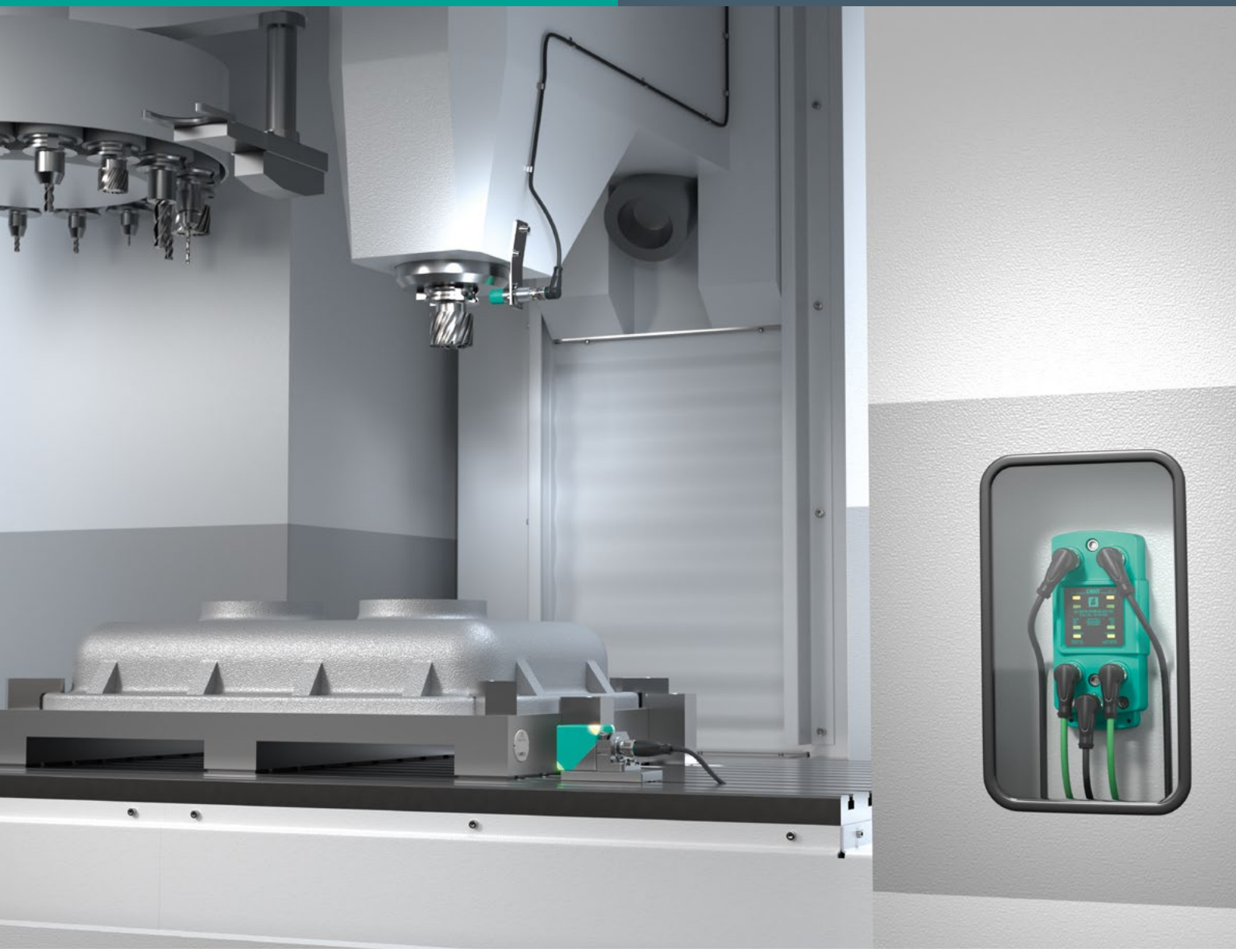
Safe Assignment of Workpiece and Tool

RFID Enables Fully Automated Operation of CNC Machining Centers

At a Glance

- Unique identification of workpieces and tools
- Reliable assignment of the machining program
- Safe, fully automated operation of CNC machinery
- Prevention of waste; safeguarding of productivity
- Rugged, compact system
- Wear-free and maintenance-free
- Data can be used for asset management

