Maximize Output With TraceBOOST™

ENHANCED STEAM TRACING SPECIFICATION

1. GENERAL

1.1. This specification describes the minimum mandatory requirements governing the design and installation of an enhanced steam tube tracing system for process piping. The system will be used to maintain process temperature inside the piping.

1.2. The enhanced steam tracing system will feature **TraceBOOST™** tracing for piping, **TraceBOOST™** cast aluminum heating jackets for valves/equipment, continuous coiled tubing to reduce or eliminate intermediate fittings and potential leak points, and S-Line® pre-insulated tubing for steam supply/condensate return lines.

1.3. **TraceBOOST™** tracing systems are ideally suited for applications with the following characteristics:

1.3.1. The purpose of heating is to maintain the average (bulk) process temperature.

1.3.2. The heating medium temperature is greater than 70°F (40°C) higher than the process maintenance temperature. Applications with narrow temperature ranges or uniform wall temperature requirements should consider an engineered heating system such as CSI's ControTrace® or contact factory for further discussion.

2. SYSTEM SIZING AND PERFORMANCE

2.1. The customer is responsible to determine the number of enhanced tracers required to achieve the thermal requirements for each line using vendor-supplied tools or guidelines.

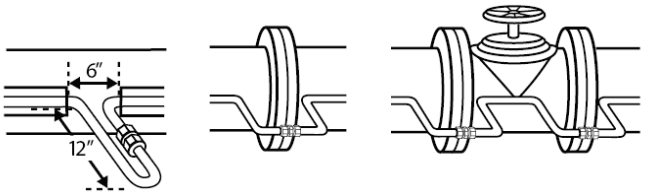
2.2. Table 1 below lists conversion of conventional tracers to **TraceBOOST™** tracers. In applications where a customer supplied conventional tube tracer specification does not exist, please contact factory.

Specified Conventional Tube Tracers		Suggested **TraceBOOST** Tracers
Carbon Steel Process Pipe	Stainless Steel Process Pipe	
2-3	2	1
4-7	3-5	2
8-10	6-8	3
11-14	9-11	4

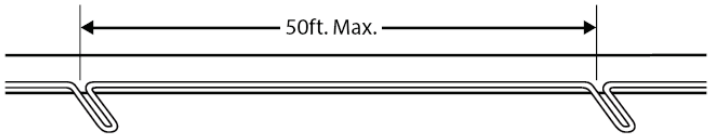
Table 1: Conventional Tube Tracing Conversion

2.3. To accommodate thermal expansion within the tubing, expansion loops are required. The placement of expansion loops are critical to the effectiveness of the tracing system.

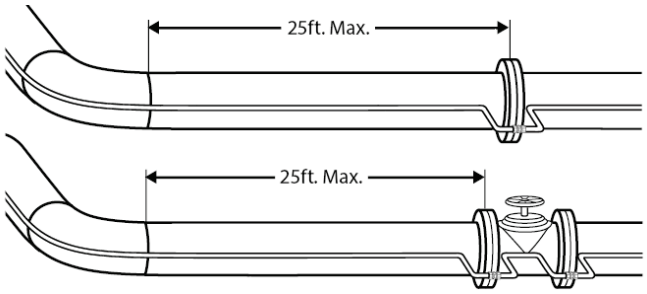
2.3.1. Any location where tubing leaves the piping will act as an expansion loop.



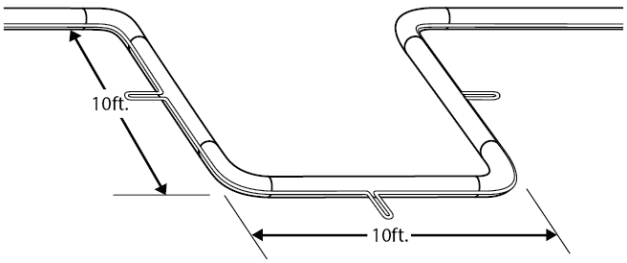
2.3.2. The maximum distance between consecutive expansion loops is 50ft. More frequent expansion loops will be required if the heating steam pressure is higher than 150 psig; contact factory for project-specific requirements.



2.3.3. The maximum distance between a change in direction and an expansion loop is 25ft.



2.3.4. The maximum distance between consecutive direction changes without an expansion loop is 10ft.



3. CONDUCTIVE ENHANCERS

3.1. Conductive heat transfer enhancer shall be installed on ½-inch (12mm) stainless steel or copper tube tracing. Heat transfer enhancer shall be aluminum and nominally 2-inches wide. Enhancer shall minimize the required use of heat transfer compound.

3.2. **TraceBOOST™** 2-inch wide aluminum straight sections not exceeding 5ft (1.5m) in length shall be used on all straight run piping. Heat transfer compound (HTC) is to be used to ensure good conductive heat transfer between the tubing, **TraceBOOST™** enhancer, and piping.

3.3. Pre-formed **TraceBOOST™** enhancer shall be used on all pipe fittings where required (elbows, tees, crosses, and reducers).

3.4. **TraceBOOST™** cast aluminum bolt-on jackets shall be used on all in-line valves and equipment not accommodated by straight or pre-formed elements.

3.5. All conductive enhancers shall be applied with CSI **TraceBOOST™** Grade C heat transfer compound and secured with no fewer than three ¾" wide x 0.030" thick stainless steel banding and buckle per piece.

4. COILED TUBING FOR REDUCTION OF INTERMEDIATE FITTINGS

4.1. Wherever possible continuous coils of tubing shall be used to reduce or eliminate the requirement of intermediate fittings and their potential leak points.

4.2. Tubing shall be ½" OD and of wall thickness, metallurgy and construction as determined by plant standards.

4.3. Supplier shall provide purpose built equipment for the safe handling and straightening of coiled tubing.

5. PRE-INSULATED TUBING FOR STEAM SUPPLY AND CONDENSATE RETURN

5.1. Pre-insulated tubing bundle shall be used for all steam supply and condensate drain connections.

5.2. The bundle must be designed such that the outer jacket temperature will not pose a burn hazard to personnel on the maximum ambient day.

5.3. Pre-insulated tubing shall be supplied in long continuous coils and comply with section 4.2.

5.4. The thermal insulation shall be nonflammable self-extinguishing, nonhygroscopic and chemically inert and shall have an average water-soluble chloride content of 45 ppm or less with a maximum permissible level of 100 ppm.

5.5. The jacket shall be continuously extruded through the entire length of the bundle and shall be terminated utilizing manufacturer recommended accessories.

5.6. Supplier shall provide purpose built equipment for the safe handling and straightening of pre-insulated coiled tubing.

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