

HTP THERMOCOUPLE FOR CLAUS THERMAL REACTORS AND SULFUR BURNING PROCESSES

FEATURES

- Worldwide standard for protecting Claus Thermal Reactors
- Maintenance free
- Remains accurate under extreme conditions.
- Protects and extends the useful life of refractory and improves reactor up-time
- Over 40 years of proven results in hundreds of installations worldwide
- Keeps working accurately in sulfur service long after other thermocouple designs fail
- Accuracy is continuously verified; self diagnostic



Basic Model HTP with
6"/150# Flange

APPLICATION

The Delta Controls Model HTP is designed for the primary purpose of reliably protecting a vessel and its refractory lining from excessive temperatures. The HTP provides long-term accuracy and reliability in Claus thermal reactor service.

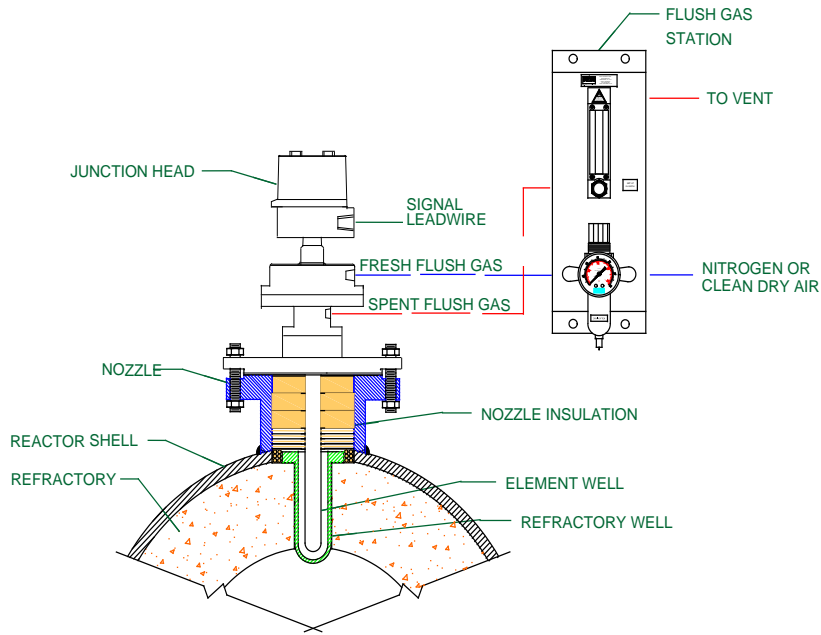
The design of the HTP is a result of careful attention to design detail, 40 years of experience, and many field installations. The thermocouple junction is isolated from the corrosive and invasive gases by using a constant very low flow flush gas circulating across the junction. The flush gas is kept at a pressure higher than the internal reactor pressure to mitigate the migration of process gases through the element well, body or seals. Process gases that do enter are carried away by the flush gas. The metered flush gas flow has an insignificant effect on the accuracy of the temperature measurement.

All HTP's are built to meet each customer's specific installation requirements, such as; thermocouple type, operating temperatures, nozzle size, insertion length, hazardous area classification and materials of construction. The HTP assembly is furnished complete with all necessary installation components including a HRW Refractory Well and HNP Nozzle Packing Kit. Installation tools are available, and recommended, to accurately produce the refractory bore hole in the correct size and alignment needed for the refractory well and thermocouple assembly.

SPECIFICATIONS

Thermocouple Types:	B, R, S (others available)
Flange Material:	Carbon Steel (A105 Forged) or Stainless Steel (316)
Trim, Bolting, and Seats:	Stainless Steel
Element Well:	Blended alumina ceramic
Certification:	CL I Div 1 Group B,C,D - Encl 4X
Process Connection:	ANSI 6"/150# (150mm) (Std.) Other sizes, types, ratings available
Flush Gas:	Nitrogen (11LPH)
Working Pressure:	150 PSIG (10 Bar) at vessel skin temperature of 500°F (260°C)
Working Temperature:	0 - 3100°F (1700°C)
Included Components:	Model HNP Nozzle Packing Kit Model HRW Refractory Well
Recommended:	Model HFS Flush Gas Station Model H6G Refractory Drill Kit
Optional:	<ul style="list-style-type: none"> • Thermocouple extension lead wire • Refractory diamond drills and casting mandrels • Model HMB Mounting Bars for "non-vertical" installations • Model HRS Refractory Stop

HTP INSTALLED IN A CLAUS THERMAL REACTOR



The clean flush gas flows through the HTP and scavenges Hydrogen, Sulfur compounds, and corrosive gases that may migrate through the element well. The gas flows into the upper chamber, down an annulus, over the thermocouple hot junction, back up the inside of the element well, and out through the vent connection to the Model HFS flush gas control station. The pressure is set to approximately 5 PSI (0.34 Bar) above the operating pressure of the reactor. This pressure is set by adjusting the regulator. The flow rate through the unit is set to 11LPH. The metered flush gas flow has an insignificant effect on the accuracy of the temperature measurement.

MODEL NUMBERING SYSTEM

MODEL - EXAMPLE
 BASIC TYPE - T/C 1 - T/C 2 - T/C 3 - INSERTION LENGTH - PROCESS CONNECTION - OPTIONS

HTP - B - B - R - 18.0" - 6"/150 RS - AA

M/N	DESCRIPTION
HTP	Basic Thermocouple

Distance from flange face to inside face of the refractory

M/N	OPTION
NIS	NIST Accuracy Certification
XPB	304 SS Housing; NACE
ZZ	Adaptations & Modifications

M/N	MOUNTING FLANGE
6"/150RS	ANSI 6-inch 150# Raised Face Flange Carbon Steel (A105)
6"/150RY	ANSI 6-inch 150# Raised Face Flange Stainless Steel (316)
6"/300RS	ANSI 6-inch 300# Raised Face Flange Carbon Steel (A105)
6"/300RY	ANSI 6-inch 300# Raised Face Flange Stainless Steel (316)
ZZ	Other Styles, Types, Materials & Sizes

M/N	DESCRIPTION	Range
B	Platinum +6% Rh (-) – Platinum +30% Rh (+)	212 - 3270°F (100 - 1800°C)
R	Platinum (-) – Platinum +13% Rh (+)	32 - 3200°F (0 - 1760°C)
S	Platinum (-) – Platinum +10% Rh (+)	32 - 3200°F (0 - 1760°C)

Notes:
 (1) Temperature shown is the maximum recommended for continuous service

AUXILIARY EQUIPMENT

M/N	DESCRIPTION – SEE SEPARATE DETAILED DATA SHEETS
HRW	Refractory Well
HNP	Nozzle Packing Kit
HFS	Flush Gas Control Station
H6G	Refractory Drilling Kit
HRS	Nozzle Refractory Stop
HMB	Horizontal Mounting Bars



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