

## Human-robot collaboration—co-worker made of steel

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A brand new generation of robots is marketable and making its way into the factories. Cobots were designed to be collaborative assistants. They work directly alongside their co-workers. These teams combine the creativity of human workers with the robots' technical capabilities.

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Until now, robots carried out their lightening-fast movements behind protective safety fences. Robots and workers were strictly separated from one another. However, robotics just entered a new chapter: Now cobots work alongside workers in the same working space.

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## Experience groundbreaking man-machine collaboration at automatica

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### Create more safety with sensors

Direct human-robot collaboration (HRC) is possible because of new safety technology. Cobots use sophisticated sensor technology that gives them sensory perception and a more refined sense of precision. As a result, they avoid dangerous collisions with their human co-workers.

Cobots move slower than robots. In many cases, they slow down even further if people come near them. As a rule, they are lighter, rounder and, in some cases, even come with soft padding. The ISO has already published its own technical specification that regulates safe collaboration between people and cobots.

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### Employees accept their new steel co-workers

Interacting with one another directly, people and robots play to their respective strengths. Companies profit from a great deal of optimization potential in their production processes.

Experiencing human-robot collaboration for the first time is encouraging. Workers tend to accept their new co-workers quickly. They report being relieved of strenuous tasks and improved working conditions. A preliminary study by the University of Wisconsin came to this conclusion.

In many cases, workers even give their new co-workers human names: The cobot at the Festo factory in Scharnhausen, Germany is named "Uschi," which stands for "UltraSCHneller Industrieroboter" (ultra-fast industrial robot) in German.

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### **Intuitive programming by guiding hands**

The current generation of cobots is supposed to be as easy for people to control as possible. Thanks to machine vision system and sensors, cobots can communicate with the surrounding infrastructure simply and reliably. Like human trainees, cobots let workers show them how to perform new tasks. The trainer guides the cobot's hands through the desired process—and in doing so programs the necessary movement.

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### **Reorganize the division of labor: Intelligent, flexible and creative**

The cobots' innovative, flexible capabilities play a key role, particularly for small and medium-sized enterprises. They offer a attractive alternative in addition to full automation and pure manual labor.

The use of cobots promotes a more intelligent division of labor between man and machine. For example, the cobot can take care of monotonous, dangerous or physically strenuous tasks while the worker focuses on complex assembly work and creative troubleshooting. Human-robot teams adapt to new processes quickly, allowing companies to produce more cost-effectively, even when it comes to extremely small batch sizes.

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### **An effective way to improve ergonomics and prolong performance**

Other important aspects for the future include improved ergonomics and ensuring the human employees' ability to work longer. Workers who have to perform ergonomically unfavorable tasks such as assembling things overhead can be relieved by robot assistance. They stay healthy and are capable of working into old age. Many pioneer users see this as an important potential solution for demographic change.

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