

Temco i-Bearing  
The wireless monitoring system

**TEMCO**

# i-Bearing Wireless

Technical information



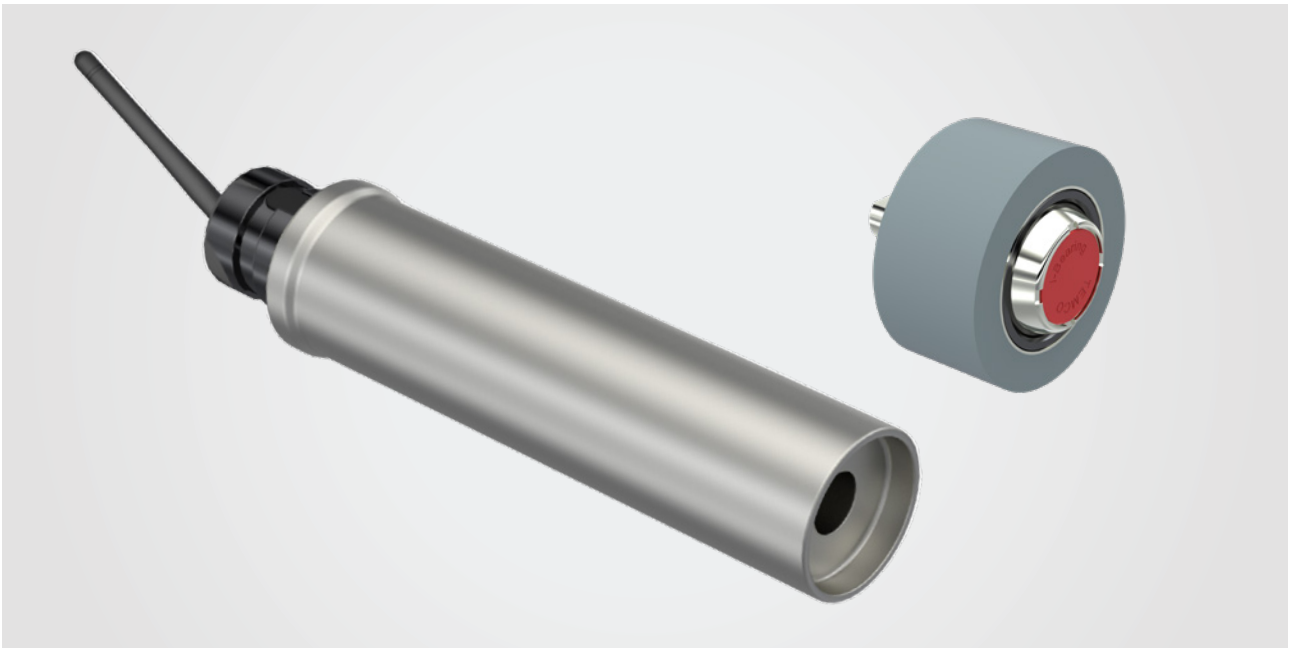
Self-powered,  
intelligent, wireless

# Self-Powered, Intelligent, Wireless

## i-Bearing – the wireless monitoring system

In the future, IIOT Systems (Industrial Internet of Things) such as smart factories or proactive device monitoring will be the key to success and cost management. Temco provides a proactive equipment monitoring system for various ball bearing arrangements from its product portfolio. The intelligence of the i-Bearing allows the constant condition monitoring of every single bearing within the plant. The patent pending i-Bearing works without cable – the sensors and electronic devices are integrated into the bearing without significant changes to the external dimensions.

