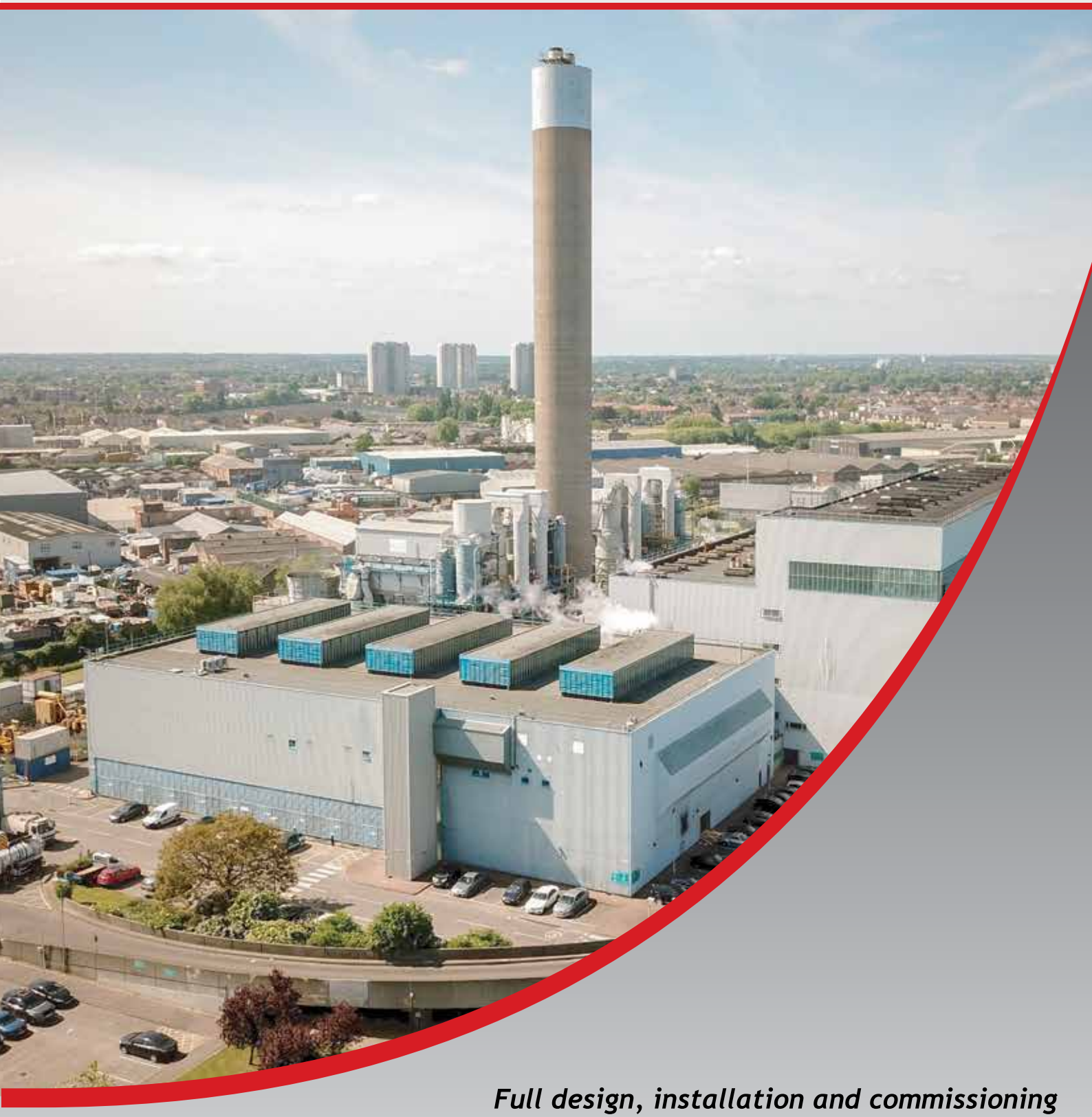
Energy from Waste
Application Guide



Full design, installation and commissioning capability of turnkey electrical heat tracing systems and controls.

