

4.2.2 Sensor Profile with Integrated RTD resistance thermocouple

In order to measure the fluid temperature all ITABAR-pitot tube sensors – with exceptions: IBFD-HT, IBFD-HTG and types –20/21 – can optionally be equipped with a RTD resistance thermocouple, see Fig 4.5. The advantages of the selected thermometer are as follows:

- The resistance thermometer is rod shaped, of robust design for long term use.
- A st steel (material 316 SS) tube provides a reliable protective cover for the the resistance thermometer.
- This version is designed with long term reliable components for industrial applications with increased challenges of oscillations.
- The temperature sensor is of 3-wire design in order to reduce the effective resistance.
- The resistance thermometer is usable in a temperature range from – 200 to + 500°C (-148°F to +842 °F).

The constructive solution of inserting the resistance thermometer is unique and convinces with the following advantages:

- The resistance thermometer is inserted into the sensor profile, see Fig 4.6 for a cross-sectional view of the sensor profile for a resistance thermometer assembly. With this method it is not a fluid wetted part, nor is it exposed to operating pressures.
- This design together with the rod-shaped version of the resistance thermometer allows for easy and quick installation and removal under pressure.

The temperature sensor is positioned along the sensor axis in between the two pressure channels. After all thermic adjustments in the vicinity of the temperature sensor it measures the fluid temperature along the pipe axis.



Fig 4.5: Pitot tube sensor type IBR with integrated resistance thermometer. Right side: opened junction box

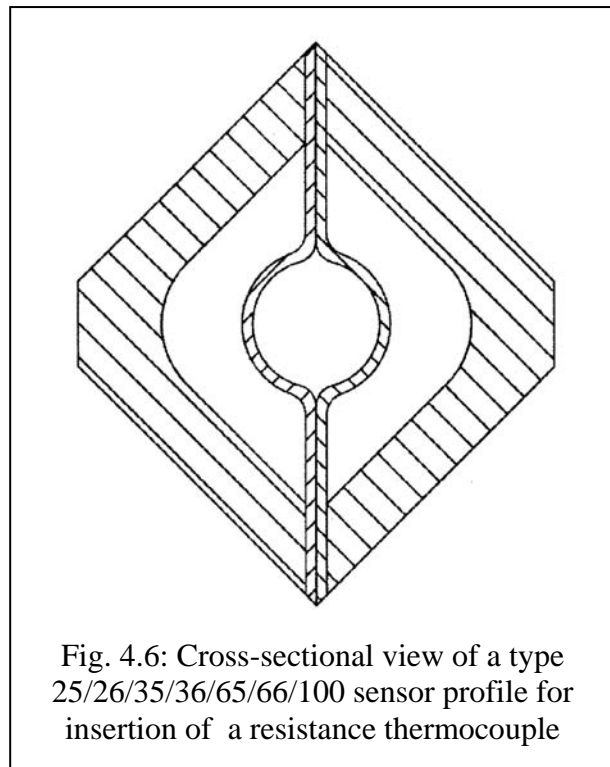


Fig. 4.6: Cross-sectional view of a type 25/26/35/36/65/66/100 sensor profile for insertion of a resistance thermocouple