



CONNECT AND PROTECT

HEAT MANAGEMENT SOLUTIONS FOR
TANK FARMS & TERMINALS

Keep It Reliable, Safe and Warm


nvent

RAYCHEM

INDUSTRIAL HEAT TRACING SOLUTIONS

Whether it involves tank terminals, refineries, process industries or other industries with tank farms – a critical part of the operations is flow assurance over pipes and tanks. Our Solutions and Services guarantee full operation of your business with the highest safety standards and at the lowest energy consumption and operational costs.

CHALLENGES

Tank operators and owners run the risk of high revenue losses when batches cannot be loaded to or from storage tanks to other tanks, process plants, ships, trucks or trains. This can occur when the Heat Management System fails and the viscosity of the stored liquids restricts the flow. Reliability and safety are the key requirements which need to be secured!

Minimized maintenance requirements, load balancing possibilities, easy control and monitoring on batch loading, energy reduction and carbon footprint reduction are also of utmost importance.



**SAVE ENERGY
LOWER YOUR CARBON FOOTPRINT**

PRODUCTS

- Best-in-class Electrical Heat Tracing systems from industry leading brand nVent RAYCHEM
- State-of-the-art nVent RAYCHEM control & monitoring systems
- Advanced tank insulation systems
- Advanced pre- insulated pipe systems
- Foundation heating for cold tank applications
- nVent RAYCHEM TraceTek Leak detection systems

TURNKEY SOLUTIONS

nVent has TRACER engineering and service centers in many countries to meet local requirements and reflect local practices whilst providing a full array of Heat Management System (HMS) services.

nVent TRACER engineering teams can support different stages for all project sizes or provide a full Engineering, Procurement and Construction (EPC) service. This ensures that the whole plant has the best possible system, with a single point of responsibility, providing total care in Heat Management Systems. Experience has taught us that early involvement in Tank Farm projects is crucial to lower your investment costs on projects and even more importantly to substantially lower your Total Costs of Ownership over the lifetime of the investment.





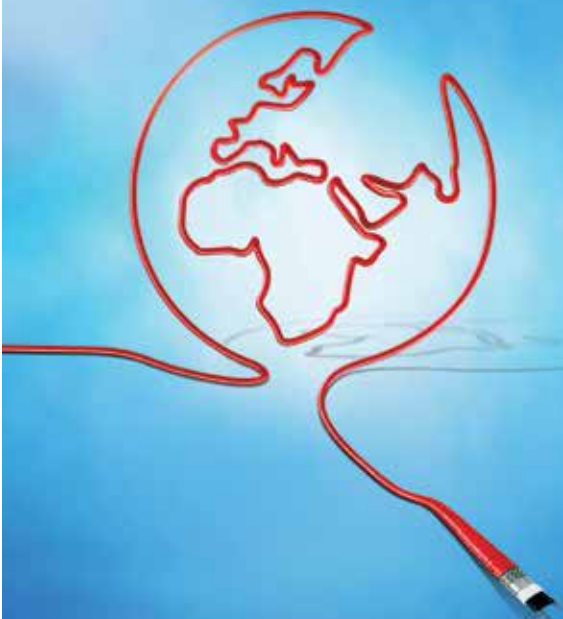
BENEFITS

Single contract partner for full Heat Management System (HMS)

Financial, contractual and operational advantages

- Investment cost control
- Operational cost savings guarantee
- Execution schedule shortened
- Highest quality products for superior reliability and safety of your operations
- Global partner with local presence

POLE TO POLE, FOR EVERY HEAT MANAGEMENT NEED, ONE UNDISPUTED INDUSTRY LEADER!



As the world's largest provider of complete electrical heat management systems, we provide innovative products and turnkey solutions that offer full life cycle support ranging from front-end engineering and installation to maintenance, repair, and operation services for projects of any size and scope.

Our operations in 48 countries, and worldwide experience, uniquely positions us to meet and exceed your project needs. We can bring solutions to all your tank farm heat management needs