HEAT TRACE

The Heat Tracing Authority™

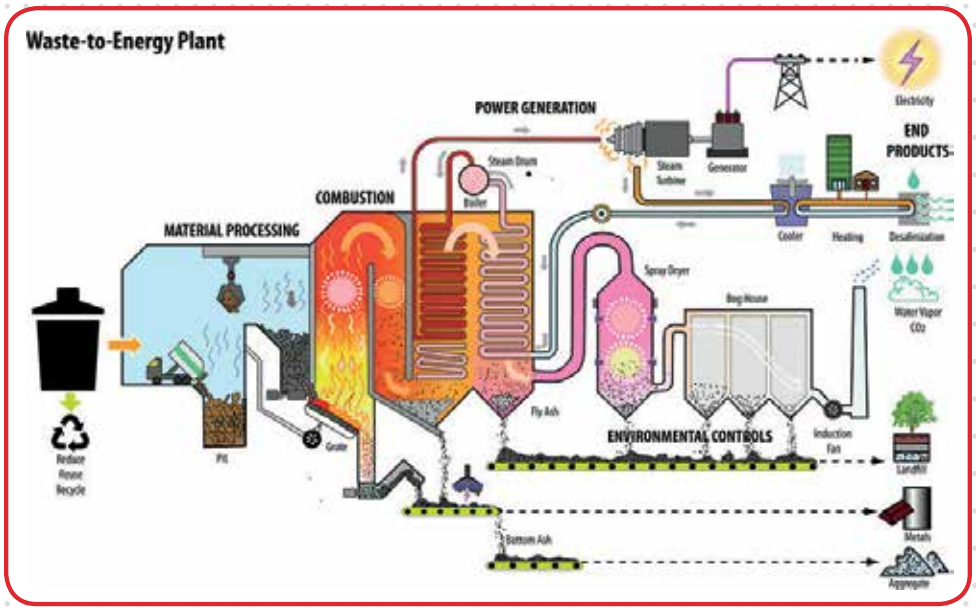
Heat Trace Limited - About Us

Heat Trace Limited is a British manufacturing company with representation in over 50 countries. We provide complete heat tracing solutions and are the industry Technical Leader in our field. Founded in 1974, Heat Trace has been manufacturing electrical heating cables ever since. Heat Trace's emphasis on innovation, ensures that our extensive Research and Development programme, guarantees we remain at the forefront of our industry.

What is Heat Tracing?

Heat Tracing, Trace Heating or Surface Heating is the method of applying heat to a body, or to a product (liquid, powder, or gas) contained within a system (pipework, vessel, or equipment) for storage or transportation, in order to avoid processing problems or difficulties.

Heat tracing is used extensively in Power Generation Applications



Typical Energy from Waste Schematic

Heated and Insulated Vessels

Heated and Insulated Process Pipework

Application Information

Electric heat tracing is required within the Energy from Waste industry for freeze protection or temperature maintenance of pipes and equipment.

Frost Protection

In cold climates, water or chemical pipework often needs to be heat traced to prevent freezing. Thermal insulation alone is incapable of preventing freezing over prolonged periods. Parallel resistance self-regulating cables or constant power cables are chosen which can be cut-to-length as required on site.

Transporting Ash

Silo ash is transported around plants. Heat Tracing is used for temperature maintenance to keep the internal surfaces of equipment at a temperature above the point at which condensation occurs.

Large Vessels

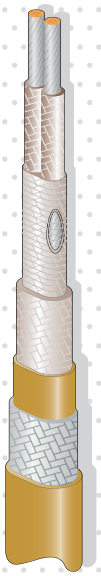
Heat tracing is applied to vessels to ensure that products are stored at the correct temperature. Usually the system is designed to compensate for heat losses through the thermal insulation. In some cases, sufficient heat is installed in order to raise the temperature of the vessel under defined conditions. The thermal insulation is the first line of defence against heat loss from a bare surface. Once the heat losses have been calculated you can determine the amount of power required based on the heat losses, the size of the tank and the power output of the heater.

Process Temperature Maintenance

Temperature Control of complex valved piping systems, such as those around pumping sets and manifolds, can create a problem for the designer. All pipe sections are not subjected to the same flow conditions. Often, only one or two pumps are operational whilst the remainder are in the standby or no flow condition. A temperature sensor located on a flowing pipe may de-energise tracing on static lines when heat is actually needed and vice-versa.

