

# HEATED TUBING BUNDLE SOLUTIONS

WINTERIZATION • CONDENSATION PREVENTION • VISCOSITY REDUCTION • PERSONNEL PROTECTION



The Heat Tracing Specialists®





### Introduction

Compared to bare tubing that is field traced and insulated, prefabricated tube bundles:

- Expedite installation
- Reduce installed cost
- Ensure long term reliability and safety of the entire system

Consistency and quality are a prerequisite in all Thermon manufacturing processes. Thermon organizations throughout the world operate to the ISO9001 standards.



With global design, manufacturing, and warehouse facilities, Thermon is capable of supplying heated instrument tubing products to meet the needs of customers around the world. Thermon manufactures every type of resistance heat tracing available today.

### Experience

Complete heat tracing systems must include instrument line heating. Thermon tube bundles are reliable, cost-effective products for heated and/or insulated tubing.

Thermon has earned the reputation as . . . The Heat Tracing Specialists®, supplying both electric and steam heat tracing solutions since 1954.

### Better Solutions

The heart of any electrically heated tubing bundle is the heat trace. **Thermon manufactures every type of resistance heat tracing available today.** Our sole-source responsibility for overall performance, especially in electrically classified hazardous areas, cannot be matched. Whatever the application – freeze protection, high temperature maintenance or sensitive analyzer lines – Thermon’s complete line of products provides superior heat tracing solutions.



### Industries

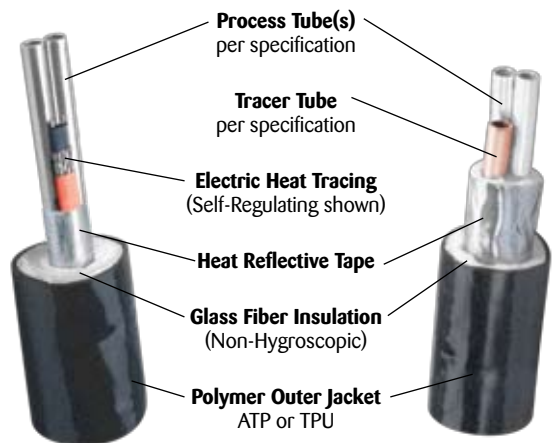
Many times tubing requires heat trace and insulation. Pre-insulated tubing is the most reliable, consistent, and cost-effective way to accomplish this. Industries relying on instrument tubing bundles include:

- Oil and Gas Production
- Refineries
- Chemical plants
- Pharmaceutical
- Power Generation
- Pulp and paper
- Food Processing
- Other Process Industries

### Typical TubeTrace® Heated Instrument Tubing Bundles

**Electrically Heated**  
(ME Shown)

**Steam/Fluid Heated**  
(MP Shown)



### Applications

Instrumentation must operate reliably to monitor critical processes and reactions, monitor emissions, and maintain control of the plant. This can require:

- Winterization / Freeze Protection
- Process Temperature Maintenance
- Personnel Protection from Burn Risk
- Keep Gas Streams Above Their Dew Point
- Prevent Condensation and Crystallization

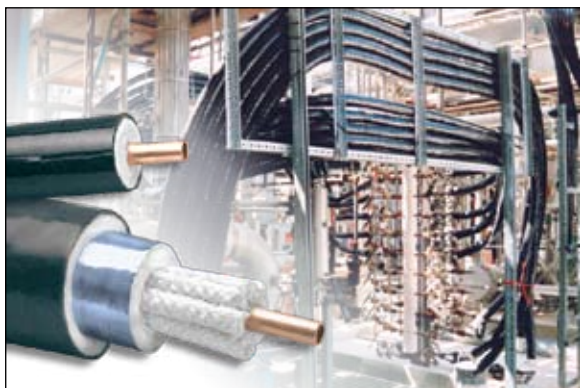
## THERMON HAS A SOLUTION FOR YOUR SPECIFIC APPLICATION



**Process Instrumentation**  
Pressure, Flow and Level



**Analytical / CEMS**  
Process Analyzers, Continuous Emissions Monitoring



**Mechanical and Steam Tracing**  
Steam Supply / Condensate Return

### Tubing Options

Thermon's flexible manufacturing process can include any tubing material:

- Stainless Steel 304 and 316, welded or seamless
- EP (Electropolished)
- CP (Chemical passivation)
- SilcoSteel<sup>\*</sup>, SilcoNert<sup>\*</sup> & Sulfinert<sup>\*</sup> finishes
- Monel
- Titanium
- Inconel 825, and Alloy 20 are readily available
- Fluoropolymer tubing, PFA, TFE and FEP.
- Double containment tubing or multiple tube materials can be provided in a common bundle.
- Nylon, polyethylene, and most any other tubing material available.

\* SilcoSteel and Sulfinert are tradenames of Restek Corp.  
SilcoNert is a tradename of SilcoTek.



### Polymer Jackets

The need for protecting the thermal insulation and other components is accomplished with a continuous extruded polymer outer jacket.