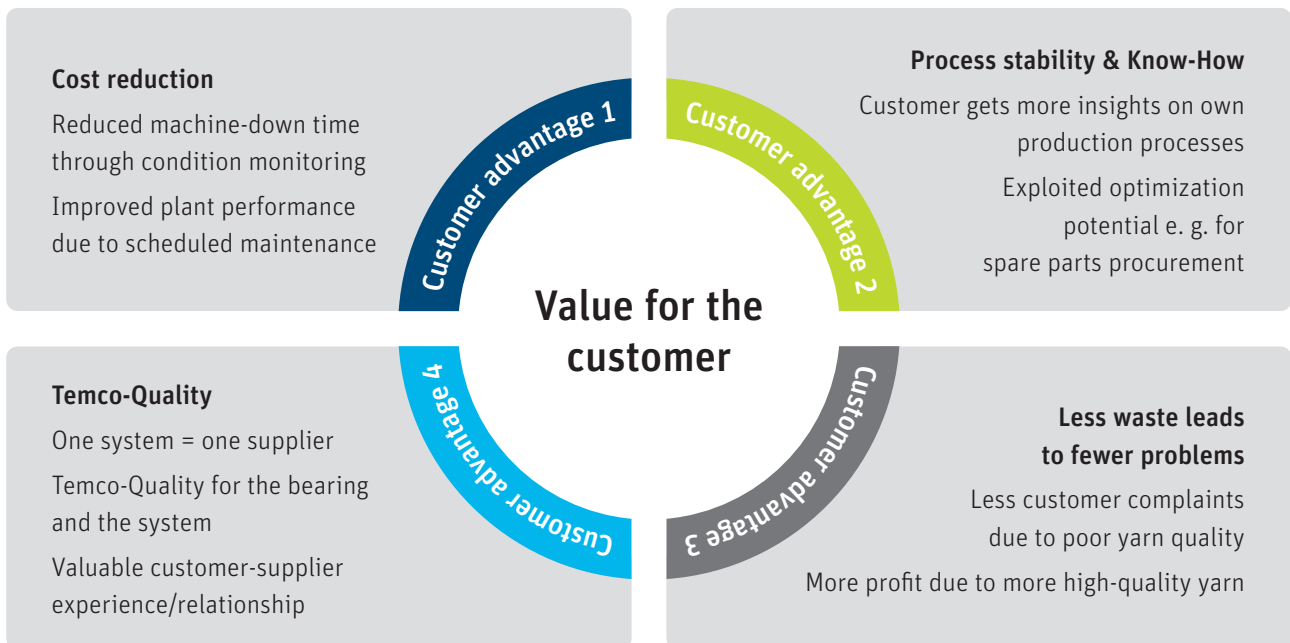
Temco's i-Bearing intelligent solution for filament machines enables, among other things, the recording and analysis of data with a timely response to malfunctions in the bearing condition monitoring online. Through predictive maintenance, process control and process tracking, bearings can be replaced before they fail by identifying critical conditions. This helps to minimize machine downtime. The user can extract other parameters from these measured values and calculate them for his or her specific application. For example, it is possible to determine the process speed from the bearing speed (rotational speed).



The i-Bearing monitoring system consists of a bearing with sensors and power supply integrated directly into the bearing. Customers benefit from a clear understanding about the status of their bearings. In the future, items with potential defects will be identified immediately, allowing replacement before a malfunction or more serious problem occurs. Thanks to this timely insight, customers can plan machine maintenance and associated downtime in advance and align it with the most efficient maintenance schedule.

## Key performance factors

- Detection of bearing damage by comparing measured values with set limits
- Vibration, temperature and rotation measurement of the bearing
- Recording of the measured values in a diagram
- Simple and clear installation without wiring on the machine
- Bearing replacement before a malfunction or a more serious problem
- Higher efficiency of production & improved machine availability
- Reduction of overall operational costs
- Continuous improvement of operation & equipment
- Online monitoring of parameters at regular intervals through powerful visual analytics
- Ability to track and analyze data