HTL Products to be Used

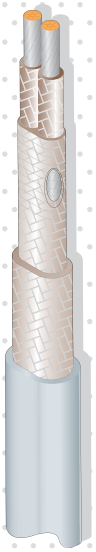
MAXIMUM TEMPERATURE UN-ENERGISED:	+285°C (+545°F)
MINIMUM INSTALLATION TEMPERATURE:	-40°C (-40°F)
POWER SUPPLY:	12 - 277V AC
TEMPERATURE CLASSIFICATION:	T1 (+350°C) T2 (+300°C) T3 (+200°C) T4 (+135°C) T5 (+100°C) T6 (+85°C)
POWER OUTPUTS:	10, 30, 50 & 70W/m



285°C
PHT

Electrical heating cable for process temperature maintenance of pipework and vessels in safe or hazardous areas

CONTINUOUS WITHSTAND TEMPERATURE (Power ON/OFF):	+500°C (+932°F)
MINIMUM INSTALLATION TEMPERATURE:	-40°C (-40°F)
POWER SUPPLY:	12 - 277V AC
TEMPERATURE CLASSIFICATION:	T1 (+350°C) T2 (+300°C) T3 (+200°C) T4 (+135°C) T5 (+100°C)
POWER OUTPUTS:	15, 30, 50, 70, 100 & 150W/m



500°C
AHT

Electrical heating cable for process temperature maintenance of pipework and vessels in safe or hazardous areas

MAXIMUM CONTINUOUS EXPOSURE TEMPERATURE (Power ON):	+85°C (+185°F)
MAXIMUM PERMISSIBLE EXPOSURE TEMPERATURE (Power OFF):	+85°C (+185°F)
***MINIMUM OPERATING TEMPERATURE:*	-65°C (-85°F)
MINIMUM INSTALLATION TEMPERATURE:	-40°C (-40°F)
POWER SUPPLY:	12 - 277V AC
TEMPERATURE CLASSIFICATION:	T6 (+85°C) T4 (+135°C)
POWER OUTPUTS:	10, 17, 25, 31 & 40W/m

85°C
FSR
FreezStopRegular

Electrical heating cable for frost protection or temperature maintenance

Benefits for Heat Trace's Constant Power Cables over Mineral Insulated Cables

- Cut-to-length capability
- Easier and quicker to terminate
- More flexible - easily reeled
- Greater surface area contact

PHT

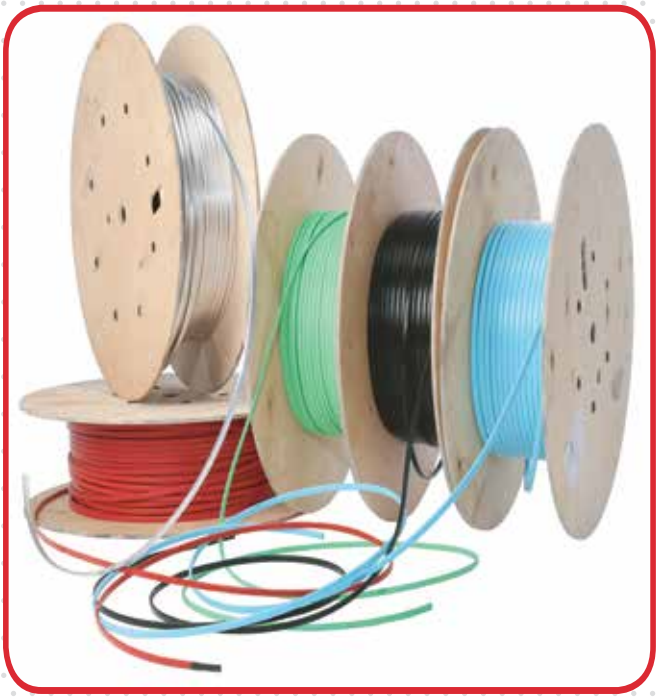
- Can be cut-to-length
- Approved for use in non-hazardous, hazardous and corrosive environments
- Quick and simple installation
- Constant power output heating cable
- Used for freeze protection or maintenance of process temperatures on pipework and vessels

