronized with the bending functions. This brings advantages – during programming and commissioning, in day-to-day continuous operation, and during servicing and maintenance work.

Workpiece pick-up

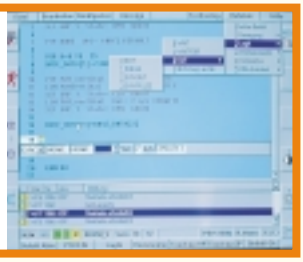
Centering

Additional process

Multiple bending process

Set-down

The optional KUKA BendTech software package allows simple programming of the entire process offline. Production can meanwhile continue without interruption, changeover time is minimal, and newly created programs can be used without modification.



"Press" your machines for all they're worth.

- **Improved cycle times with large batches**
- **Low cycle times with large parts that are difficult to handle**
- **Consistently high quality, irrespective of batch size**
- **Simple integration with existing press brakes and bending centers**
- **Can be operated continuously 24 hours a day**
- **Reliable system availability in environments with high levels of noise, dirt and heat**

KUKA robots and Bending software ensure that bending processes are short and cost-effective. They significantly boost the productivity not only of your machine, but also of your entire production process. The following rule-of-thumb applies here: the larger the batch size and the heavier the parts, the greater the advantages to be gleaned from using robots. Even with small batch sizes and parts, the use of KUKA robots ensures consistent cycle times over long periods, high quality and availability, and savings in terms of personnel costs.

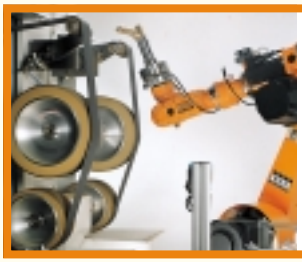
EXPLOIT NEW POSSIBILITIES, SAVE ON EXPENSIVE SPECIAL MACHINERY.

KUKA robots can do far more than simply load and unload machines. They also take care of a range of subsequent work processes. Here is an overview of some of their capabilities:

Loading and unloading. The loading and unloading tasks of the robot at the press brake include picking up the blank plate, turning it and setting down the finished product.

Laser cutting. Thanks to the complex motion and positioning capabilities of robots in 2 or 3 dimensions, solid-state lasers and robots have become a well-established combination for laser welding and cutting in a vast range of industrial applications.

Arc welding. Another processing step in the metalworking industry is spot and arc welding. These are applications in which KUKA robots have decades of experience.



Grinding and polishing. Ever more demanding design and quality requirements in the metalworking industry necessitate the use of robots for precise surface finishing.

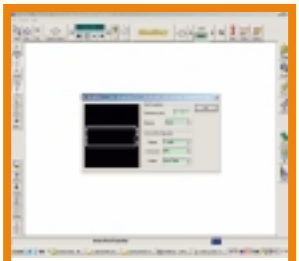
Palletizing. The work process may be over, but the potential of a KUKA robot is still far from being fully tapped. Stacking and palletizing are among its specialities.

The range of possible applications for KUKA robots knows practically no bounds. KUKA robots can take care of not only the entire machine-tending process, but also tool changing and further machining processes, such as cutting, welding or polishing. Furthermore, KUKA robots far surpass the performance of any human operator. Under certain circumstances, they can also replace a wide range of extra machines. If that's not cost-effective…

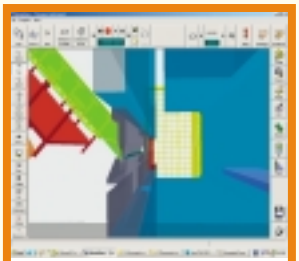
KUKA BENDTECH PRO* – NEVER PROGRAM AGAIN!

*AVAILABLE 2004

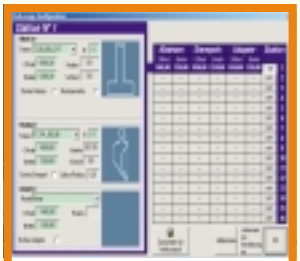
BendTech Pro allows offline programming of the robot and press brake in a single step. A simulation of the planned application is created offline. This enables system processes (cycle time, reach, collision check, and even offline programming) to be tested and, if required, optimized before commissioning. Thanks to the integrated bending sequence software, developed specifically to meet the requirements of modern sheet metalworking plants, a new press and robot program for a new workpiece can be generated while production continues.



