

KUKA

KUKA Laser Automation Solutions

**LASERS AND AUTOMATION
PERFECTLY COMBINED**



COST-EFFECTIVE LASER MACHINING? KUKA HAS THE SOLUTION.



ANYONE IN METALWORKING TODAY KNOWS THAT TO REMAIN COMPETITIVE IT IS NECESSARY TO MANUFACTURE PRODUCTS THAT ARE OF THE HIGHEST QUALITY AND TO DO SO HIGHLY EFFICIENTLY. LASER WELDING, BRAZING AND CUTTING SOLUTIONS FROM KUKA MAKE THIS POSSIBLE! THEY SHORTEN YOUR MACHINING TIMES WHILE SIMULTANEOUSLY IMPROVING QUALITY. NO MATTER WHETHER YOU ARE WORKING WITH ROBOTIC CELLS, INTEGRATED SYSTEM SOLUTIONS OR SYSTEM MODULES, YOU WILL NOT RECEIVE AN “OFF THE RACK” SOLUTION FROM KUKA, BUT A CUSTOMIZED PACKAGE TAILORED TO YOUR SPECIFIC REQUIREMENTS: KUKA PROVIDES COMPLETE TURNKEY SOLUTIONS FROM A SINGLE SOURCE.

As the market leader, with many years of experience, KUKA masters the entire technological range of robot-based laser applications. KUKA laser solutions can be found in all major branches of industry – from automotive manufacturers and Tier 1 suppliers to the aerospace industry – and also in small and medium-sized metalworking companies. You want clean and fast processes that reduce your costs and optimize your manufacturing sequences? KUKA has the solution! With know-how, experience and future-oriented technical implementation that offers all-round process reliability.

LOW UNIT COSTS

1

... due to higher process speeds and reduced reworking

EXCELLENT PROCESS QUALITY

2

... achieved by means of a non-contact process with small heat-affected zone

GUARANTEED SECURITY OF INVESTMENT

3

... as the systems can be used and expanded flexibly

HIGH RELIABILITY

4

... with customer-specific solutions based on tried-and-tested standard components

IMPROVED COMPONENT DESIGN

5

... e.g. in terms of stability, material savings and weight reduction

COMPREHENSIVE CONSULTATION AND HIGH PROCESS RELIABILITY

6

... anchored in overall technological expertise in all common laser technologies and numerous other manufacturing processes



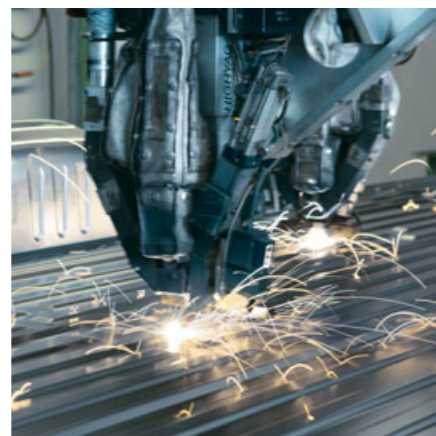
LASER + AUTOMATION = KUKA

VEHICLE BODIES, AIRCRAFT COMPONENTS, FACADE ELEMENTS, STAINLESS STEEL HOUSINGS – WHATEVER YOU WANT TO JOIN OR CUT, KUKA HAS THE TECHNOLOGY YOU NEED. CO₂ LASERS, SOLID-STATE LASERS, FIBER LASERS OR DIODE LASERS – FOR WELDING, BRAZING (WITH COLD/HOT WIRE), GAS METAL-ARC/LASER HYBRID WELDING OR CUTTING: KUKA PLANS AND IMPLEMENTS ALL LASER MACHINING PROCESSES FOR YOU ACCORDING TO YOUR SPECIFIC REQUIREMENTS. WE ALSO OFFER FAR MORE ON REQUEST – E.G. AUTOMATIC COMPONENT HANDLING, CAMERA-ASSISTED WELD SEAM INSPECTION, LOGGING OF WELD PARAMETERS – ALL THE WAY UP TO FULLY INTEGRATED MANUFACTURING SYSTEMS.



