

TOLERANCES

Tolerances of RTD's are specified as a function of temperature.

They can be expressed in ohms, temperature, or percentages.

JMS now features RTD Thermometers using platinum resistors with a tolerance as low as 0.01% of resistance @ 0°C.

Better accuracies are possible by performing calibrations on a sensor at several different temperatures and listing exact resistance readings of that RTD at those temperatures. This is a more expensive method, but can be cost effective when accuracy is critical in a process. (See pages VIII, IX, X)

Readout instrumentation of RTD's converts resistance to temperature. Typical accuracies of this equipment are 0.1%. Lead wire and connection error for 2 and 3 wire RTD's can be significant.

After an RTD is manufactured there are some conditions that can alter the accuracy and reliability of an RTD. Moisture within the RTD can decrease the resistance value of the RTD and cause errors. Bad seals on the RTD are usually the cause. High temperatures can cause the insulation material's electrical resistance to decrease significantly. Also, at high temperatures, if any iron exists within the probe, iron migration can cause a poisoning of the platinum, thus measurement errors.

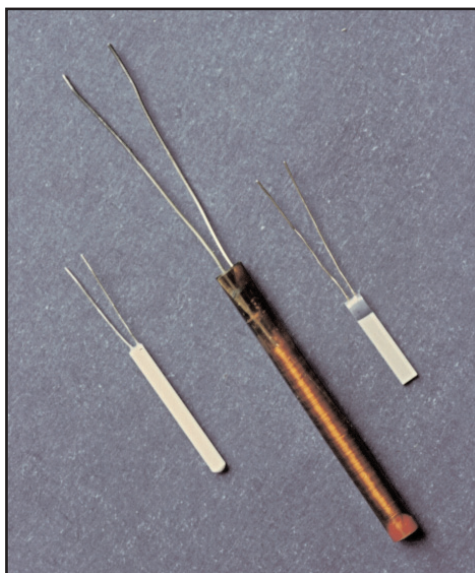
Physical or mechanical changes can cause shifts in the calibration of RTD's.

Rapid cooling can cause defects in the platinum structure and thus measurement errors. The defects can usually be eliminated by reannealing at 450°C.

Vibration in the process can also cause a drift in RTD's by causing a shift in the windings.

Stretching or strain on a metal can change it's resistance independent of temperature.

Due to the fact that RTD's are wound on a mandrel and supported in some way, the expansion coefficient of the supporting medium should match that of platinum, or else the actual contact of the winding with the medium used should be minimized. Thin film, thick film, totally supported, partially supported and bird cage constructions all have specific applications. JMS Southeast, Inc. manufactures high quality RTD's using thin film and semi-supported bulbs.



4, one hour sessions training video.
\$1200.00 - Call for information.