Safe interaction with industrial robots

Robot showcase at SPS 2019

Equipped with

- KeMotion3
- KeDrive for Motion
- KeSafe
- KeTop T70R
- COMAU Racer 3
- 2 safety laser scanners
- Force-torque sensor

Demo concept

The COMAU Racer3 robot arm has to restack chips. A human operator teaches it to position the chips correctly. There are two safety zones around the demo. If someone enters zone 1, the robot immediately reduces its working speed. If somebody enters zone 2, the robot stops moving. With the help of KeTop, the operator can now switch the robot into „move-by-hand mode“ (safely reduced speed) by pressing the enabling button and teach it a new pick & place position.

As soon as the person leaves zone 2, the robot automatically resumes work. The robot scans the chip stack again to determine the amount. It then piles the chips back and forth piece by piece between the two positions. Once the person leaves zone 1, the entire safety area is clear, and the robot accelerates its work back to maximum speed.

Successful human-robot interaction

As the safety controller perfectly interacts with the functional controller, the robot does not switch to an error state when a human approaches. It simply adapts its behavior.

With KEBA KeMotion, standard industrial robots can be used for HRI tasks. The integrated safety control guarantees safely limited speeds and working areas for all common robot kinematics. Ready-made technology modules enable the simple integration of a force sensor for hand guidance and the definition of virtual restricted areas. This allows the operator to sense the workspace limits when guiding the robot arm. The force sensor itself does not have to be safety-certified.

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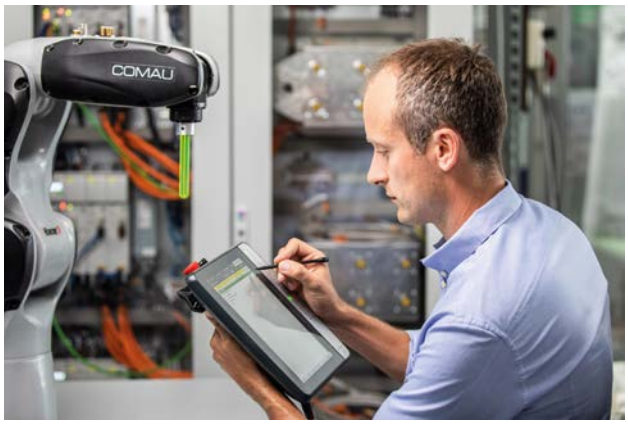
Practical relevance

In the production hall of the future, humans and robots will be working hand in hand. Safety fences won't be necessary as robots cooperate and collaborate with people. Both complement each other perfectly in their abilities.

Humans teach the robot motion sequences, monitor the production process and concentrate on tasks in which they are superior to the robot. The robot in turn takes over the heavy physical and monotonous activities. This results in smooth and efficient production.



KeMotion

Fast, turnkey and comprehensive automation in the Industry 4.0 era:

- Scalable hardware portfolio
- High-end robotics technologies
- Maximum safety for humans and machines
- Multi-robot control for up to 16 robots
- More than 30 predefined types of robot
- Real-world 3D simulation
- Fast engineering and commissioning
- Industry 4.0 solution for various applications
- Intuitive simple robot programming (KAIRO)
- Turnkey robot visualization (TeachView)

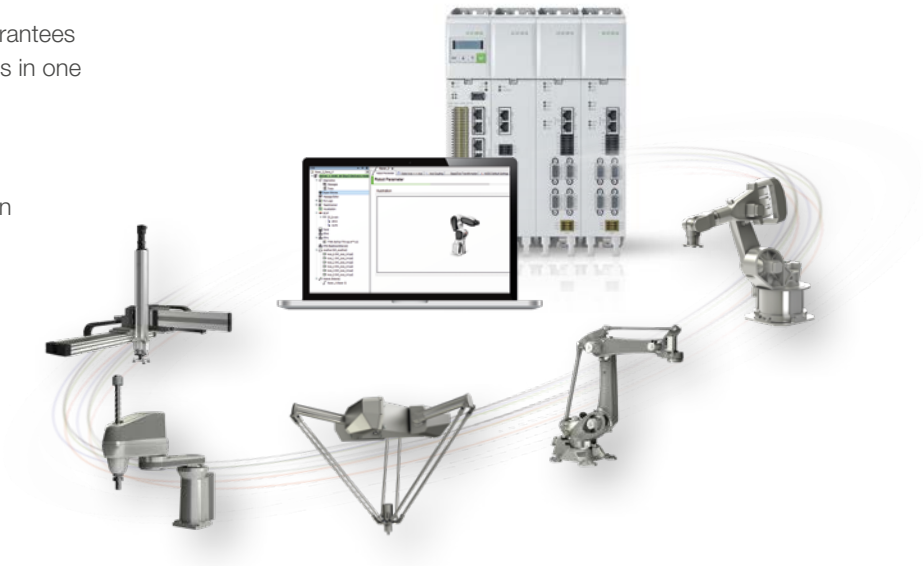
Extra bonus

Smart technology building blocks such as the Dynamic torque model, Intelligent Motion, Tracking, Palletizing Wizards, Camera Integration, etc. can be used „out of the box" and ensure that robot as well as machine manufacturers quickly move up the ranks to the high-end robotics league.

KeSafe

The freely programmable KeSafe controller guarantees a safety level up to PLe for robots and machines in one application.

- Safe logic
- Safe single-axis speed and position
- Safe Cartesian speed, position and orientation



Demo-Fact-Box

- Intelligent hand guidance assistant
- Simple sensor integration
- 90 percent less code

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