

HARTING RFID Sensor Application Example

UHF RFID from HARTING is more than just identification



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Gearbox temperature monitoring for wind power stations and big motors with HARTING RFID Sensor Solution

Condition Monitoring

To maximize the output efficiency of wind power stations and in order to minimize the need for maintenance, it is necessary to constantly monitor the temperature within the gearbox. A similar scenario you'll find when using bigger asynchronous electrical motors, where you are interested in the temperature of the rotor magnets. The information of the temperature is used locally, to shut down the wind turbine / motor or reduce the speed in case of abnormal temperatures. The information can also be used at a central location, to gather information on the overall health of the wind power plant. Temperature measurement within a gearbox or a motor is especially difficult, because cable connected sensors cannot be used due to the rotation. To create a maintenance-free solution, an additional requirement is that the sensors themselves are passive, without the need of external power supply.

Keywords

- Retrofit
- Condition Monitoring
- Temperature Measurement

Target Customers

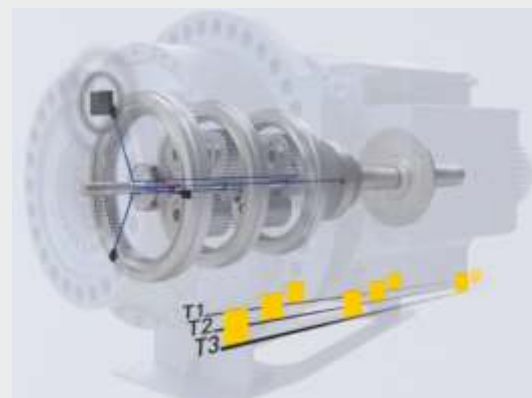
- gearbox / motor manufacturers
- System Integrators
- Hardware and Software Developers

Project Information

- Customer: Gearbox manufacturer
- Service Provider: HARTING IT SD
- Project Length: 24 months

Components

- Reader: Ha-VIS RF-R350
- Antenna: Ha-VIS RF-ANT MR20 or Ha-VIS LOCFIELD®
- Transponder: Ha-VIS ETBv2



HARTING IT Software Development GmbH & Co. KG
Marienwerderstr. 2, 32339 Espelkamp, Germany
Auto-ID@HARTING.com

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Solution

By making use of the RFID version of MICA in combination with the ETBv2 RFID transponder we were able to solve the customer problem with a simplistic approach. The ETBv2 as an on-metal IP67 approved transponder, which can work well in a metallic environment. It contains a power harvester which makes it possible to capture temperature values from an attached PT1000 temperature sensor. Because the sensor is connected to the transponder (the transmitter) cable based the sensing location could be on a totally different spot than transmitting location. Due to this feature even temperature values inside a metal axis could be detected. The ETBv2 is placed into the gearbox, passing through the antenna field of the Ha-VIS RF-R350 on each turn. The antenna themselves are placed on the non-rotating parts of the gearbox, connected to the power stations systems. The antenna inside the gearbox or the motor and the reader outside. Because of the software flexibility the reader is able to handle the sensor raw data of the system. It could hand over directly analog temperature values or could activate digital outputs when the temperature is exceeding special temperature levels.