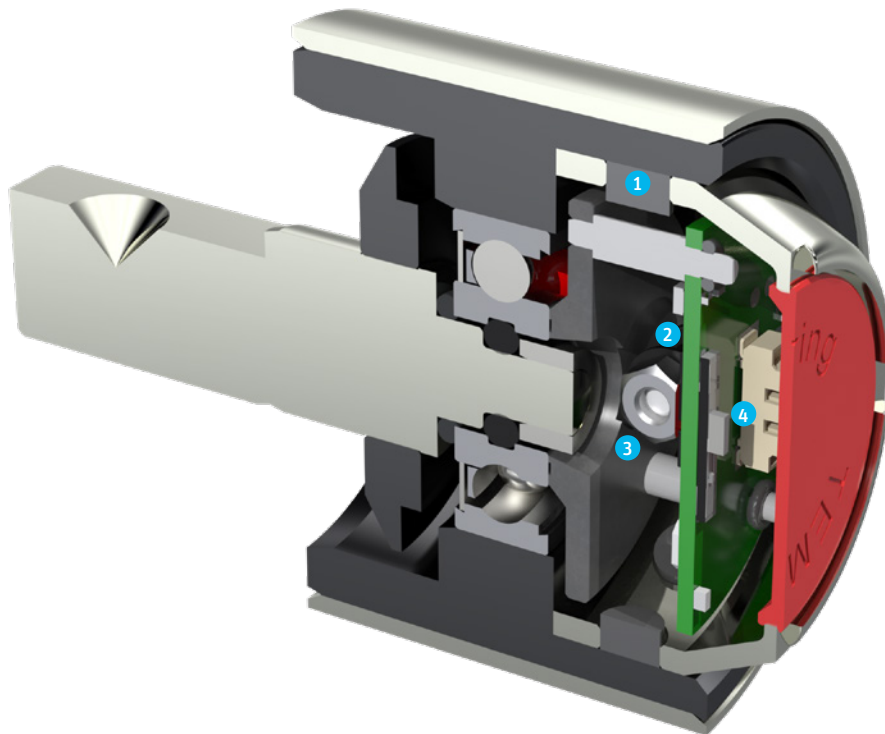
# Wireless Condition Monitoring

## Energy harvesting and wireless data transfer

The Sensors and energy supply are directly integrated into the bearing arrangement. No external power supply or battery is needed due to the own energy harvesting. Power is generated via a rotating cap with integrated magnets in combination with a fixed coil. The measurement of speed, bearing vibrations and temperature is set up directly on the inner ring of the bearing.

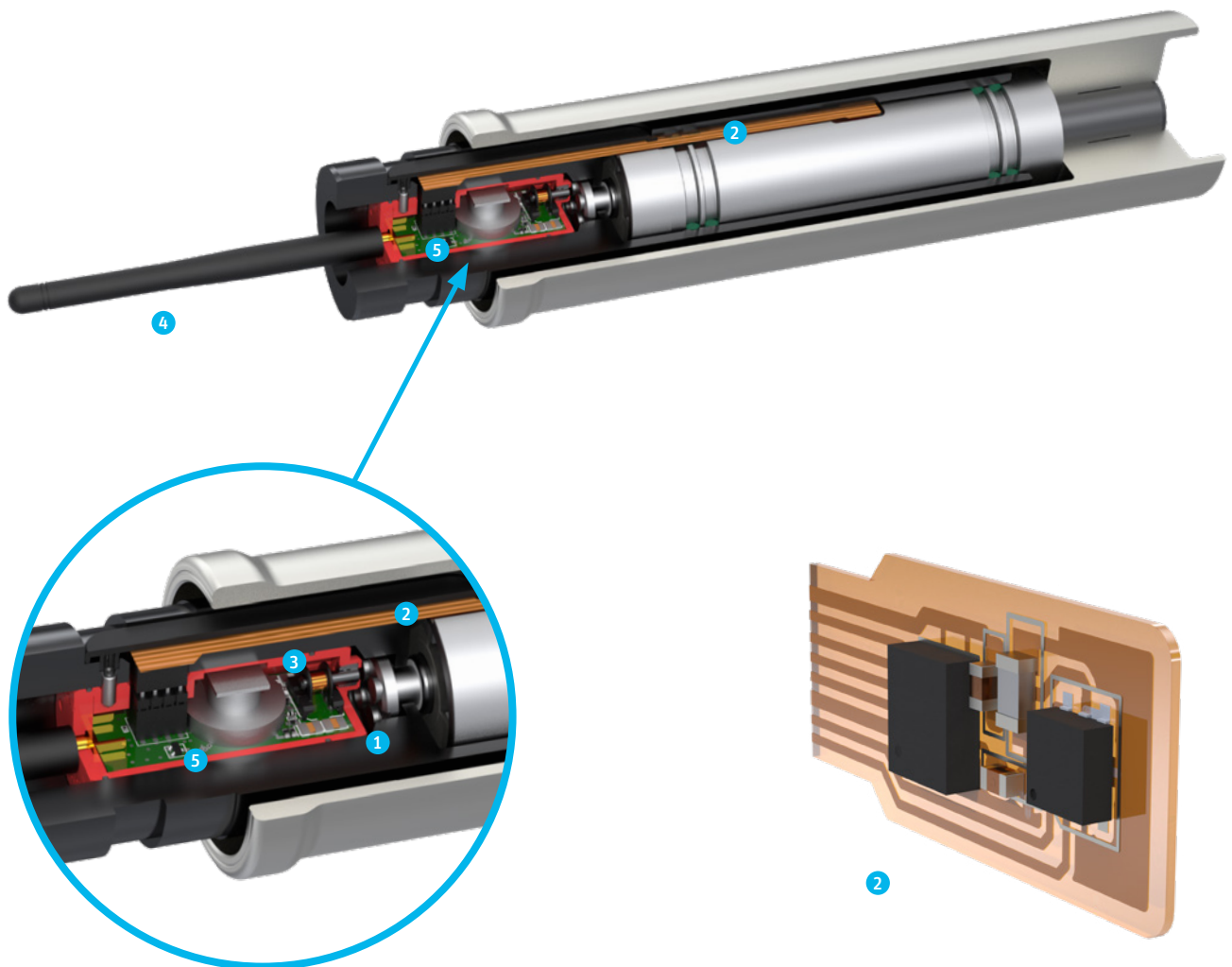
The measured data is transmitted via Bluetooth to a gateway, from where the data is forwarded via Ethernet to an analysis device.