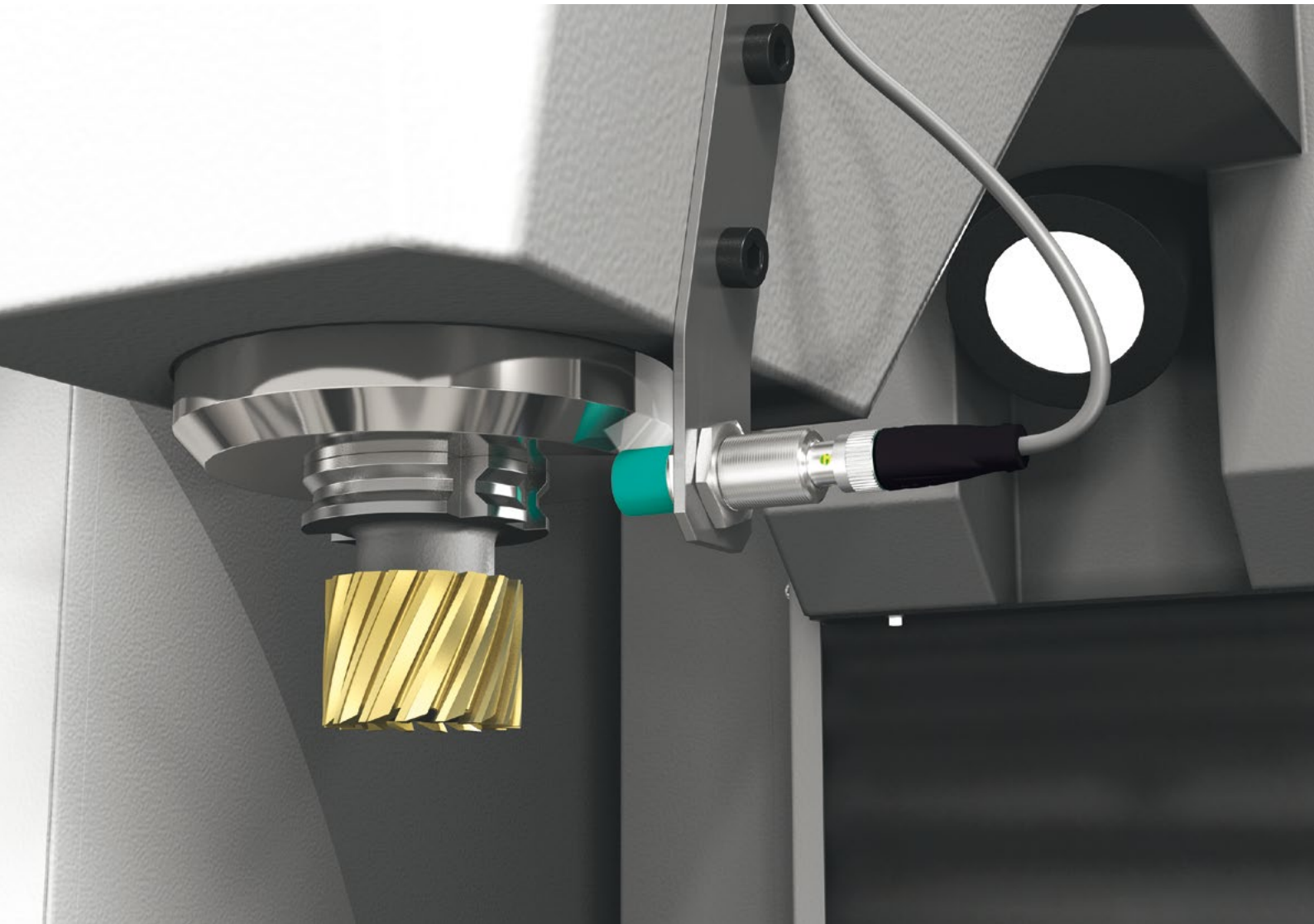


The Application

Machining operations are usually carried out on CNC-programmed, fully automated machine tools. These sorts of machines require a high level of investment, since the tools used are of a high quality and are correspondingly expensive. The same applies to the machined workpieces. Reliable, safe operations with a clear allocation of the components involved protect the investment and keep running costs within the planned limits.

The Goal

At the beginning of the machining step, it should be ensured that the workpiece is being machined with the right tool and according to the planned work program. For this purpose, it is necessary to clearly and safely assign the tool, the workpiece carrier, the workpiece, and the machining process. The seamless identification of components helps to avoid waste and to achieve a high level of productivity.



The Solution

The workpiece carriers and the toolheads are equipped with RFID tags. These are read out by RFID read/write devices at the machining station. The control panel checks the plausibility of the process using the RFID data. Since the workpieces are assigned to a specific workpiece carrier, the system detects whether the workpiece, the tool, and the planned machining process are compatible with each other. Correct assignment is guaranteed. Compact RFID read/write devices, tags with a ferrite core, and the IDENTControl Compact evaluation unit are available for the metal environment and the generally confined conditions.

The Benefits

Reliable identification using the RFID system enables both fully automated and safe operation of CNC machinery. The RFID read/write devices designed for this application can be installed directly in the metal environment. Together with the ferrite-core tags, they guarantee safe functioning even under harsh ambient conditions. RFID data can be used for asset management and predictive maintenance. The tag can store process-related data such as the tool operating time. Targeted regrinding or replacement of individual tools can be carried out as required. The IDENTControl evaluation unit is as rugged as it is reliable and enables easy integration into programmable logic controllers (PLCs) from various manufacturers. Common industrial Ethernet and Industrial Internet of Things interfaces are available for connecting it to PLC- and IT-based systems.

Technical Features

IPH-L2-V1 RFID read/write device for workpiece carrier detection

- Housing with variable alignment capability
- 4× dual LEDs on the corners
- IP67 degree of protection

IPH-18GM-V1 RFID read/write device for workpiece detection

- Thread M18 × 1
- Connection via V1 (M12 × 1) plug connection
- IP67 degree of protection

IDENTControl Compact evaluation unit

- Supports common industrial Ethernet protocols as well as IIoT interfaces
- Network loop by means of integrated 2-port switch
- Up to 2 RFID read/write devices can be connected
- Automatic time synchronization via the network time protocol (NTP/SNTP) ensures high process reliability

Diverse transponders

- Battery-free read/write tags
- For fully flush mounting in metal



For more information, visit: **pepperl-fuchs.com/px-rfid**