THE ADVANTAGES OF LASERS SPEAK FOR THEMSELVES

- UNBEATABLY SHORT PROCESSING CYCLES
- ONE-SIDED, NON-CONTACT AND FORCE-FREE PROCESS
- LARGE WELDING DEPTHS AND NARROW SEAMS, OR NARROW KERF WITH EXCELLENT EDGE QUALITY
- MINIMAL DISTORTION DUE TO LOW HEAT INPUT AND SMALL HEAT-AFFECTED ZONE
- WIDE RANGE OF SEAM GEOMETRIES WITH HIGH QUALITY

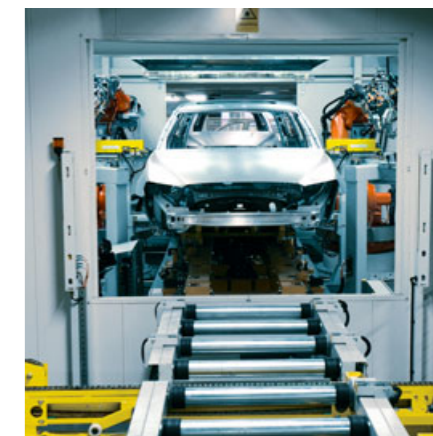


WHAT IS THE BEST SOLUTION FOR YOU? ASK US.

MODULAR ROBOTIC CELL OR FULLY AUTOMATED LASER MACHINING SYSTEM? KUKA OFFERS YOU EVERY KIND OF PRODUCTION TECHNOLOGY. PRECISELY TAILORED TO YOUR REQUIREMENTS AND SEAMLESSLY INTEGRATED INTO YOUR MANUFACTURING PROCESS: FROM CONSULTATION AND DESIGN TO THE FINISHED TURNKEY SYSTEM. WITH OUR ALL-ROUND KUKA AUTOMATION KNOW-HOW, WE ALSO TAKE LOGISTICS, ERGONOMIC REQUIREMENTS AND BUILDING CONSTRAINTS INTO CONSIDERATION, FOR EXAMPLE, AS WELL AS ANY OTHER GENERAL CONDITIONS THAT ARE IMPORTANT TO YOU.

WHEN IT COMES TO CUSTOMIZED COMPLETE SOLUTIONS: ONLY THE BEST WILL DO

A manufacturing system for laser machining consists primarily of the following process components: laser beam source, optics (incl. beam guidance system), robot, laser-compatible component fixture, cell and safety controllers and a safety booth. Additional modules, e.g. tool changing systems, multiple-axis positioning devices, external axes or various loading and maintenance doors, can be simply integrated into the system.

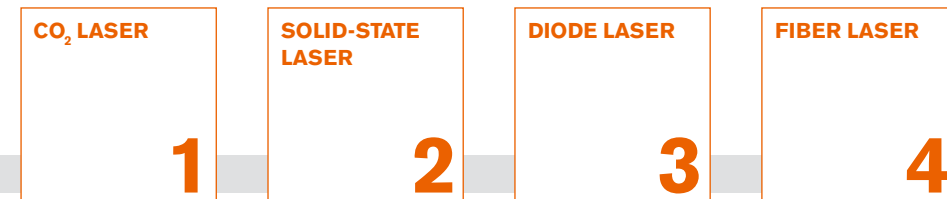


THERE IS ONLY ONE MEASURE OF THE QUALITY OF A LASER WELDING SYSTEM: THE QUALITY OF THE PRODUCTS IT MANUFACTURES

AT KUKA, THE PRIMARY FOCUS IS ON YOUR PRODUCT – FROM THE OUTSET. THIS IS WHY KUKA NOT ONLY PROVIDES YOU WITH JUST THE RIGHT LASER BEAM SOURCE, OPTICS AND FIXTURE YOU REQUIRE TO ACHIEVE MAXIMUM PRODUCT QUALITY, BUT ALSO WORKS OUT EVERYTHING ELSE YOU NEED FOR YOUR LASER SOLUTION, SUCH AS LOGISTICS, ERGONOMICS, MATERIALS FLOW, OPERATOR CONTROL CONCEPTS, ETC., TO ENSURE DIMENSIONAL ACCURACY AND PROCESS RELIABILITY. WITH KUKA YOU CAN REST ASSURED: IT FITS – AND THE QUALITY IS RIGHT!

