ThorburnFlex

Sure Temp™ Heated Hose Assemblies

Engineered Solutions For Pipe Motion

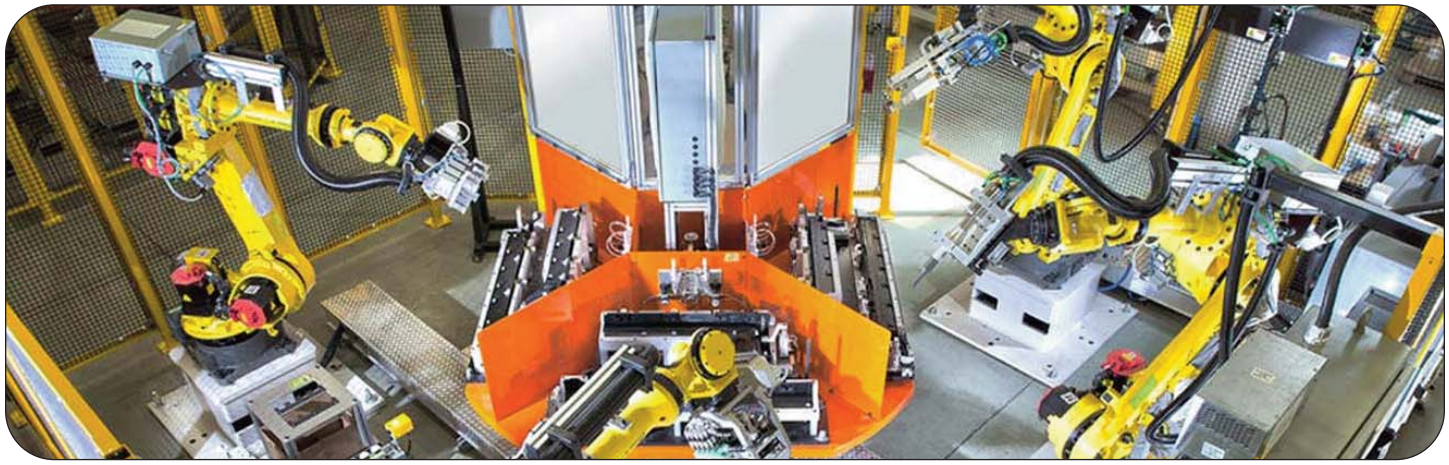
Canada

www.thorburnflex.com

ThorburnFlex

A Proven Leader In Flexible Piping Technology

Sure Temp™ Electrically Heated Hose



Electrically heated hoses are used wherever a liquid, viscous or melted medium has to be transported from one place to another without losing the temperature. The hose is designed to regulate the temperature of the process fluid entering the hose assembly as it passes through the hose. This is usually required to prevent solidification or an increase in the fluid viscosity. A heating element is spirally wrapped around the hose assembly to regulate the temperature. This self regulating heating element requires a sensor and controller to maintain a specific temperature. Electrical heating, as opposed to steam heating, is preferred because it is more convenient, more controllable and more readily available.

Thorburn's Sure-Temp™ hose assembly

Manufacturing Sure-Temp™ electrically heated hose assembly

Sure-Temp™, with its precise construction using PTFE tubing, stainless steel braided reinforcement and high-performance insulation, provides an internally uniform temperature that is stable throughout the length of the hose, together with great flexibility and sturdiness. When it is necessary to maintain the product temperature at a predefined value, Sure-Temp™ electrically heated hose assemblies provide a constant temperature of the material conveyed through to the application site, without the material temperature being influenced by ambient temperatures and heat losses along the way.

Sure-Temp™ heated hoses are used to:

- Keep media fluid for processing
- Achieve their optimum properties for processing
- Avoid condensation of gaseous media
- Process in a more productive way (robotic applications)
- Ensure consistent quality in manufacturing
- Connect moving parts and devices

