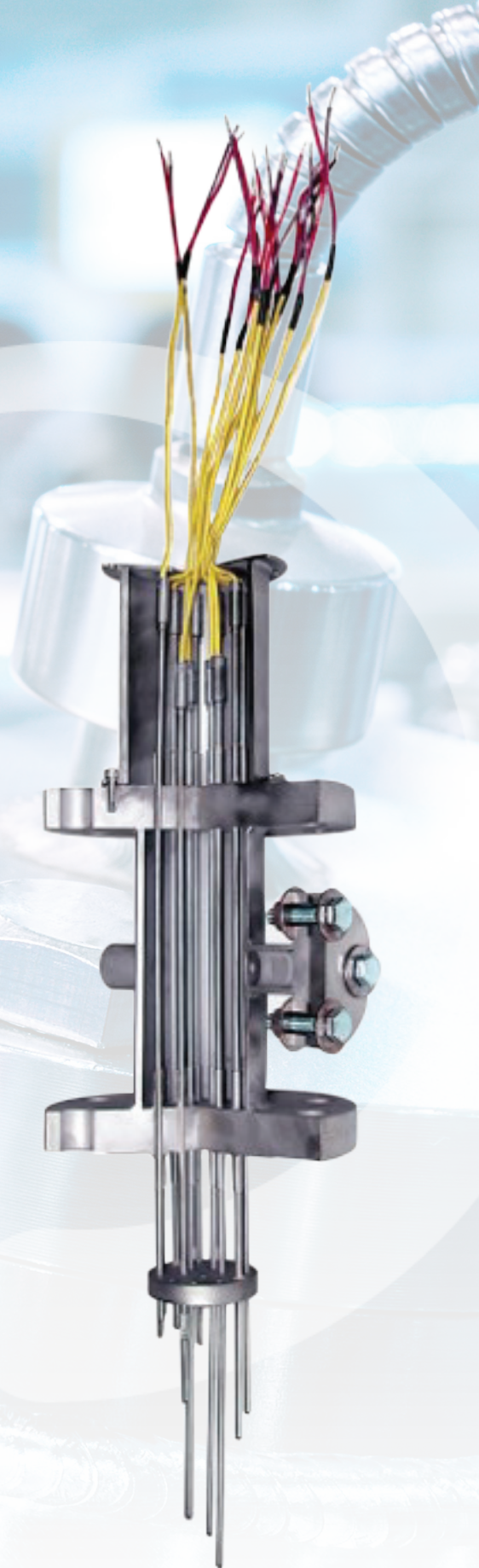




MULTI-POINT THERMOCOUPLE ASSEMBLIES



T C P R O D U C T S . C O M

MARSH BELLOFRAM • 8019 OHIO RIVER BLVD • NEWELL, WV 26050 USA



SPACE SAVING SOLUTIONS

MULTI-POINT THERMOCOUPLE ASSEMBLIES

Certain processes require precise monitoring of temperature throughout a vessel. When space, cost, or time limitations make it impractical to measure all of these points with individual thermocouples, TCP's multi-point thermocouple assemblies have been providing the solution for over 50 years.

Multi-point thermocouple assemblies are custom designed for each application in order to provide the most accurate temperature profile possible. Assemblies are constructed to withstand the extreme temperatures and pressures that are experienced in severe reactor environments.

FEATURES:

- Cost and space effective
- Assemblies can be of any length
- Custom designed for any application
- Sensors limited only by pipe size

APPLICATIONS



Catalytic Reforming Process

Flexible multi-point thermocouples are ideal for profiling and monitoring temperatures inside reactors during the reforming process.



Hydrocracker & Hydrotreater

Multi-point thermocouple pipe thermowells are accurate, rugged and durable which is ideal for this type of application.



Crude Oil Distillation

Flexible multi-point thermocouples can achieve quality results when strategically placed to efficiently and accurately measure temperatures during the distillation process.



Fluid Catalytic Cracking

The multi-point thermocouple ideal for this application is a single vertical entry to a vessel with as many as 18-multipoint locations depending on vessel size or capacity.



Special Applications

Multi-point thermocouple assemblies are used in many applications. Speak to an expert for more information about custom solutions for special applications.



DIFFICULT JOB? WE'RE FLEXIBLE

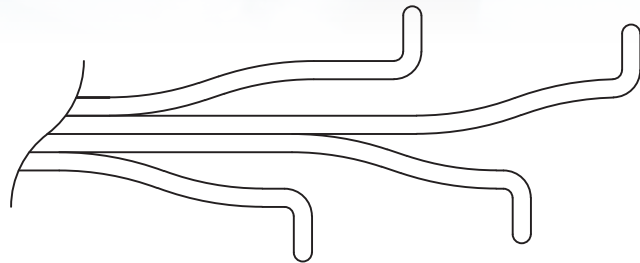
FLEXIBLE THERMOCOUPLE DESIGNS

Flexible Multi-Thermocouple

The flexible element design allows for temperature measurement at any point in a system, allowing for an extremely accurate pressure map of a process. Elements can be run along the side of a reactor wall to avoid interfering with the process. These assemblies are normally equipped with a containment chamber on the outside of the vessel. Thermocouple replacement requires the assembly to be returned to the factory for servicing.