The CAD program supplies workpiece data input with various layers (e.g. bending lines).



The bending sequence software BendTech Pro simulates the new work process offline in a feasibility study.



BendTech Pro generates the operating and tool lists for the bending process offline using familiar Windows graphics while production continues.

The robot and press program generated and tested offline is transferred and the modified production process is started after a very short setup time.

KUKA Bend Tech Pro speeds up your processes.

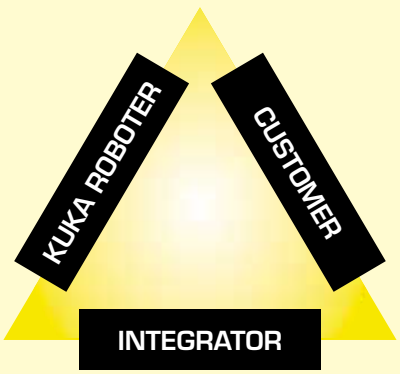
- **No teaching required**
- **Offline generation of the operating list (tools, grippers, bending sequences)**
- **Setup times reduced to a minimum**
- **Process simulation, feasibility study**
- **Cycle time analysis**
- **Robot motion synchronized with the press beam velocity (line encoder)**

The advantages of the open KUKA KRC robot controller are exploited to the full in bending applications. The robot and the machine interact optimally. Commissioning time is significantly reduced by using the inline forms provided on the KUKA Control Panel (KCP) for entering all values relevant for the bending process. The operator quickly feels at home thanks to the KCP's familiar Windows interface. Operating convenience the way it should be.

The KRC robot controller with its Windows interface offers widely-used programming standards. The KUKA Control Panel (KCP) makes data entry easy with menu-guided programming, predefined forms, etc. The highlight is the 6D mouse for teaching the robot motion by moving to points and saving the coordinates. Programming can't get any easier than this.

KUKA robots are available with the right payload capacity for every application. They range from 3 kg to 570 kg with variable mounting options (e.g. installation on the machine or suspended from the ceiling). And boast superior performance figures for work envelope, dynamics, and repeatability. With their high degree of customizability, KUKA robots are acknowledged to be at the leading edge of technology. They have proved their worth thousands of times in all areas of automation.