THE RIGHT PROCESS FOR EVERY TASK

KUKA implements 3D laser welding, brazing and cutting with different process applications.



LASER WELDING	HYBRID WELDING WITH LASER AND MIG	REMOTE WELDING	LASER BRAZING	LASER CUTTING
<ul style="list-style-type: none"> Large welding depths Low heat input High process speed One-sided seam access possible New design potential 	<ul style="list-style-type: none"> Higher welding speed than with arc welding Combined advantages of laser and arc welding technology Improved weldability of aluminum Higher tolerance compatibility Process-related advantages in thick plate welding 	<ul style="list-style-type: none"> Variable working distance with a focal length of up to 1.5m Simple machining of large-size parts thanks to the large workspace Shorter cycle times due to extremely fast relocation High utilization of the laser source Complex seam geometries possible 	<ul style="list-style-type: none"> Low heat generation No limitations caused by zinc coating Seal welding possible Harmonious workpiece transitions possible Good gap-bridging qualities 	<ul style="list-style-type: none"> High flexibility resulting from free programming High cutting speed Narrow kerf Clean cut edges Less reworking Wear-free

Comprehensive production process expertise and technological competence are prerequisites for implementing the best solution. This is why we do not master just a few application modules, but are intimately familiar with every detail of all common system

components: from the laser beam source and a variety of optics to an extensive range of process applications and requirements for laser-compatible workpiece fixtures. At the same time, we also factor the manufacturing environment into our concepts,

take the materials flow into account and optimize ergonomic processes. Many factors influence the overall result. We ensure that your complete solution lives up to what it promises: process reliability and cost-effectiveness.

ROBOT
As the world's technological leader, KUKA offers not just the right robot for every application, but also the entire periphery and associated software.

OPTICS

Double or single welding optics? Additional functions, such as pressure wheel, remote optics, tactile seam tracking, cross jet or cone jet ...? KUKA models precisely the optics you require to achieve the best possible results.

EXTERNAL AXES

Perfect handling, perfect welding. KUKA offers everything you need for laser welding – including external axes for positioning: with one or more rotational axes and high payload capacities.

MATCHING

Wide range of hardware components, logistics, materials flow, ergonomics, process parameters, local circumstances ...

For KUKA, "matching" means bringing all system components together so perfectly and integrating them into processes in such a way that a permanently functional solution is created.