## LR7035 Nip Roller with i-Bearing wireless



- 1 Magnets for energy harvesting (rotating)
- 2 Sensors for vibration and temperature
- 3 Coil for energy harvesting (stationary)
- 4 Antenna

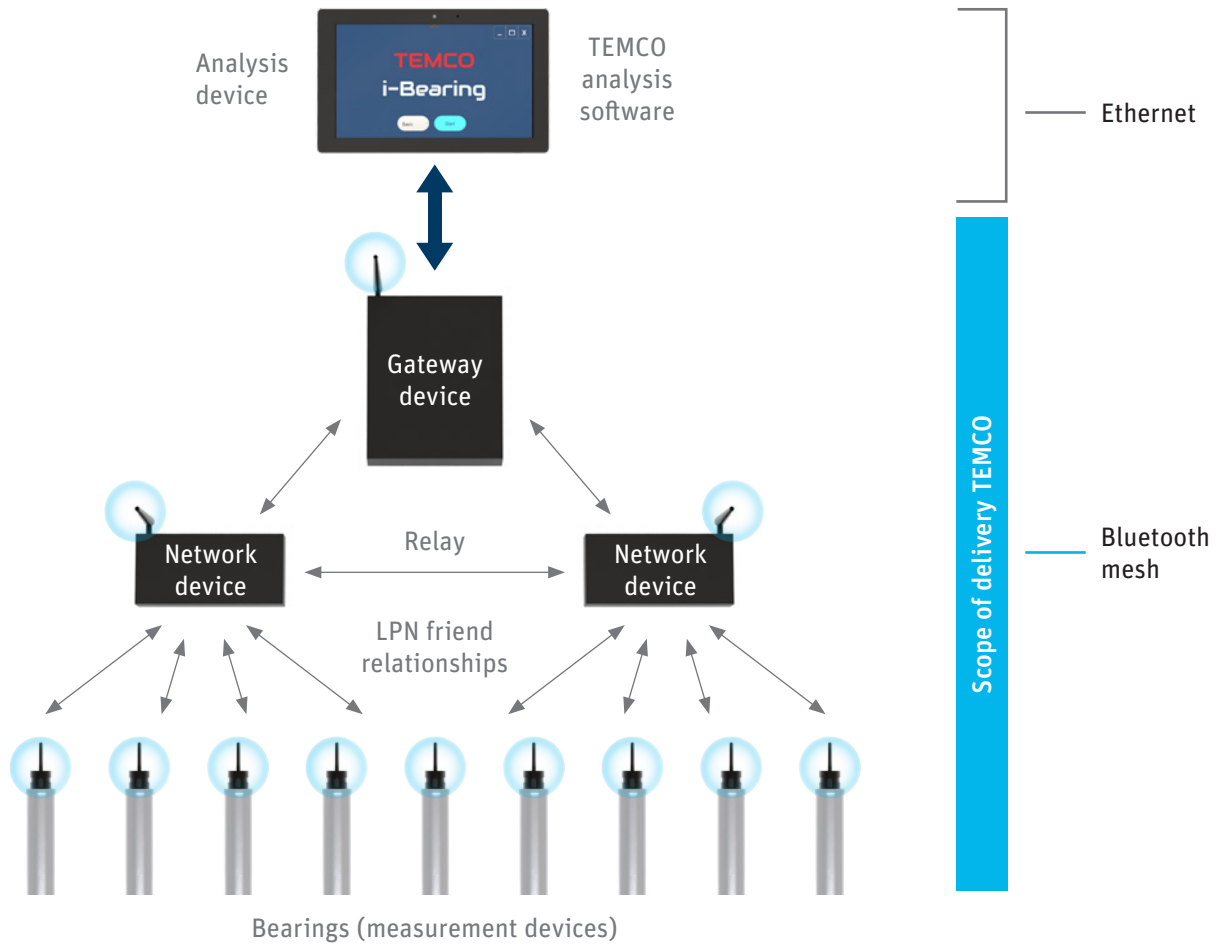
## VR60240 Separator Roller with i-Bearing wireless