THE KUKA PARTNER NETWORK

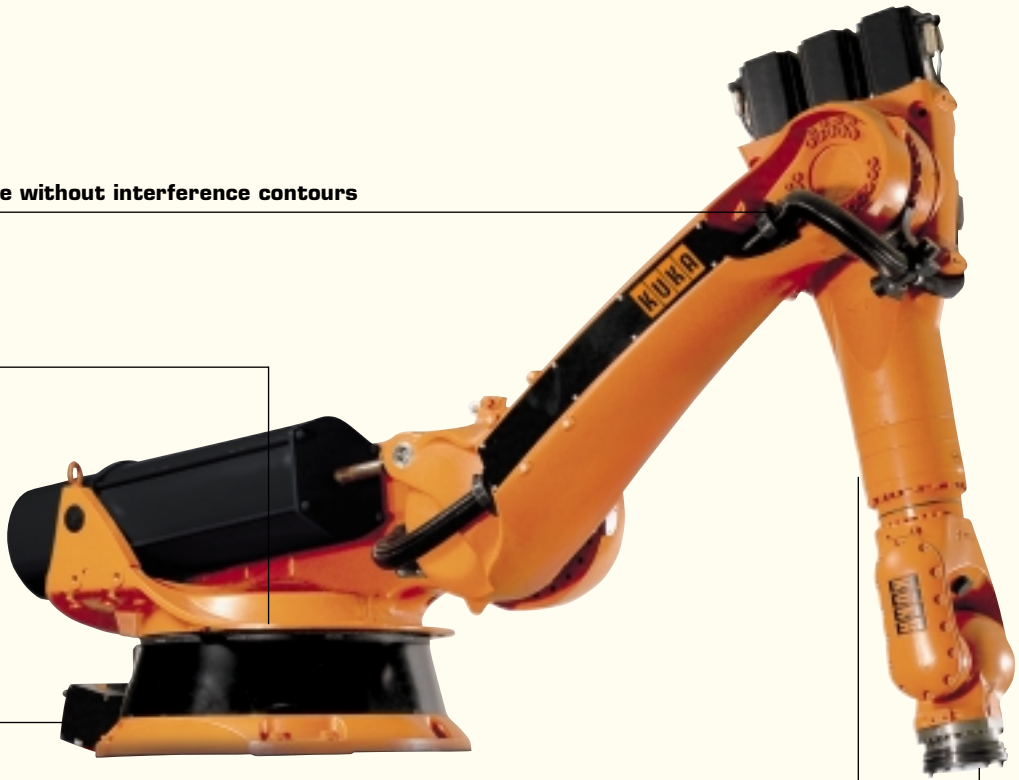


In order to implement the optimal solution for you, KUKA works together with selected specialists in various industries. These systems integrators have been joined into a network under the KUKA systems partner concept. Thanks to this expertise in creating "custom-tailored" solutions, KUKA has earned an outstanding reputation in a large number of industries. On top of this comes an extensive range of regional training facilities and service centers.

ONLY FROM KUKA: A UNIQUE RANGE OF ROBOTS FOR BENDING PROCESSES.

KUKA offers you a unique range of robots with payloads from 16 to 210 kg, developed specially for bending processes. Their low construction and long reach mean that they are ideally suited for the loading process. The awkward installation of the press brake on a pedestal is in most cases no longer necessary.

CONFIGURATION EXAMPLE BASED ON THE KR 150K SERIES 2000 SHELF-MOUNTED ROBOT



Integrated dress package without interference contours

Axis range monitoring

Press controller interface

Arm extension (200, 400 or 600 mm)

Up to 3700 mm reach

There are practically no limits to the uses of KUKA robots in bending processes. After all, not only is the robot product range especially extensive – a wide selection of different payloads is also available: in the medium and high payload categories alone we offer a choice of three bending process robots in each category. By installing the KUKA robot on a KUKA linear unit, i.e. an additional traversing unit mounted on the floor or ceiling, the fist-shaped work envelope of the KUKA robot can be expanded to virtually any length.

Everything you need for bending processes.

Low payloads:	Medium payloads:	High payloads:	Very high payloads:	Special shelf-mounted versions:
KR 16	KR 30	KR 150	KR 360	KR 16 K
	KR 45	KR 180	KR 500	KR 30 K
	KR 60	KR 210	KR 360 450 PA	KR 60 K
			KR 500 570 PA	KR 150 K
				KR 180 K
				KR 210 K

KUKA linear units. By mounting them on a traversing unit on the ceiling or floor, the mobility and functionality of KUKA robots can be expanded tremendously. Depending on the application, by mounting the robot on the ceiling, you can minimize floor space requirements, reduce periphery costs, increase your flexibility and process reliability and expand the work envelope.

WM-Nr. 841797/E/1/10.03 RTS-RIEGERTEAM.DE

CUSTOMER SUPPORT

In addition to our robotic systems, we offer not only an extensive range of support services, but also robot rentals, leases and spare parts.

KUKA World Support Center is there to ensure that your projects run smoothly, from the planning phase through to production. Our technicians concentrate on your specific requirements and optimize the standard product to meet your needs.

As far as availability is concerned, with KUKA you are in good hands. From programming and system optimization to maintenance and immediate assistance – our KUKA robot specialists are at your disposal. Our qualified hotline employees are available round the clock to deal with all your robot-related questions!

KUKA robots can do anything – if you know how to use them. It is for this reason that we not only produce state-of-the-art technology, but also set quality standards in the field of training. We offer seminars worldwide, tailored to virtually all technology applications of the various target groups.

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