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INOR Why use temperature transmitters?

The following part gives some important reasons for using temperature transmitters in temperature measurements.

To convert the low-level sensor output to an amplified signal.

The amplified signal is much less sensitive to electrical disturbances. This is particularly important if the sensor is located far away from the receiving instrumentation. Long cables and low signal levels increase the risk for significant disturbances in the measurement.

To convert the unlinear sensor output to a temperature linear standard signal.

Typical standard signals are 4-20 mA, 0-10 V. Other standard signals are 0-20 mA, 0-5 mA, 1-5 V, 2-10 V.

Thanks to the standard signals, which are proportional to the temperatures, it is possible to use standard instruments for indication, recording etc. and standard input modules in PLCs or DCSs. This greatly simplifies the plant engineering.

To reduce the costs for cables and other instrumentation.

If field mounted transmitters are used, the cable costs can be reduced.

Only two leads are required, if a 2-wire transmitter is used, compared to three or four for RTDs. Standard copper signal cables can be used instead of more expensive compensation or extension cables for thermocouples.

Normally all the connected instrumentation is less expensive if using standard input signals like 4-20 mA.

No requirement for expensive Thermocouple input cards.

To improve the safety of the temperature measurement.

The safety can be improved by letting the transmitter supervise the sensor leads. The Sensor Break Protection will indicate broken sensor leads and force the output to a user defined level.

To improve the accuracy of the temperature measurement.

The accuracy can be improved by letting the transmitter compensate for sensor errors (Sensor Error Correction) or errors in connected instrumentation (System Error Correction).

Measuring errors due to reduced isolation in the sensor or between the sensor leads can be avoided with the SmartSense function. This function is a standard feature in most of the Inor intelligent transmitters.

To improve the functionality of the temperature measurement.

Useful functions can be included together with the measurement, especially when using the intelligent IPAQ and MESO transmitters.

Some examples are:

Dampening function to reduce instabilities of the measuring value.

Loop calibration output. The transmitter generates an accurate output signal that is used to calibrate or check other instruments in the measurement loop.

On-screen real time presentation of measured values (in °C or °F) and output signal. The presentation can be in numerical, as bar graphs or as a line recorder.