Advanced Technology Solutions
_Versatile assembly systems with sensitive robotics

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We accompany you on the road to the automated production of tomorrow – from components up to flexible, versatile assembly solutions.

Volatile markets, high product variety and shorter product cycles are decisive factors for the production facilities of the future. Anyone wanting to stay competitive in the long term must be able to adapt production quickly to changing circumstances. KUKA Systems helps you to respond adequately to these challenges with versatile assembly systems that can be used wherever they are required and support an aging workforce. In the process chain, they capitalize on the strengths of the robot and the flexibility of the human worker. They produce high-quality results in reproducible processes, with low type-specific or component-relevant investment requirements. In other words, intelligent concepts that bring the possibility of spontaneous automation and fully flexible system configuration closer than ever.
When it comes to humans and robots working together, collaboration is more than just cooperation. In production facilities, the workspaces of the workers have not, until now, overlapped with those of their robotic colleagues. Instead, they were separated by a safety fence. However, the greatest potential for more ergonomic and efficient production lies precisely in teamwork between the two.

With our robot-based sensitive assembly solutions, we seamlessly integrate human-robot collaboration (HRC) into series production. The KUKA LBR iiwa enables entirely new solutions in production technology. The robot’s integrated, high-performance, flexible sensor technology, along with the great freedom of movement provided by its seven axes, allows it to perform a wide range of work processes with the sensitive touch of a human and this standards-compliant and TÜV-certified (German Association for Technical Inspection).

Many manual operations can now already be automated whereas, only a short time ago, it was too difficult or not economically viable to do so. This gives rise to exciting new automation concepts – human and robot work alternately at a shared workstation and work hand in hand. It makes no difference whether you are a newcomer to automation or whether you wish to expand an existing system. We have got the right component e.g. as gripper, screwer or linear axis.

Save assembly with feeling:
HRC-enabled components for the KUKA LBR iiwa

Ready for the factory of the future

01 Mobility
Automation exactly where you need it: with a mobile assembly solution you are investing in actual production, rather than in the expensive and time-consuming conversion of your systems.

02 Flexibility
Joining tasks today, machine tending tomorrow: our quickly adaptable solutions enable type-flexible production with variable batch sizes. This ensures that you remain equipped to meet future requirements.

03 Reproducibility
In-process quality assurance ensures that you are able to manufacture precisely and in a reproducible manner with our sensitive assembly systems – and without the need for type-specific or component-relevant investment.

04 Sustainability
You take responsibility for the economic performance of your company, for your employees and for the environment. Our sustainable concepts help you to implement your production accordingly.

05 Modularity
We provide the modules you need to build your solution according to your requirements. You can select any number of modules in any combination. After all, it is you who knows best what exactly suits you.

06 Scalability
You need a system that can be expanded effortlessly and adapted to your production capacity without investment rising sharply? Together, we will draw up a future-proof solution that will grow with you.

07 Compatibility
Our solutions are designed in a way that the hardware and software can be integrated into any human working environment – seamlessly, flexibly and without the need for major installation work.

08 Universality
A single solution for many tasks: with our concepts, you can respond quickly to fluctuating production quantities and capacity utilization. Simply change the tool and the LBR iiwa is ready to perform a different task.
**Individual solution concepts for challenging tasks**

**KUKA flexFELLOW**
We are revolutionizing automation with the concept of a robot-based locationally flexible assistant that can perform tasks without the need for safeguards: as a cell equipped with process tools then can operate autonomously, KUKA flexFELLOW can balance capacity fluctuations or temporarily deputize for workers at any suitable workstation in the company. KUKA flexFELLOW enables the so-called spontaneous automation required for the factories of tomorrow. There is a modular kit of gripper and screwing tools available.

**Flexible robot for flexible production concepts**
Existing systems are mostly designed for the workspace of human operators. For flexible automation of production, it is therefore imperative for the workspace of the robot to be expanded. KUKA systems is meeting this challenge with a linear axis – and allowing HRC at the same time. A travel of up to 5 m with floor or ceiling installation enables streamlined integration into existing systems. The protective measures that are usually required are already integrated into this system. You are provided with a solution that satisfies the safety requirements for interaction between humans and robots.

**Loading a turning center**
For its stator manufacturing operation in Bad Neustadt (Germany), Siemens was on the lookout for a flexible solution to automate the simple activity of passing on and positioning workpieces which had previously been done by hand. The requirements specified high quality and continuous, barrierfree access to the working area for people. Siemens is using the KUKA flexFELLOW as a mobile loading unit. The task of the KUKA flexFELLOW is to remove the part to be processed, the stator, from a shelf on a workpiece carrier to feed a lathe for machining. This cuts the stator automatically. Additionally, the KUKA flexFELLOW is used for quality inspections.

**Automated screw fastening of dishwashers**
For the production of dishwashers, Bosch Siemens Hausgeräte, Donauwörth (Germany) has a new worker on the production line. Its name: KUKA flexFELLOW. The advantages: flexible, sensitive and always ready for operation when required. It takes over the fitting of pump pots in the dishwasher production line. Since the KUKA flexFELLOW is equipped with the sensitive LBR iiwa, the operator can walk right up to the robot during operation to observe and monitor the process. Using its responsive capabilities, the KUKA flexFELLOW can then calibrate itself independently at its workstation, use a search run mode to find the screw positions, re-apply pressure to the component if it is not correctly positioned and finally tighten the four screws.

**Advanced Technology Solutions stands for:**
- Versatile assembly systems
- Sensitive lightweight robots
- Human-robot collaboration
- HRC-enabled process tools
- Modular kit
- Connected fenceless production cells
- Mobile process and inspection stations
- Sustainability and future compatibility
Industrie 4.0
Prepared for transformation of the worlds of production

Smart Production, Internet of Things or Industrie 4.0. Even if the names and terms used vary from one country to another, they all share the same goal: the creation of elementary competitive advantages – at both company level and in global competition.

Work on the factory of the future is thus in full swing worldwide. This involves intelligent, networked industrial production and logistics processes on the basis of cyber-physical production systems (CPPS). Or, to put it simply: factories that, by means of advanced networking, respond intelligently to changing tasks and continuously reconfigure themselves. The factory of tomorrow should be able to organize and continuously optimize its production processes, thereby counteracting the consequences of another development: demographic change. New solutions are called for because of falling birth rates and increasingly aged populations in modern industrial societies. Without the “smart factory”, it will be simply impossible to achieve a productivity increase on this scale at the same time as effectively husbanding our existing natural resources.

In order to make new working environments both highly productive and ergonomically beneficial for the labor force, KUKA is developing central key technologies: collaborative robots, mobile assistance systems, autonomously controlled vehicles and intelligently networked automation solutions that support humans in the work setting, easing the workload in a variety of ways.

In collaboration with experts from diverse sectors, KUKA is now already implementing highly flexible, digitized manufacturing processes that will open up new opportunities in a competitive environment and lastingly change the way we work and produce.

For further information, please contact us at ats@kuka.com

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