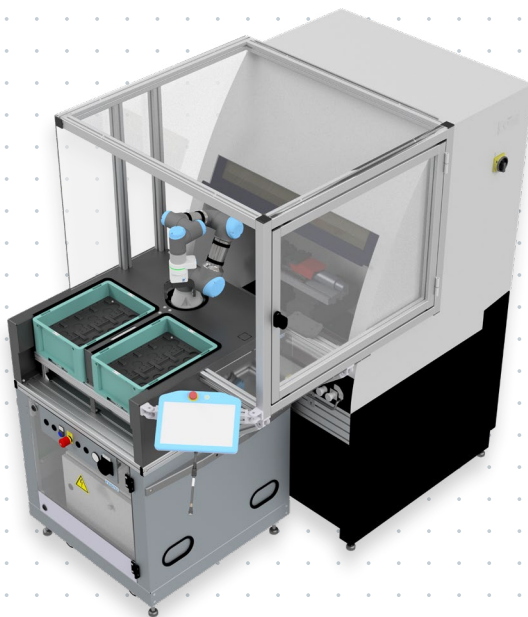




Collaborative robot loading



Highlights

- Collaborative robotics
- Human-robot interaction
- CNC processing machine with exchangeable controller
- Different working areas of the robot
- Simple structure makes it an easy entry point
- Communication via OPC UA
- Cells can be used individually
- Workpiece individualisation
- Option: Machine learning

Automated machine loading makes a significant contribution to economic efficiency. It is already being used in modern, small-scale series production. This has resulted in a need for qualified staff and thus for technical basic and further training.

The concept

The training system demonstrates the connection between robotics and CNC technology that can be learned with the help of a practical example. New communication methods such as OPC UA make it easy to link the two topics. The modular system enables learning at individual stations and can be integrated into the complete system in just a few steps.

The system in training situations

All those in technical basic and further training to gain professional skills will sooner or later come into contact with the modules shown. These include mechatronics technicians, mechanics, machining mechanics, electronics engineers, technicians with additional electrical engineering qualification, etc.

Comprehensive training system

The basics of CNC technology and collaborative robotics for the system shown are available on our learning platform LX.



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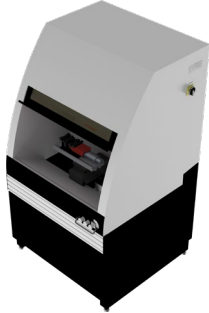
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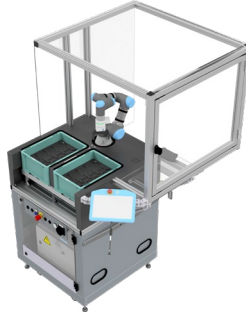
Learning at individual stations or on the system

Training scenarios



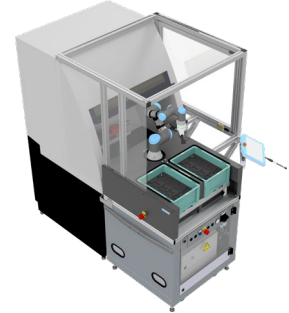
CNC technology

The CNC milling machine with interchangeable controller allows students to learn the basics of CNC technology as well as the different types of controllers. Sinumerik Operate, Fanuc 31i and Heidenhain TNC 640 are available on this machine. A simple changeover is all it takes.



Robotics

Programming and operating modern collaborative robots is learned with the help of the robot. The built-in safety functions facilitate collaboration between people and robots.



Combining both techniques

By combining the two systems, it is possible to create a scenario that is used in modern manufacturing. The focus is on the interaction between CNC machines, robots and people. Communication takes place via OPC-UA.

Camera system and machine learning



Camera system

In this training concept, the topic of machine learning can be illustrated with the help of a camera. The camera detects the fill level of the two crates and enables dynamic manual transfer to the worker.

Machine learning

Machine learning techniques can be used to uniquely identify the objects in the crates. This function is used to optimise process times and to accurately grip workpieces, even when they are placed in different positions.

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