Features:

- Accurate temperature map
- Quickest response time



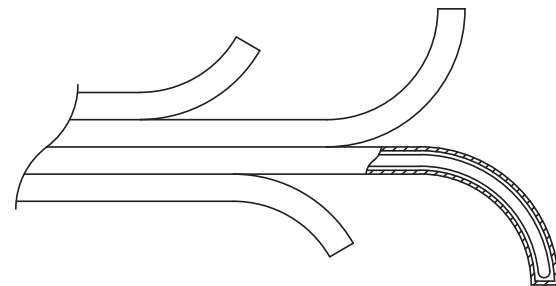
FLEXIBLE THERMOWELL DESIGNS

Flexible Multi-Thermowell with Field Replaceable Elements

The flexible thermowell design allows for temperature measurement at any point in a system, allowing for an extremely accurate pressure map of a process. Flexible multi-thermowells offer enhanced durability to withstand harsh environments. Thermocouples can easily and quickly be replaced on site without any downtime.

Features:

- Accurate temperature map
- Elements are field replaceable without downtime



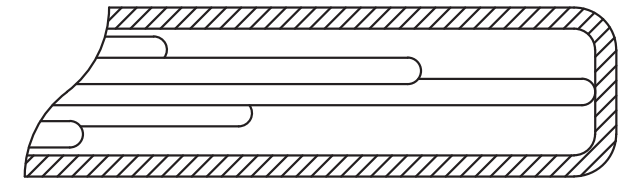
STANDARD THERMOWELL DESIGNS

Free Hanging

Thermocouple elements are mounted to the desired length and bundled together. This type of assembly is normally small in diameter allowing the thermocouples to fill up the inner volume which reduces thermal lag. Thermocouple sensors can be replaced, but may require the unit to be returned to the factory. This is the most economical option of TCP's multipoint designs.

Features:

- Economical design
- Ease of installation

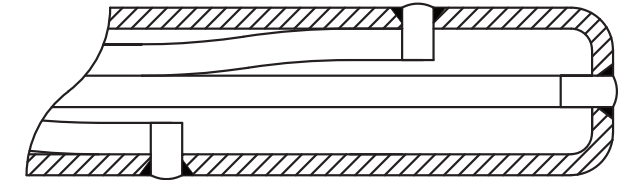


Multi-Guide Tube

Guide tubes are welded to a contact plug which is welded to the outer diameter of the thermowell. This design allows for a large number of thermocouple elements and quicker response times due to their contact with the outer diameter of the thermowell. If a single sensor needs replaced, it can be accomplished easily and quickly on site without interrupting the process.

Features:

- Thermal block allows quicker response time
- Elements are field replaceable

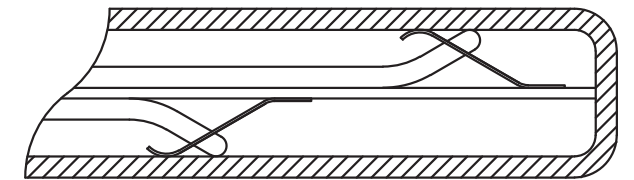


Spring Loaded

A leaf spring holds the tip of the thermocouple to the inner wall of the thermowell. This design allows quicker response time. Thermocouple replacement requires the entire assembly to be returned to the factory for servicing.

Features:

- Contact with side wall allows quicker response time
- Springs made with bimetallic material

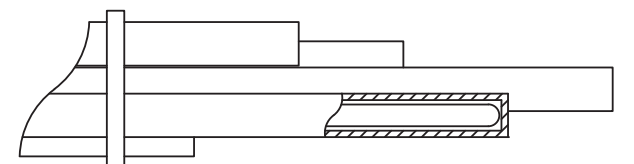


Rigid Multi-Thermowell

Each thermocouple has an individual thermowell that is guided by either a spacer-ring or a T-beam. This type of assembly is limited on the number of thermocouples due to the shape of the guide. Thermocouples can be easily and quickly replaced on site.

Features:

- Individual wells allow quicker response time
- Elements are field replaceable





ORDERING INFORMATION

Requirements are unique to each project. Below is the required information needed to start the process of customizing solutions to fit your need. Please select or provide specific information within each section. If you need more information or help with selection please contact us to speak to an expert.

REQUIRED INFORMATION

Style

- Flexible Thermocouple
- Flexible Thermowell
- Free Hanging
- Custom Design
- Multi-Guide Tube
- Spring Loaded
- Rigid Multi-Thermowell

Thermocouple Style

- Calibration (Type J, K, E, N, T)
- Simplex or Duplex
- Grounded or Ungrounded

Process Connection

- Connection Size
- Pipe Size
- Pressure Rating/Class
- Material Required

Enclosure Requirements

- Agency Certifications or Ratings
- Special Materials Required

Other Options Available

- Cooling Fins
- Lifting Lugs
- Transmitters
- Containment Chamber
- Flexible or Rigid Extension

Special Requirements

- Any Custom Specifications

CONTACT US TODAY

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Fanatical about our customers since 1955.

At TCP, our mission is to be the most trusted provider of temperature monitoring and measuring solutions. We service many industries, including transportation, petrochemical refining, and plastics manufacturing. We focus on the benefits that our solutions provide to each customer's business and strive to maintain customer loyalty.

