A290

Eddy current sensors
eddyNCDT

Detection of turbocharger rotor dynamics

In order to inspect the behaviour of turbochargers during different stress states, eddy current displacement sensors are applied in turbocharger test benches. The miniature design of the sensors and their resistance to oil and high temperatures enable the precise detection of the lubricating gap of hydrodynamically stored rotor shafts.

For this purpose, the shaft centre bearing and the shaft movement are measured on two measuring planes by two separate sensors. One measuring plane is on the compressor side of the turbocharger; the other is on the turbocharger turbine side. The sensors are mounted 90° to one another, which allows conclusions to be made regarding the shaft movement in different stress states.

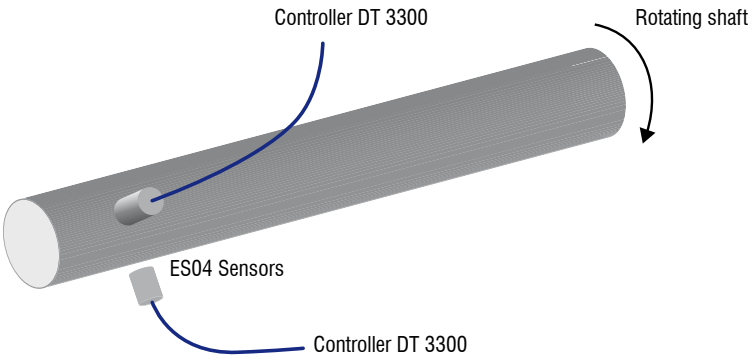
The detection of these parameters using measurement technology provides early recognition of, for example, disturbances or imbalance.

Advantages
- High accuracy
- Miniature sensor design
- Resistant to oil
- High temperatures

Requirements for the measurement system
- Measuring range: 400µm
- Accuracy (absolute) 20µm
- Frequency response 20kHz

Ambient conditions
- Temperature: 100°C
- Medium: oil

System design
- 4x DT3300 eddy current displacement measurement system
- 4x ES04 shielded sensors
- 4x EC6 sensor cables
- 4x EA3200-ES04M-EC6 adaptor board
- 4x E3000 LC/0,04/0,44/specific linearity calibration
- 4x E3000 TCS/20/150/specific temperature compensation



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