Reference

NearFi in use with rotary tables

Contactless power and data transmission

Movable system parts

Rotary tables are components in automation technology applications. They are also referred to as rotating tables, revolving tables, and rotary indexing tables and enable a circular movement on which parts (or workpieces) can be transported continuously to different stations of a working or process step. In addition to goods carriers, automatic devices are also used that, for example, assemble parts, affix labels, fill containers, and seal containers. In some cases, testing tasks are also done, including electrical testing, dimensional checks, and visual inspections.

Rotary tables are usually driven electromechanically via gears or direct drive. Here, the required electrical power and process data are usually transmitted to the rotating table – often also connected to a media rotary feed-through for oils or gases.

Laser welding machine (Krah)

Application

The laser welding machine processes a workpiece in several steps and rotates it in a rotary cycle to the respective processing stations. First the workpieces are inserted, then the workpieces are aligned with each other. The tolerances are then checked and the workpieces are welded. Finally, the finished workpiece is married and given a barcode. There are sensors at each processing station, which are picked up by a PROFINET I/O module and communicated to the controller. These are essentially the machine states and workpiece positions of the various processing steps.

Laser welding machines are used in production, for example

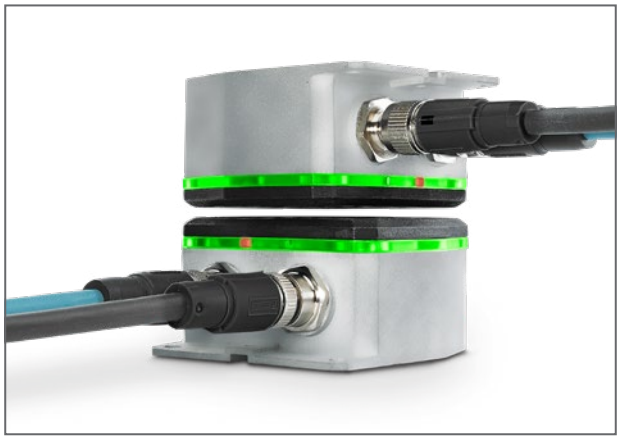
The challenge

The required electrical energy and PROFINET data must be transmitted to the rotating table. The problem with connectors is that contacts bend or break and the cable-hose assembly comes loose due to frequent movement.

Faulty connectors can cause production downtimes

The solution

One NearFi coupler pair is installed on each processing station. The I/O modules, installed on the rotating part of the table, are used for sensor detection of machine states and workpiece positions. The NearFi couplers supply the PROFINET I/O modules with the necessary power. In addition, they transmit the PROFINET protocol to the controller via an air gap without latency or wear.



NearFi couplers for contactless power and data transmission

"The big advantage of the NearFi solution is the simple startup without configuration effort, as the couplers can be put into operation almost like a connector. It was important to us that the contactless solution supports the PROFINET Fast Startup function so that we could avoid delays in establishing communication".

Oliver Krause, Team Leader Automation and Control Technology, Krah Gruppe

Rotary table with swivel unit (SHL)

Application

For surface processing, it must be possible to swivel the workpieces through 360°. Rotary tables with swivel units are used for this purpose. Such a system consists of several areas for the various processing steps: the insertion of the workpiece onto the carrier, the initial processing of the workpiece by sanding robots with coarse grit, and finally processing by sanding robots with fine grit. The rotary table rotates the workpiece to the next processing station.

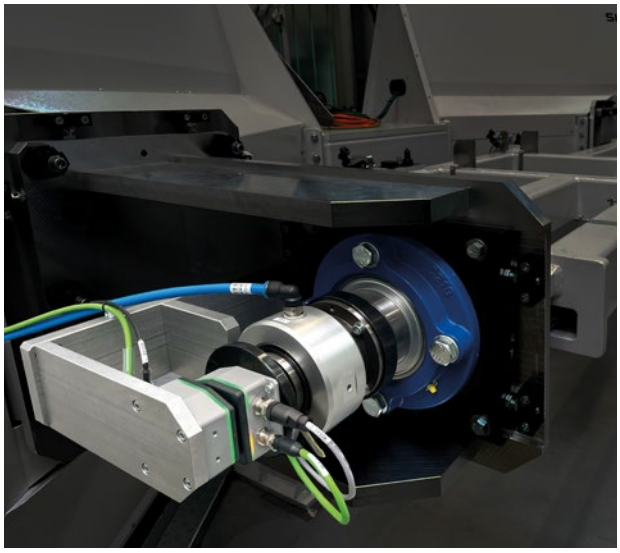
The challenge

The PROFINET data from the sensors and actuators for clamping the workpieces on the carriers is often transmitted via slip rings in the three continuously rotating axes. Communication interference is a typical characteristic of slip rings, especially when it comes to Ethernet transmission.

The solution

One NearFi coupler pair is installed on each rotary axis of the rotary table for the three continuously rotating swivel units. The devices supply the necessary power to PROFINET valve terminals, to which sensors and actuators for clamping the workpiece are connected. In addition, they transmit the PROFINET protocol to the controller via an air gap without latency or wear.

Wide angle view of rotary table with swivel units



Close-up view of NearFi in use at the rotary table with swivel unit

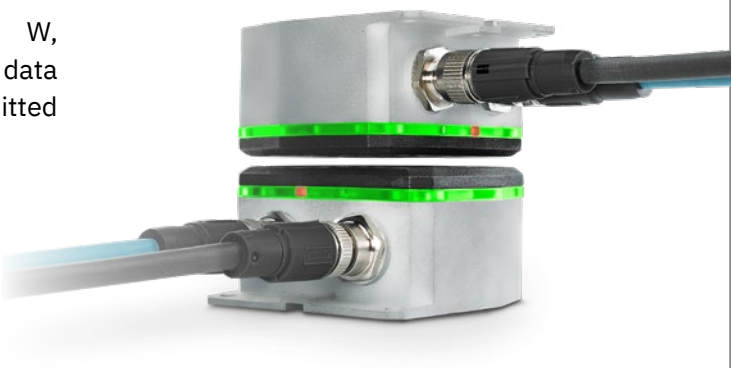
“One advantage of the NearFi solution is the simple startup without configuration effort. The devices simply need to be connected with a 24 V and PROFINET cable and the connection is established in just a few milliseconds”.

Bernhard Mattes, Senior Director Engineering, SHL AG

Recommended products

With NearFi couplers, power (50 W, 24 V DC/2 A) and real-time Ethernet data (100 Mbps, full duplex) can be transmitted across an air gap of a few centimeters.

1433050 NEARFI 2200 B
1433049 NEARFI 2200 R



NearFi couplers for contactless power and data transmission

Contact

Do you have any further questions about the NearFi couplers or our NearFi technology? Contact us for more information, we will be glad to advise you.

Find out more about our NearFi products:

› phoe.co/NearFi-coupler

Found out more about our NearFi technology:

› phoe.co/NearFi

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