- 1 Magnets for energy harvesting (rotating)
- 2 Flexible sensor PCB
- 3 Coil for energy harvesting (stationary)
- 4 Antenna
- 5 Microcontroller PCB

# Experience Goes Digital

## Wireless data transfer via Bluetooth mesh



## Features

- Bearings and network / gateway devices form a Bluetooth mesh
- Network devices are used to extend the radio range, e. g. for large networks
- Gateway device can communicate directly with the bearings
- Gateway device functions as interface between Bluetooth and analysis device (PC)
- Connection between PC and gateway via Ethernet

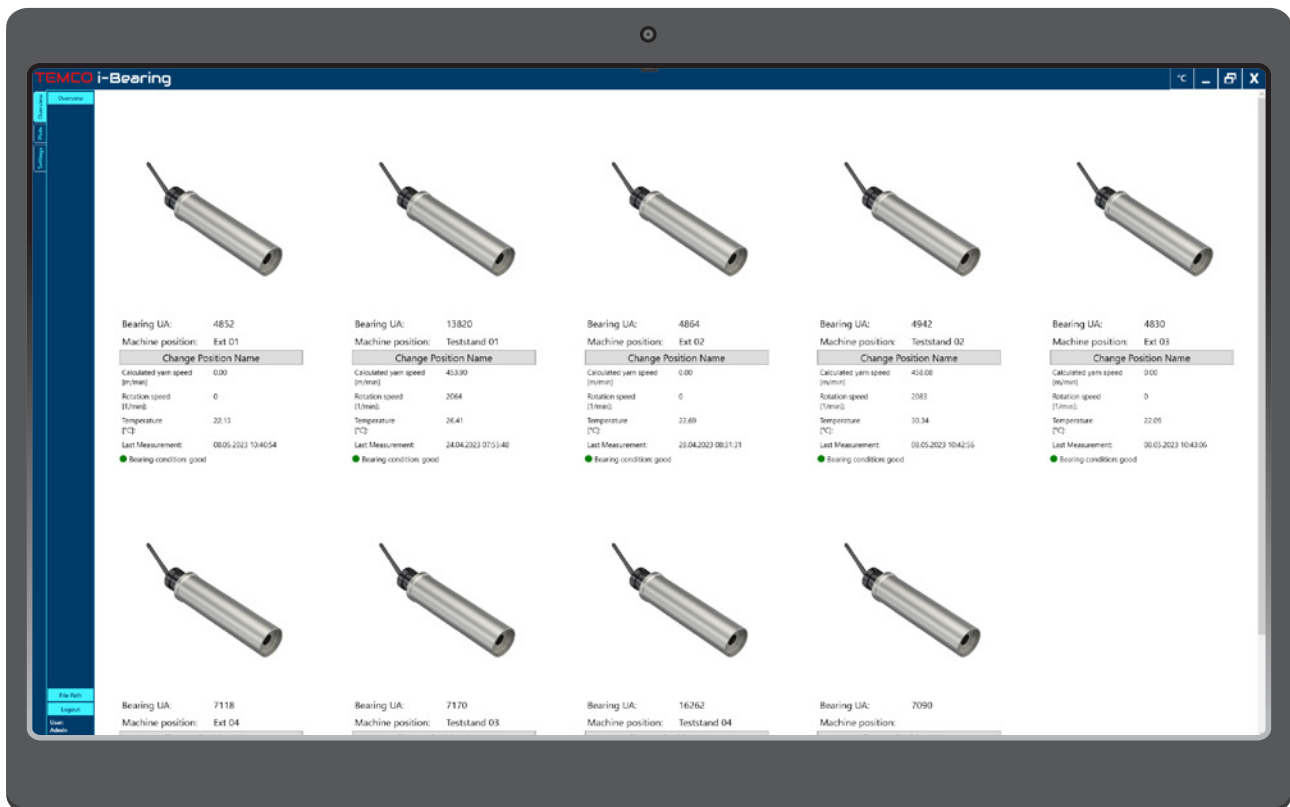
## Temco analysis software

Temco has developed its own analysis software for i-Bearing, which customers can install on a PC or tablet. This software gives a perfect overview of all bearing arrangements in the machine. The bearing condition is indicated by the colors Green (bearing condition good), Yellow (bearing condition to monitor) and Red (bearing must be replaced).

