

Thermocouple Decalibration and Drift – Part 6

What else can be done to reduce “Drifting” thermocouple signals?

Last time we established that **specifying the right temperature sensor for the job and taking care to install and maintain it correctly is very important.**

To summarize, you must choose the best **sensor type, sheath material, size** (bigger is better when it comes to thermal stability), **special limits** and use **calibration with discretion** since it is no guarantee of tolerances when placed in service. You must also be careful of **insertion depths, lead wire, transition conditions** and **connections** - which should be secure and protected.

Despite all these precautions, **thermocouple drift will occur – it’s just a matter of when, and how much.** If accuracy and stability are really needed, what else can one do to deal with thermocouple drift?

There are some products on the market that can help to reduce drift.

1. RTD’s are more stable than thermocouples
 - An obvious choice if your process conditions permit
 - But RTD’s have lower temperature range, are damaged by vibration and cannot give you as precise contact as thermocouples.
2. Thermocouples with larger wires
 - Bigger IS better
 - But in the same size sheath, you sacrifice insulation thickness and increase opportunity for virtual junction
3. Stabilized Type K thermocouples
 - Can help reduce the natural shift of the Chromel wire above 550C
 - But, has no affect on other causes of decalibration
4. Alternate thermocouple pairs
 - The best known of these is Type N, which has the same range and responsiveness of a Type K but no Chromel wire shift.
 - But, alternate materials are still subject to many causes of decalibration
5. Thermocouples and RTD’s with improved insulating material
 - AccuTru’s proprietary MI-Dry™ insulation material reduces or eliminates causes of drift.
 - For proof, see the article this month on how it reduces Virtual Junction errors.

Next time we’ll discuss some other **advantages of MI-Dry™ dielectric insulant** in thermocouple and RTD construction.

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