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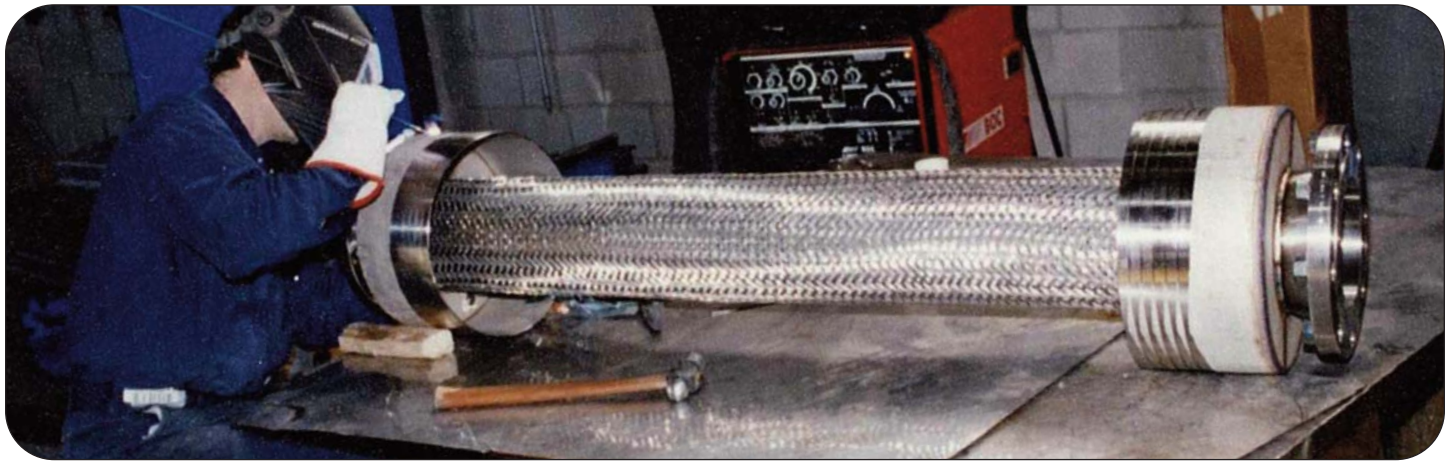


Performing quality check of Sure-Temp™ hose

Custom end fitting on Sure-Temp™ hose assembly

Features & Benefits:

- Easily drained and cleaned
- High mechanical resistive strength
- Uniform heating prevents hot spots
- External temperature controller
- Greatest variety of end fittings for electrically heated hose assemblies
- J or K thermocouplers available
- Standard voltage 120V, 220V, 480V & 600V
- Optional built in temperature control

Specifications:

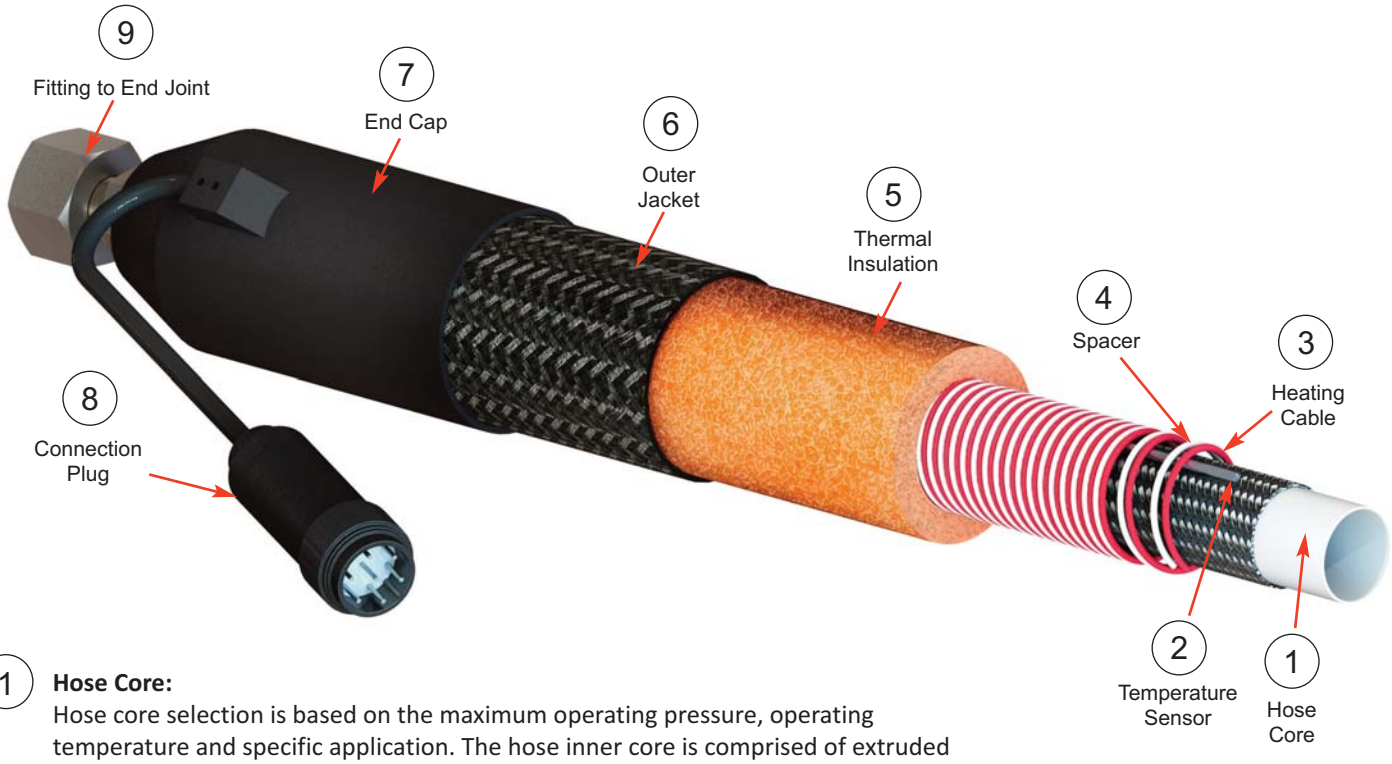
Heated Pressure Hoses Gas Analysis:
Frost protection/holding temperatures | 5°C to 450°C
Nominal ID | 4mm to 50mm
Typical Design Pressures | Full vacuum to 300 psi (20 bar)