AHT

- Can be cut-to-length
- Approved for use in non-hazardous, hazardous and corrosive environments
- Constant power output heating cable
- Used for freeze protection or maintenance of process temperatures in pipework and vessels
- AHT is jacketed in a continuous aluminium extrusion for maximum mechanical strength
- Quick and simple installation

Benefits of Heat Trace's Self-Regulating Cables - Safe, Efficient, Reliable

The use of self-regulating heating cables ensure system safety, as all Heat Trace's self-regulating heating cables are Inherently Temperature Safe. They are also energy efficient due to the self-regulation of the heater output.
The self-regulating characteristics of the heater means, that as their temperature falls, so the output of the heater increases, thus ensuring that the pipe and tank contents remain at the optimum temperature. An additional thermostat may be employed for greater energy efficiency.



FSR

- Automatically adjusts heat output in response to increasing or decreasing temperature
- Can be cut-to-length
- Will not overheat or burnout, even when overlapped (Inherently Temperature Safe)
- Approved for use in non-hazardous, hazardous and corrosive environments
- Industrial grade, self-regulating heating cable
- Used for freeze protection or temperature maintenance
- Quick and simple installation

Design & Engineering Services

Design

All design work is carried out in accordance with the latest National and International heat tracing standards. Using TraceIT, Heat Trace's own state-of-the-art electric heat tracing design software, ensures that system design complies with the latest national and international standards. Heat Trace are specialists in all types of electric heat tracing systems for use in both SAFE and HAZARDOUS areas.

Consultancy

From Concept through to Commissioning - Heat Trace offers a full turnkey project capability. This includes the initial enquiry through site surveys to final client handover.

Bespoke Software

Heat Trace's TraceIT Design Software empowers our partners, be they customers, distributors or engineering houses, to produce safe, reliable, competitive and detailed heat tracing system designs. Designs for freeze protection, temperature maintenance and heat raising of pipes, tanks and vessels are all possible, calculating stabilised designs and temperature control requirements where appropriate. The completed design package can then be assembled and presented, either as a quotation, or tender document, for submittal to the client, all from within a single software package. TraceIT is available on the Heat Trace website. Both these versions can be used for heat loss calculations and product selection.

Personnel Training

Training in product knowledge, system design, installation and maintenance procedures can be provided, either on-site, or at one of our affiliates offices/facilities. Alternatively, ETHIC-GLOBAL (the Electric Heat Tracing Industry Council) offers accreditation with E-Academy.This is intended to provide an on-line resource for heat tracing design education and learning. Basic and Advanced courses are available.

Quality Management

Heat Trace's quality management system, certified to ISO 9001:2015 and BS EN ISO IEC 80079-34 includes design, development, manufacture, supply and installation of electric surface heating systems.

Project Management

Dedicated Project Managers will ensure the smooth operation and completion of all projects.

cml UKAS ISO 9001 QUALITY SYSTEM CERTIFICATION QMS12547

Case Study

Heat Trace Limited have previously completed a project that included full design, installation and commissioning of electric heat tracing system and control panels within an Energy from Waste plant.

The plant was used to transform waste to a suitable product to transport it to an incinerator. Waste was sorted within the plant. Heat tracing was used on the pipelines for the liquid that was used to create a pulp. The pulp was then transported to an incinerator by rail and used as fuel for the boiler. The steam created was used to produce power for a neighbouring plant and enhance National Grid Capacity.

Heat tracing was used on the forward processing plant to protect against freezing.

CONTROLS

An example of a typical control panel is a mild steel enclosure, with 7" touchscreen HMI, door interlocked isolator and 24V circuit 'Healthy' and 'Common' alarm lamps.

System Features include:

- Temperature Control
- Current Monitoring
- Communication and Reporting
- Alarms and Faults

For further information on system capabilities please contact:
info@heat-trace.com

WORLDWIDE REPRESENTATION

Heat Trace is represented throughout the world in over 50 countries. Our network of Affiliate Offices, Partner Companies, Distributors and Agents work, both independently and jointly, with our Corporate Headquarters, resulting in an integrated team of heat tracing and surface heating specialists having a global capability.

For full details of overseas offices please contact Heat Trace Limited direct.

HEAT TRACE

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APDS0719 (25042023) Issue 4