Based on the bearing ID, the machine position can be easily assigned. The software is extremely easy to use and can be adjusted to suit individual needs. In addition, it has different user modes (Basic, Plot, Settings) as well as different diagrams (history diagram and scatterplot).

The intelligence of the i-Bearing allows the constant condition monitoring of every single Temco bearing installed within a plant. By measuring speed, vibration acceleration and temperatures, the i-Bearing identifies critical conditions allowing bearings to be replaced before they fail. Machine maintenance is thus optimized and expensive downtime minimized. Customers also get a clear overview, 24/7, of the condition of all installed Temco bearings across their entire plant.

With this wireless and self-powered version of its i-Bearing, Temco provides more freedom to its bearing condition monitoring system.



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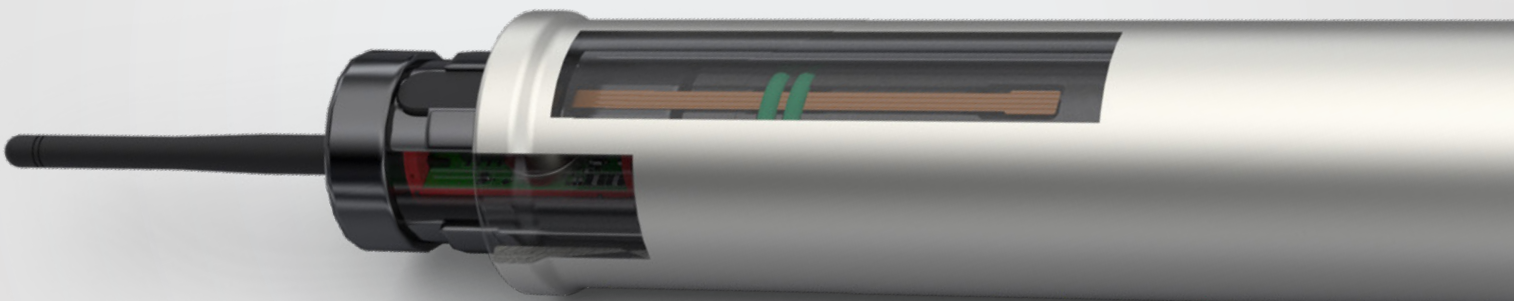
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