Standard jacket material is ATP- (Arctic Thermoplastic), with optional TPU (polyurethane) and HTJ (high temperature jacket) materials available.

### Design Tools

CompuTrace-IT is an invaluable tool for projects that require steam and/or electrical heating for instrument tubing. Thermon's TubeTrace pre-insulated and heat traced tubing can easily be designed to include terminations and accessories for most applications. The user can create systems with hazardous area approvals with any one of five globally recognized standards. For steam heating applications CompuTrace-IT can design systems for "light" or "heavy" steam tracing.

CompuTrace<sup>®</sup>-IT computer design software can be downloaded from . . . [www.thermon.com](http://www.thermon.com)





# Electrically Heated Tubing Bundles

## TubeTrace® Type SE/ME



Small diameter lines are heated for many reasons including freeze protection (winterization), reduced viscosity, and keeping gas samples above their dew point. These can be critical for process accuracy, emissions compliance, and even plant operation.

Steam and electrically traced instrument tubing bundles represent lower installed costs and increased reliability for flow, level and pressure transmitters (as examples).

**Thermon manufactures every type of resistance heat trace available in the world today<sup>1</sup>.**

### **TubeTrace® with Self-Regulating BSX™**

A cost effective solution for water freeze protection and low temperature maintenance.

**Tube Temperature Range:** 5°C to 65°C

**Maximum Exposure<sup>2</sup>:** 85°C power off



### **TubeTrace® with Self-Regulating HTSX™**

Primarily used for process temperature maintenance or freeze protection where temperature exposure to steam purge is expected.

**Tube Temperature Range:** 5°C to 121°C

**Maximum Intermittent Exposure<sup>2</sup>:** 250°C power off



### **TubeTrace® with Self-Regulating VSX™**

A high performance heat trace specifically for process temperature maintenance or freeze protection where high temperature exposure is a consideration.

**Tube Temperature Range:** 5°C to 150°C

**Maximum Intermittent Exposure<sup>2</sup>:** 250°C power off



### **TubeTrace® with Power-Limiting HPT™**

A “cut-to-length” heat trace for higher temperature maintenance or for multiple tube bundles requiring high heat loading. Also used for freeze protection where high temperature exposure is a factor.

**Tube Temperature Range:** 5°C to 204°C

**Maximum Exposure<sup>2</sup>:** 260°C power off



The following are also available

**TubeTrace® with Mineral Insulated MIQ heat trace**

**TubeTrace® with Parallell Constant Watt FP, and**

#### **Note . . .**

1. Standard products are certified for use in ordinary (nonclassified) areas and in potentially explosive atmospheres in accordance with ATEX Directive and the IEC Ex Scheme.
2. Reflects maximum exposure temperature of heater.

# Sample Transport Bundles/Umbilicals for CEMS and Analyzer Service



## Custom CEMS and Analyzer Bundles

Most countries require industrial furnaces and boilers to have emissions monitoring systems to verify proper operation of pollution controls. Extractive gas analyzers require that the gas sample be kept above its dew point to remain a vapor from the probe to the analyzer, sometimes significant distances. Similarly, process analyzer lines require heating to measure process gas streams above their dew point.



Custom CEMS Umbilical  
(with FAK 9L Bulkhead Shown)

## Electrically Heated TubeTrace:

- Hazardous area approvals.
- HPT power-limiting heat trace represents the best choice for maintaining temperatures above 150°C that can be "cut-to-length" in the field.
- To accurately sense temperatures in multiple locations, consider factory installed RTD, Thermocouple, or Thermistor temperature sensors.



TubeTrace  
with Power-Limiting HPT

## Non-Heated ThermoTube® and "NI" Non-Insulated Bundles also available for analytical applications.

### Tube Bundle options can also include:

- Auxiliary conductors for probe heaters
- Un-heated tubes for blowback and calibration gas.
- Special markings and identification, as required.



NI Bundle

**Steam heated TubeTrace and ThermoTube pre-insulated (non-heated) bundles also available for analytical applications.**

## Controls and Monitoring

To accurately control temperatures for electrically heated tubing applications, consider Thermon's TC control and monitoring systems. TC-systems are available with single-point or multi-circuit configurations and include ground leakage equipment protection, various alarm functions, and communications capabilities to host PC, PLC, and DCS systems.



TC-816 Controller (Shown)





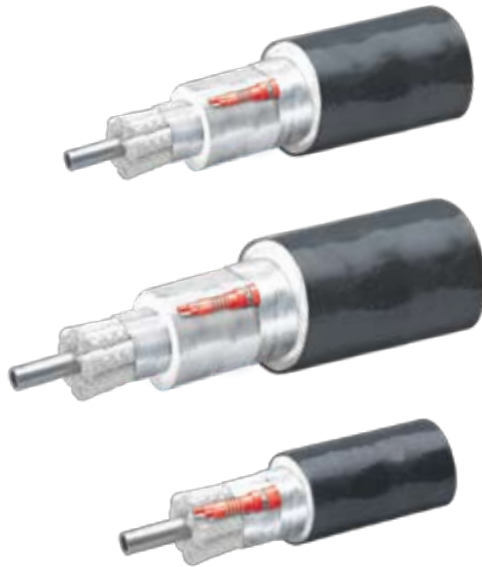
# Freeze Protection for High Temperature Steam Lines

## TubeTrace® Type SEI/MEI - HT, HTX & HTX2

TubeTrace Type SEI/MEI - HT, HTX, and HTX2 electrically heated instrument tubing was developed to freeze protect high temperature steam lines. Though designed for freeze protection of condensates, super-heated steam samples can exceed 538°C during normal operation.