Heated Pressure Hoses Liquid Service:
Frost protection/holding temperatures | 5°C to 250°C
Nominal ID | 8mm to 200mm
Typical Design Pressures | Full vacuum to 300 psi (20 bar)

Sure Temp™ Electrically Heated Hose Assemblies
Available with Factory Mutual Approval for use in Class 1, Div. 2, Group D areas

Sure Temp™ Electrically Heated Hose Construction

Thorburn's Sure Temp™ technology offers the industry the widest range of custom built electrically heated hose assemblies. Sure Temp™ capabilities range from basic freeze protection and gas sampling to transferring viscous materials at precise and uniform temperatures. This enables loading/unloading of oil, fat, resins, paint, bitumen, adhesives, compounds and foods with maximum efficiency, without temperature loss.



1 **Hose Core:**
Hose core selection is based on the maximum operating pressure, operating temperature and specific application. The hose inner core is comprised of extruded PTFE, 0.030" or 0.040" wall thickness, which offers exceptional resistance to temperature cycling and kinking.

- Smooth Bore TS Hose Series - Pressure applications
  (See page 7 for details)
- Corrugated TC Hose Series - Loading/unloading applications
  (See pages 49 to 57 for details)
- Rubber TR Hose Series - Loading/unloading applications
  (See page 37 for details)
- Corrugated Metallic Hose - Elusive gases and cryogenic/high temperature >200°C transfer applications
  (Please refer to Thorburn's Metallic Hose Catalog pages 5 to 16 for details)

TS Series Hose

TC Series Hose

TR Series Hose

Metal

Sure Temp™ Electrically Heated Hose Construction

2 **Temperature Sensor:**
The temperature sensor is helically wound around the hose core between the heating cable and helps the temperature controller regulate heat on the hose. 2-wire technology is standard and can be integrated with thermocoupler type K or J.

3 **Heating Cable:**
The heating cable is comprised of a strong nickel alloy. The power of the heating cable depends on the temperature that must be maintained. Available in single or 3 phase 120V, 240V, 480V & 600V.

4 **Spacer:**
The spacer is made of braided glass fiber and provides reliable protection for the heating cable against mechanical damage. Optional aluminum foil can be added to the spacer for better heat distribution.

5 **Thermal Insulation:**
The selection of thermal insulation depends on working temperature.
- EPDM foam - up to 100°C
- Silicone foam - up to 250°C
- Fiberglass or silica cloth - high temperatures above 250°C

6 **Outer Jacket:**
The outer jacket provides the hose protection against external elements such as weather, humidity and abrasion. Selection of the outer jacket depends upon application, bend radius and ambient temperature.

7 **End Caps:**
The end caps are used to seal off both ends of the heated hose and provide strain relief for the connection cable. Standard end caps are made of silicone, EPDM, plastic (polyamide) and galvanized metal.

8 **Connection Cable:**
The electrically heated hose is equipped with a connecting cable 1,5 m long (standard) with or without plug. Plugs are 5 pin (<20A standard) and 7 pin (<10A) configurations.

9 **Fitting to End Joint:**
The fitting to end joints are a progressive swage or crimp design. Fittings include Female and Male NPT, Female and Male 37° JIC Swivel, Tube stub, Cam & Groove, Sanitary Flange, BSPP, Metric and many other fitting to end joints options.

