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REFORMERS DELAYED COKER UNITS BOILERS
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NANCES REFORMERS DELAYED COKER UNITS E

**Reliable Furnace and
Heater Temperature
Measurement, without
Thermocouple Failure.**

tsc thermo sensors corporation

PREMIER TEMPERATURE MEASUREMENT PRODUCTS

“we have NEVER seen temperature readings in such close proximity to each other ...”

“we were able to go from thermocouple/thermowell replacement every maintenance cycle to thermocouples that last the life of the furnace coil (3-5 years) ...”

“based on above results, it is recommended that all furnaces be retrofitted with the type K thermocouples manufactured by Thermo Sensors Corp. ... no substitute vendors are recommended ...”

Advantages to Our Thermocouples

- 3-year warranty inclusive of materials, workmanship and insulation resistance
- Low drift / high accuracy
- Replaceable versions available
- Less frequent decoking, due to accurate cracking temperatures
- Better furnace / heater efficiency
- Longer furnace / heater tube life

Welded Tube Skin Thermocouple on Ethylene Furnace Coil Outlet

Crossover Tube Assembly on Olefins Furnace

Replaceable Tube Skin Thermocouple on Delayed Coker Unit

Thermo Sensors Corporation adheres to many stringent procedures in the fabrication of thermocouples and thermocouple installation. With the use of proprietary fabrication methods and materials, we are able to provide our customers with extreme accuracy and longevity, resulting in substantial cost savings. Accurate temperature measurement results in better control of the process, resulting in furnace efficiency, longer tube life and less decoking.

“your competitors’ thermocouples were lasting a maximum of five months and the readings we were seeing were 1800° and decreasing at a steady pace. Now, after one year of testing, your thermocouples have not been replaced and are reading within 2° as the day we installed them, 2050°...”

The best installations are planned well in advance with the customer. Planning, scheduling, instrument engineers, process engineers, operations and safety should be involved well in advance to work out installation procedure details.

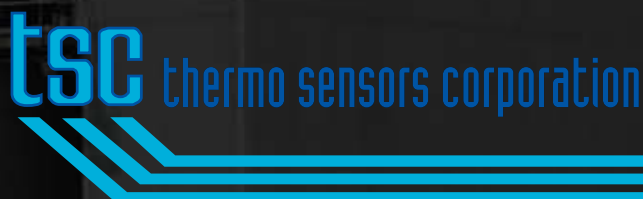
Many refineries and chemical plants employ contractors to install thermocouples as part of their turnaround package. It is common for petrochemical companies to not have enough company instrument inspectors to follow thermocouple installations, resulting in early failures. Should you decide to have Thermo Sensors Corporation supervise your installation, we offer a generic procedure that can be "custom" fitted to a specific heater. The procedure includes step-by-step points that ensure the details are followed in regard to location, welding, expansion, sheath routing, tube preparation, etc.

Key Installation Factors

- Correct placement of weld pad on tube
- Hold down clip size and spacing
- Proper design and location of expansion coils
- Thermocouple sheath routing
- Protection for any "exposed" thermocouple sheath
- Furnace/heater tube preparation
- Pre-heat and post-weld heat treat
- Welding procedures
- Positive material identification
- Proper thermocouple exit sealing

“The best manufactured thermocouple installed poorly or the best installation using a poorly manufactured thermocouple will result in inaccurate temperature readings or early failures of the tube skin thermocouple.”

Only Thermo Sensors offers the best of both, manufacturing and installation supervision!



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