FIXTURE

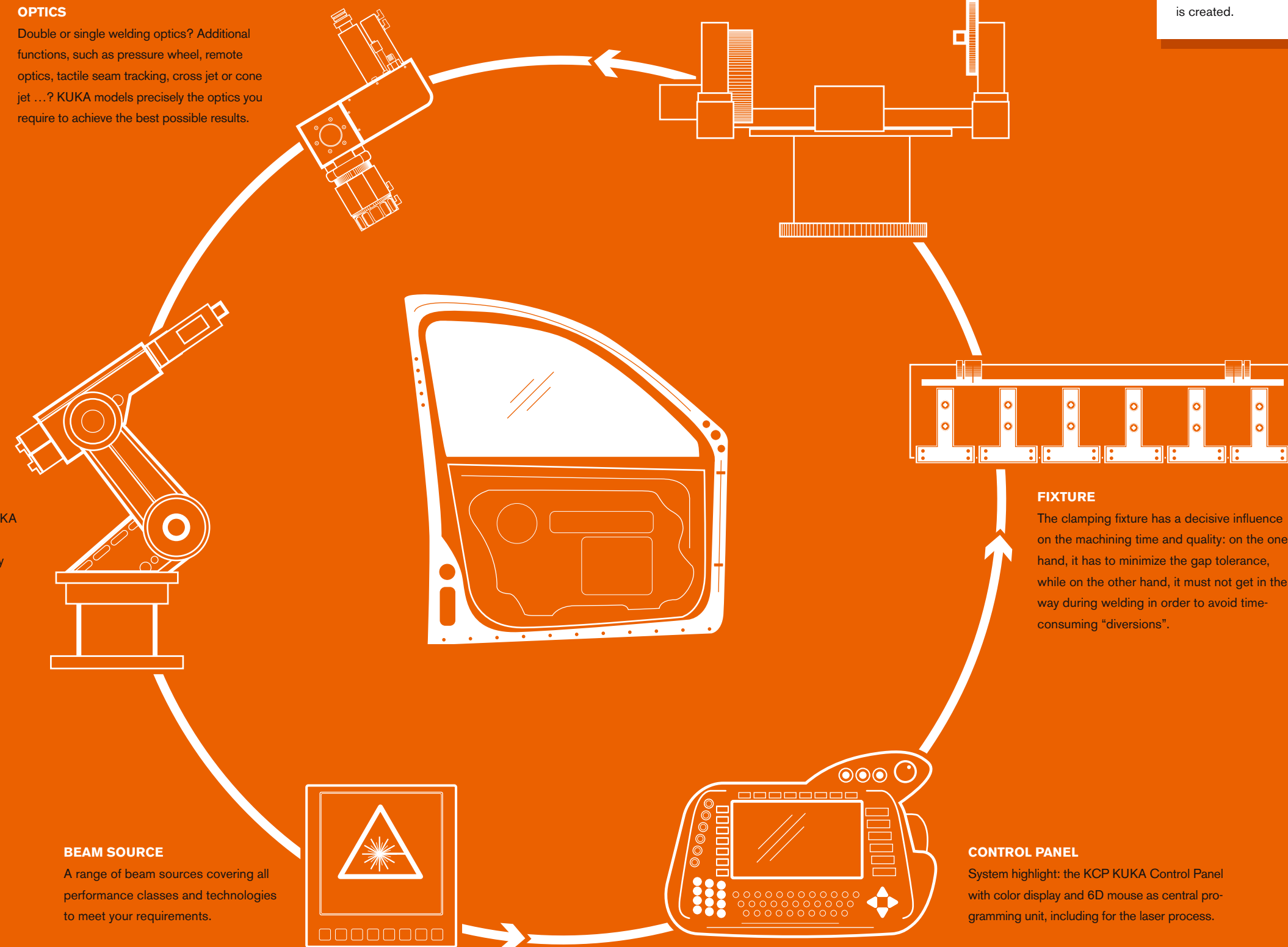
The clamping fixture has a decisive influence on the machining time and quality: on the one hand, it has to minimize the gap tolerance, while on the other hand, it must not get in the way during welding in order to avoid time-consuming "diversions".

BEAM SOURCE

A range of beam sources covering all performance classes and technologies to meet your requirements.

CONTROL PANEL

System highlight: the KCP KUKA Control Panel with color display and 6D mouse as central programming unit, including for the laser process.



ROBOTS: MASTERFUL 3D MOVERS

KUKA ROBOTS ARE AMONG THE MOST FLEXIBLE AND COST-EFFECTIVE AUTOMATION SOLUTIONS THAT EXIST. PARTICULARLY IN CASES WHERE USERS CONTINUALLY HAVE TO ADAPT QUICKLY TO NEW TASKS, WHERE COMPLEX GEOMETRIES ARE PROCESSED OR WHERE MANY STEPS HAVE TO BE EXECUTED AS QUICKLY AS POSSIBLE IN EXTREMELY CONFINED SPACES, THEIR STRENGTHS MAKE THEM UNBEATABLE.

SENSORS CAST LIGHT ON THE MATTER

KUKA's system technology is rounded off by functions such as tactile or optical seam detection and tracking, gap determination, focal point control, etc. Is the workpiece optimally positioned? Did the weld parameters and weld seam meet the requirements? In short: is the quality right? The sensors show things the way they are.



