Technology Cooperation

Joint Press Conference by Siemens and KUKA

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Speakers

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Manufacturing is changing faster than ever before

Increasing competitiveness

1. Increase efficiency
   - Energy and resource efficiency are decisive factors of competitiveness

2. Shorten time-to-market
   - Shorter innovation cycles
   - More complex products
   - Larger data volumes

3. Enhance flexibility
   - Individualized mass production
   - Volatile markets
   - High productivity

Increasing importance of manufacturing industry ...
Automation potential due to changes in manufacturing

Loading and unloading

Machining in conjunction with a CNC machine

Lightweight construction

Huge potential for cooperation between KUKA and Siemens
What is required of industry?

- Multiple machining of a single part (e.g. milling, drilling, testing)
- CNC programming for robot applications
- Integration into CAD/CAM/CNC design chain similar to machine tools with SINUMERIK
- Large working range
- Good accessibility (6 axes) on all sides of the workpiece

Cost and space savings, precision to match requirements and CNC operation
CNC integration of robots
Technologies and machining processes

Machining large and irregularly shaped workpieces:

- Drilling and riveting
- Composite tape laying
- Water jet cutting
- Simple milling, thread cutting, roughing and trimming
- Ultrasonic cutting
- Deburring
- Inspection
- Marking and painting
- Welding
- Laser cutting and welding

High productivity in numerous technologies
Applications of CNC integration of robots in established industries

- Aerospace
- Automotive
- Plastics
- Power

Wide range of applications for CNC integrated robot solutions
## Siemens and KUKA

**Objectives of cooperation**

<table>
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<tr>
<th>Shared solutions offered: expand integrated, operator-friendly loading of machine tools with robots</th>
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<tr>
<td>Integration of robotics and CNC solutions for machining workpieces with robots</td>
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<tr>
<td>Development of integrated processes: integrated engineering along the entire value chain</td>
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<td>Development of new applications in numerous industries</td>
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**Shared marketing creates added opportunities.**
SINUMERIK programming and operation for KUKA machining robots

- CNC program, setup of the position and visualization by the SINUMERIK CNC.
- Robot control performs servo positioning, inverse transformation, compensation (precision enhancement) and cartesian safety.
Integrated engineering along the entire value chain
Post-processor for processing with KUKA robots

Programming

Trial run / simulation
NX CAM simulation

Production

Highly efficient process from design to finished part
Advantages of cooperation
Added value for customers

- CNC operation using established SINUMERIK
- Integration into Siemens CAD/CAM/CNC chain
- Strength in common end customer industries
- Proven compensation and cartesian safety from KUKA
- Robot kinematics from KUKA can absorb process forces and is proven in practice

Strengths are united!