The most common requirement for these bundles is around the HRSG (Heat Recovery Steam Generator) found in combined cycle co-generation stations. These bundles are not designed to maintain elevated temperatures.

TubeTrace Type SEI/MEI - HT, HTX, and HTX2 bundles are offered as Single Electrical Isolated (SEI) tube or Multiple Electrical Isolated (MEI) tubes, and are most often heated with HPT power-limiting heat trace. HPT has one of the highest continuous temperature exposure rating of any cut-to-length heat trace in the world today.



**TubeTrace® Type SEI/MEI - HT**  
**Maintain:** 5°C down to -45°C  
**Continuous Tube Exposure:** 399°C

**TubeTrace® Type SEI/MEI - HTX**  
**Maintain:** 5°C down to -45°C  
**Continuous Tube Exposure:** 593°C

**TubeTrace® Type SEI/MEI - HTX2**  
**Maintain:** 5°C down to -34°C  
**Intermittent Tube Exposure:**  
Withstand 593°C

Thermon MIQ™ mineral insulated series heat trace is also available in TubeTrace SE/ME bundles and can be applied directly to a high temperature tube surface.

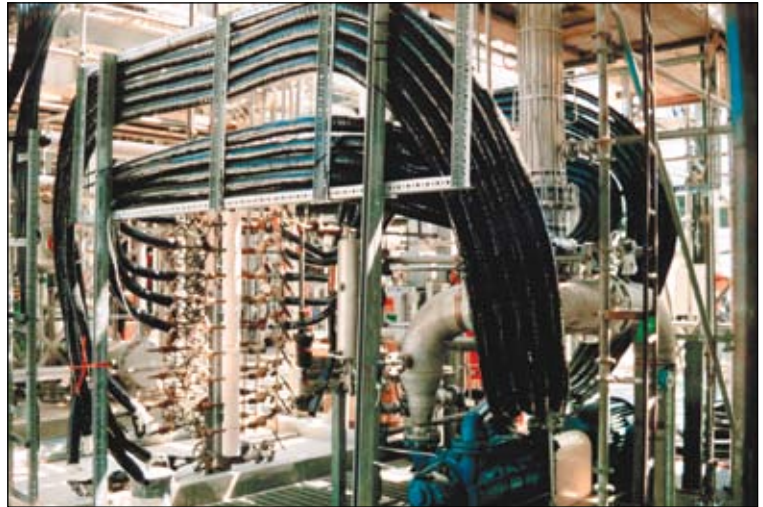
# Steam Heated Tubing Bundles

## TubeTrace® Type SP/MP and Type SI/MI

### Steam or Fluid "Light Traced"

For freeze protection and lower temperature maintenance. The tracer tube is isolated from the process tube(s), so process tube temperatures will be significantly lower than the tracer tube temperature.

**Tube Temperature Range:** 5°C to 121°C  
**Maximum Tube Exposure\*:** 205°C



### Steam or Fluid "Heavy Traced"

For freeze protection and process maintenance. The tracer tube is in direct contact with the process tube(s), so process tube temperatures will be very close to the tracer tube temperature.

**Standard Tracer Temperature\* Range:** 5°C to 205°C  
**Maximum Tube Exposure\*:** 205°C



Type MP Shown,  
 (SP for "Heavy Traced" also available)

### Pre-Insulated Tubing ThermoTube®

#### ThermoTube® Type SL

Single tube pre-insulated for steam supply, condensate return, or other unheated fluid or gas transport.

**Continuous Temperature\* Range:** Service to 205°C



Type SL Shown

#### Type SL - HT

**Maximum Continuous Tube Temperature\*:** 399°C

#### Type SL - HTX

**Maximum Continuous Tube Temperature\*:** 593°C

#### Type SL - HTX2

**Maximum Intermittent Tube Temperature\*:** 593°C



Type SL - HTX Shown

\* Maximum tube temperature shown for standard bundle insulation thickness that keeps the outer jacket below 60°C. Tube Temperatures to 260°C possible.





#### OFFICES WORLDWIDE

UNITED STATES CANADA MEXICO NETHERLANDS  
UNITED KINGDOM FRANCE SPAIN GERMANY  
RUSSIA AUSTRALIA MALAYSIA CHINA INDIA  
JAPAN SOUTH KOREA BAHRAIN

**THERMON . . . Globally Recognized as The Heat Tracing Specialists®**



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