ANYONE WANTING TO HAVE A SAY IN SYSTEM PLANNING MUST KNOW HOW TO LISTEN

WHAT IS TO BE WELDED? WHAT IS THE BATCH SIZE? WHAT ARE THE CONSTRAINTS? ANYONE WANTING TO PROVIDE THE BEST CUSTOM-TAILORED LASER WELDING SYSTEM DESIGN HAS TO KNOW WHAT THE CUSTOMER NEEDS. WE LISTEN TO WHAT YOU HAVE TO SAY AND TAKE YOU THROUGH A WIDE RANGE OF DIFFERENT SCENARIOS AT AN EARLY STAGE. THIS WAY, YOU CAN BE CERTAIN THAT YOUR REQUIREMENTS ARE INCORPORATED INTO THE SYSTEM RIGHT FROM THE OUTSET AND THAT THE BEST SOLUTION WILL BE CREATED FOR YOU FROM A WIDE RANGE OF TECHNOLOGIES AND COMPONENTS.

YOUR PARTNER – FROM ENGINEERING TO SERVICING

LONG BEFORE THE FIRST WORKPIECE PASSES THROUGH YOUR LASER APPLICATION, WE SUPPORT YOU WITH OUR KNOW-HOW. CONSULTATION, PLANNING, ENGINEERING, IMPLEMENTATION ... ALL THE WAY THROUGH TO COMPLETE CUSTOMER SERVICE: WE KNOW WHAT YOU NEED AND HAVE THE RIGHT SOLUTION READY FOR YOU. ONE OF THE WAYS WE ENSURE THIS IS THROUGH OUR UNIQUE KUKA TECHCENTER. IN AN AREA COVERING 2,500 SQUARE METERS, OUR ENGINEERS CARRY OUT FEASIBILITY INVESTIGATIONS AND TEST THE PRACTICABILITY OF INNOVATIVE CONCEPTS.



WHAT SERVICES DO WE OFFER? SEE FOR YOURSELF:

ENGINEERING

- Layout, shop structures, logistics and personnel concepts
- Drafting of clamping and assembly plans, methods and assembly sequences
- Process and production planning
- Simultaneous 3D CAD design and simulation, materials flow and system availability, ergonomic studies
- Investigation of reachability and accessibility, process simulation

IMPLEMENTATION AND PROJECT MANAGEMENT

- Concrete/detailed planning and systems engineering
- Definition of system components and process parameters
- General contracting, turnkey or full-service project management
- Optimization of the project life span and product unit costs
- Monitoring of deadlines and progress

PROCESS TECHNOLOGY

- Consulting/evaluation: component design, materials, process technology, systems engineering and system components
- Feasibility study and methods planning
- Test set-up, studies, prototypes

START-UP AND OPTIMIZATION

- Ensuring system availability and quality
- Process support
- Optimization of process parameters

IF YOU WANT TO SAVE YOUR BREATH LATER, DISCUSS YOUR SERVICE REQUIREMENTS WITH US



THE BEST KIND OF SERVICE IS THE KIND YOU DON'T NEED TO WASTE ANY WORDS ABOUT BECAUSE EVERYTHING FUNCTIONS PERFECTLY. KUKA OFFERS YOU EXACTLY THIS KIND OF SERVICE – AND IT DOES NOT JUST START WITH MAINTENANCE AND END WITH SPARE PARTS: FROM PROCESS AND SYSTEM TRAINING TO COMPREHENSIVE CONCEPTS FOR SUPPLYING AND STOCKING SPARE AND WEARING PARTS, NOT FORGETTING MAINTENANCE, SERVICING AND COMPETENT TELEDIAGNOSTICS AND HOTLINE: YOUR KUKA TEAM IS THERE FOR YOU WHEN YOU NEED IT MOST.



KUKA

KUKA Systems – International

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INDIA
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WOULD YOU LIKE MORE INFORMATION ABOUT OUR LASER WELDING SYSTEMS?
CALL US ON: **PHONE +49 821 797-0** OR E-MAIL US AT **LASER@KUKA.DE**. WE ARE
THERE FOR YOU WHENEVER YOU NEED US.