

Electronic components for LUVO probes

Redesign

The LUVO scopes are used in the air pre-heaters for power plants, have eddy current sensors to keep the gap between lamellar seal on the air preheater as narrow as possible.

To do so, the eddy-current sensor, which is an air coil embedded in a high-temperature resistant ceramic body with temperature compensation, is placed on the tip of the LUVO scope in the air flow of the pre-heater.

The ceramic body is thus exposed to a temperature $> 400^{\circ}\text{C}$.

The eddy current sensor detects the air gap between the ceramic head and rotor in the air pre-heater by having the magnetic field of the airflow influenced by the closeness of the rotor material (ST37).

Distances of 2...15 mm can be detected with relative high precision as 0...20mA signals, by having the electronics installed on the end of the LUVO scope, which detects the field alterations in the air flow of the ceramic head and convert them to an analogue signal.

The eddy-current sensor of the sensor LUVO scope, together with the electronics on the end of the sensor, are calibrated by placing a calibrating device on the probe head, which allows for guiding the probe at a defined distance to the target material using a spindle guide.

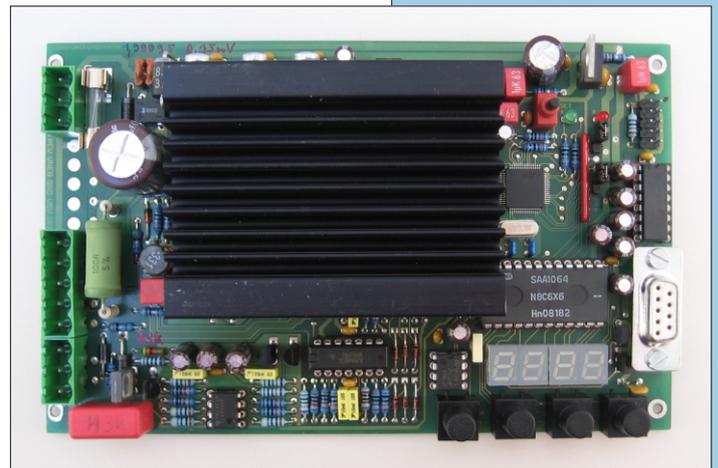
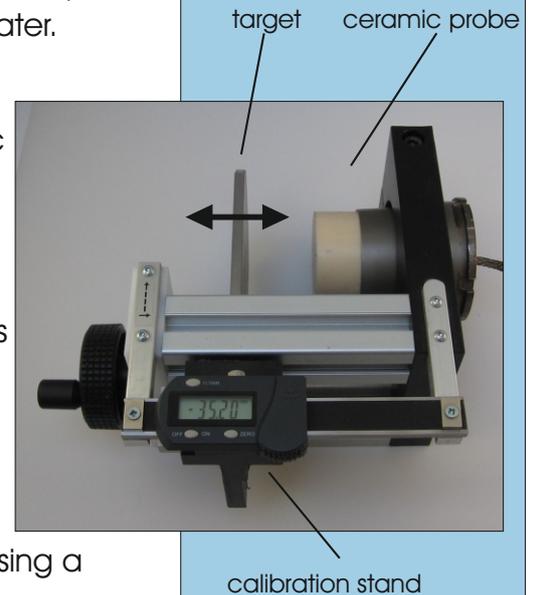
The electronic controller for the eddy-current sensor is a microcontroller with a user-interface having 4 push buttons and a four-digit display to calibrate the ceramic probe and the electronic controller.

The display on the user control displays the intended calibration distance for the target. The distances are adjusted with the help of the spindle guide with an accwag better than 1/100mm and stored pushing a button.

By this mean a characteristic curve for each ceramic probe is obtain and saved internally in a compensation table in the EE-PROM.

The electronics are highly reliable for the use in power plants and at high ambient temperatures and are connected to the probe head with a robust plug. The V24 interface allows for a laptop to perform remote parametering up to 5 m from the location or in the event of calibration.

The controller is designed for nominal 24 V DC at ambient temperatures of up to $+85^{\circ}\text{C}$.



Controller

Technical data:

Sensor	: Ceramic probe, VA-adapter with M56, temperature compensated air coils with temperature proof line l = 1500mm, material NiCrNi, plug
Controller	: 19" 3HE insert 100x160mm, mikroprozessor controlled. 4-digit display and 4 pushbutton input V24-Sub D9pol-connect.
Supply	: 24V DC nom. 250mA
Ambient temperature	: Ceramic probe max. 420°C, controller board max. 85°C



DIE ENTWICKLER

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