MICRO-EPSILON

Active damping of liquid-cooled centrifuges

At certain configurations of speed, filling level and design parameters, liquid-filled industrial centrifuges tend to produce unstable running characteristics which can lead to failure of the centrifuge. The instability, which arises due to interaction between the fluid and the centrifuge, cannot be rectified by passive means (dampers), so therefore the instability is corrected actively with the aid of a magnetic bearing and suitable closed-loop controllers. The deflection of the rotor, which is acquired with two eddy-current sensors orientated at 90° to one another, is used as input information for the controller.

Reasons for the system selection:

- Non-contact measurement
- High accuracy and temperature stability
- Bandwidth 10 kHz (-3 dB)
- Insensitive to strong magnetic fields

Technical details

- Measuring range: 2,000 µm
- Resolution: 1 µm
- Accuracy: 4 µm
- Bandwidth: 10 kHz (- 3dB)

Ambient conditions:

- Temperature: 15°C to 25°C
- Medium: airl
- Interference fields: strong magnetic fields

System setup

2 x S2	1 x OS510
2 x C3	2 x DL 504
2 x BC - S2m	6 x FP 507
1 x RS 584	
1 x DD 500