Installing inner isulation on Sure-Temp™ hose

Preparing Sure-Temp™ hoses for shipment

EPDM

Silicone

Plastic

Metal

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Sure Temp™ Electrically Heated Hose Applications

Robotic automotive bonding machine

Plastics processing
- Injection molding
- Extrusion, co-extruders
- Mold-making

Adhesives and dosing systems
- Hot-melt equipment
- Adhesive robots
- Packaging equipment
- Dosing equipment

Surface technology
- Bitumen plants
- Spray-coating plants
- Airless equipment

Isolation technology
- Packaging foam equipment
- PUR foam equipment

Process and environmental technology
- Exhaust gas stations
- Exhaust gas measurement technology
- Sampling probes
- Flue gas analytical
- Emission measurements

Chemical thermal process engineering
- Heavy fuel oil systems
- Chemical pipelines
- Fluid metals
- Silo heating systems

Transportation technology
- Transfer and delivery hoses
- Silo and levelling hoses

Plant and apparatus engineering
- Filling and sealing equipment
- Food processing
- Tool heating

How to Order Thorburn Sure-Temp™ Hose Assemblies

Hose Type	Size ID X OAL	Hose Core	Sensor	Sensor Position	Heating Cable	Spacer
HHS	**10X24**	**TS11**	**STP100**	**SP300**	**HC1**	**S1**
HHS = Single heated hose **HHM2** = Double heated hose **HHM3** = Triple heated hose **HHM4** = Quad. heated hose	For special length or size please specify	**TS Series Smooth Bore PTFE Hose** TS11 TS12 TSX16 TSX17 TSX18 TR40 **TC Series Convoluted Bore PTFE Hose** TC72 TC76 TC85 TC87 TC92 TC96 TC97 TC98 TN33 TN34 TP31 TP32	**2 Wire Type** **SPT-100** = 2 Wire (Standard) **SPT-25** **SPT-50** **SPT-200** **SPT-500** **SPT-1000** **3 Wire Type** **SPT-1003W** **4 Wire Type** **SPT-1004W** **Thermocouple** **STCK** = Type K (NiCi-Ni) **STCJ** = Type J (Fe-CuNi)	**SP300** = 300mm (Standard) **SP500** = 500mm (Optional) **SP600** = 600mm (Optional) Sensor Position is upstream of the power connection	**HC1** = PTFE insulating cable (C/W Protective conducting braiding) **HC2** = Self regulating (up to 100°C)	**S1** = Braided Glass Fiber

04 = 1/4 (6mm)	X	**12** (300mm)
06 = 3/8 (10mm)	X	**24** (600mm)
08 = 1/2 (12mm)	X	**36** (900mm)
10 = 5/8 (16mm)	X	**40** (1000mm)
12 = 3/4 (19mm)	X	**48** (1200mm)
16 = 1 (25mm)	X	**60** (1500mm)
20 = 1 1/4 (32mm)	X	**80** (2000mm)
24 = 1 1/2 (40mm)	X	**88** (2200mm)
32 = 2 (50mm)	X	**100** (2500mm)
40 = 2 1/2 (63mm)	X	**108** (2700mm)
48 = 3 (80mm)	X	**120** (3000mm)
64 = 4 (100mm)	X	**128** (3200mm)
96 = 6 (150mm)	X	**140** (3500mm)
160 = 10 (250mm)	X	**148** (3700mm)
196 = 12 (300mm)	X	**160** (4000mm)

Sure Temp™ Electrically Heated Hose Applications

Freeze protected chemical loading/unloading

Spraying equipment

Filling Machine

Plastic injection machine

Industrial gluing machine

Flue gas analysis

Spacer Option	Insulation	Outer Jacket	End Caps	Connection Fittings	Connection Cable	Voltage
AF	**I3**	**056**	**EC2**	**XX**	**7**	**115**

AF = Aluminum Foil (For improved heat distribution)

If not required, leave blank

I1 = Multi-Layered Thermal Fleece
I2 = Silicone Foam
I3 = EPDM Foam
I4 = Glass Silica & Silicone Foam

051 = Corrugated Rubber
052 = Corrugated Plastic
053 = 304SS Braid
054 = Nylon Braid
055 = Polyamide Braid
056 = Silicone
057 = Corrugated 321 Metal Hose

EC1 = Silicone
EC1T = Silicone (+ Terminal Housing)
EC2 = EPDM
EC2T = EPDM (+ Terminal Housing)
EC3 = Plastic
EC3T = Plastic (+ Terminal Housing)
EC4 = Metal
EC4T = Metal (+ Terminal Housing)

XX = Male NPT
XX = Male BSPT
XX = Male JIC
XX = Male DIN 24
XX = Male DIN 60
XX = Female FSX
XX = Female O-Seal
XX = Female DIN 24
XX = Female DIN 60
XX = Female Sanitary Flange
XX = Female Flange PN10
XX = Female Flange PN16
XX = Female Flange PN25
XX = Female Flange 150#
XX = Female Flange 300#
XX = Female Flange Encapsulated

5 = 5 Pin Round
7 = 7 Pin Round

12 = 12 VAC
24 = 24 VAC
48 = 48 VAC
115 = 115 VAC
220 = 220 VAC
480 = 480 VAC
600 = 600 VAC
XX = Other (Specify)

TFTC-01 Temperature Controllers
The temperature is measured by a sensor processed by the microcontroller and displayed. After comparing actual and preset values, the appropriate output relays are switched.

- LED display works to -25°C
- Programmable -50°C to 500°C
- 16A resistive load alarm contact
- Sensors with 2 or 3 wires

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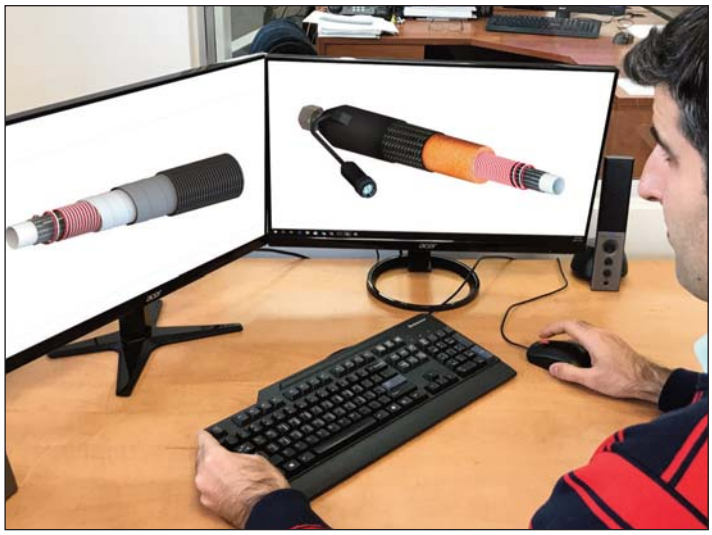
European Conformaty | ISO 9001:2015 | B31.1, B31.3 | ASME "NPT" Sec. III Class 1 | ASME "U" Sec. VIII Div. 1 | N285.0, B51 CGA CR96-001 | 97/23/EC Module H | UL 536

ISIR Romania | CNCAN Romania | EN 13480-2002 | HAF 604 China | TSG China



Engineering Capabilities & Experience

Thorburn's design engineering expertise is supported by advanced FEA software that offers powerful and complete solutions for both routine and sophisticated engineering problems. Thorburn's engineers can analyse and provide innovative solutions for pipe and duct motion problems including dynamic vibration, nonlinear static, linear static, thermal gradient through material wall thickness, acoustic impedance and fatigue using a common model data structure and integrated solver technology.

Design & Materials

- ASME Code Sections I, II, III, VIII, IX, B31.1 & B31.3
- ISO 10380 Corrugated Metal Hose & Hose Assemblies
- NACE MRO175-2009/ISO 15156-2009 compliance
- FEA - Finite Element Analysis

Welding and Fabrication Capabilities

- Arc, Pulse Arc, TIG, MIG, Core Wire
- Tube Welding, Track Welding, Automated Flame Cutting & Welding
- Rolls, Positioners, Turntables
- Automated Tube Welding DIN 6mm (1/4") to DIN 300mm (12")
- Hydro-Forming Convolutions DIN 25mm (1") to DIN 750mm (30")
- Mechanical Forming Convolutions DIN 6mm (1/4") to DIN 300mm (12")

NDT/NDE Programs & Design Verification Testing

- Weld X-Ray to 300KV-5MA / Welds Dye Penetrant to ASME Sec V
- Vacuum Testing 29.9" HG and Hydrostatic or Nitrogen Pressure Testing to 1,000 bar (15,000 psi)
- Impulse Testing to 680 bar (10,000 psi) at 204°C (400°F).
- Burst Testing up to 4,000 bar (60,000 psi)
- Pliability Fatigue & Deflection Testing ISO 10380:2012
- Seismic & Vibration Analysis in Acceptance with ASME Sec III
- Helium Mass Spectrometer Leak Testing

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