RAYCHEM TRACER

KEEP IT RELIABLE, SAFE AND WARM

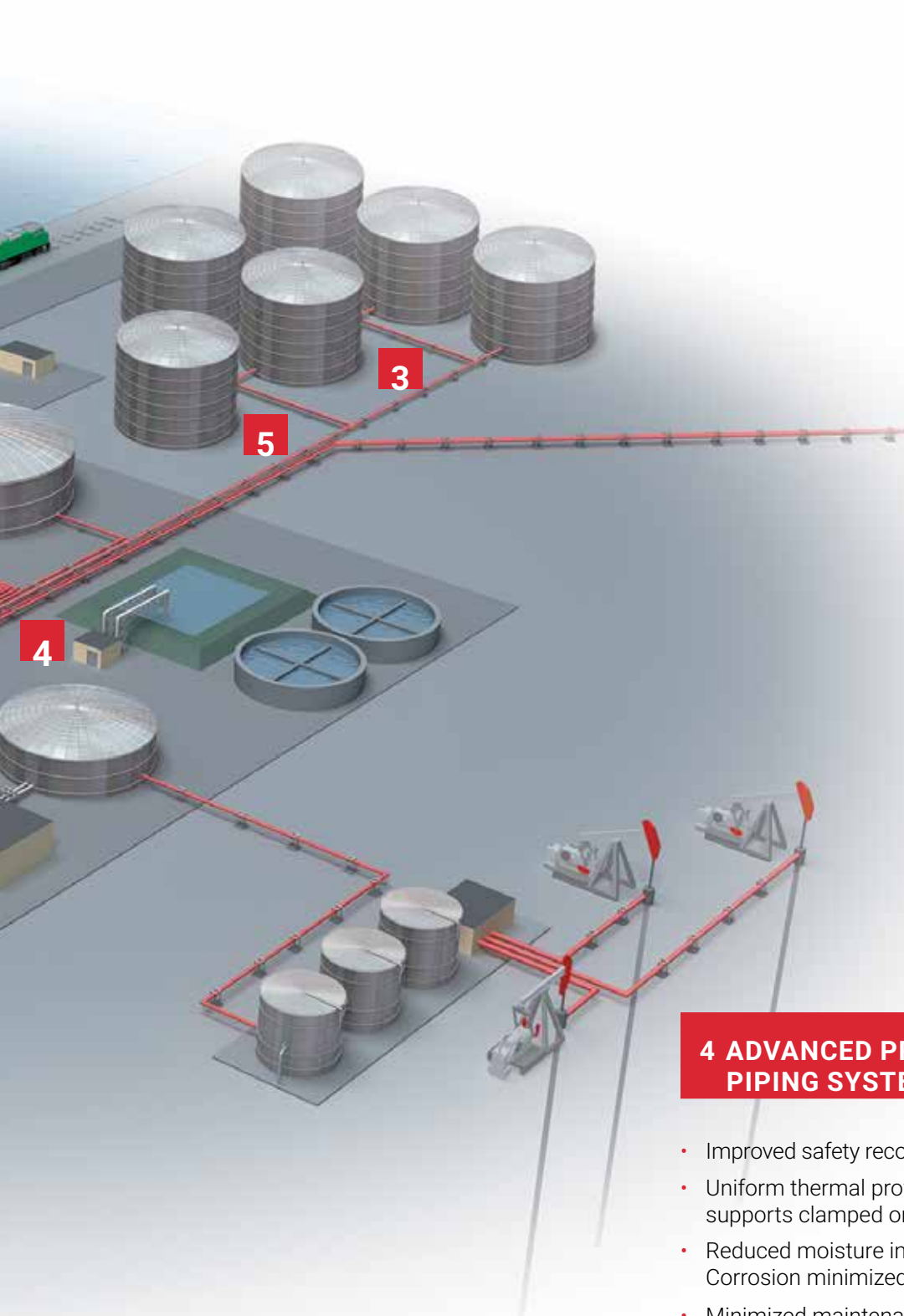


1 ELECTRICAL HEAT TRACING SOLUTIONS

- Temperature of all pipes/tanks can be remotely controlled and monitored (in operator's room)
- Easy switching On/Off parts of the Heat-Tracing Systems according to the necessary product flow
 - Jetty to and from Tank
 - Tank to and from Tank
 - Tank to and from Truck/Train loading
- Less power supply needed for the Total Heat Tracing system by using intelligent power clamping
- OPEX: significant energy savings by using our advanced nVent RAYCHEM NGC-40 controller series

2 FOUNDATION HEATING / FROST HEAVE PROTECTION

- Stabilized soil – cracking problems eliminated
- Control & Monitoring integrated in nVent's Heat Management Solution
- Tank foundation heating can be combined easily with our Leak detection systems



3 ADVANCED TANK INSULATION SYSTEMS

- Reduced safety risks and installation schedule
- Long lifetime, Under Insulation Corrosion minimized
- Substantial energy savings - reduced Carbon Footprint
- Highly reduced Total Costs of Ownership

4 ADVANCED PRE-INSULATED PIPING SYSTEMS

- Improved safety records by reduced spent field hours
- Uniform thermal profile (high quality insulation, supports clamped on outer casing)
- Reduced moisture ingress - Under Insulation Corrosion minimized
- Minimized maintenance

5 LEAK DETECTION SYSTEMS

- Sensors (wired or wireless) allow configurations to suit all locations
- Can be integrated with your existing control systems or stand-alone if needed
- Industrial strength liquid hydrocarbon leak detection: reliable & accurate
- Peace of mind. And if a leak happens – accurate alarms so you can take action

HEAT-TRACING SOLUTIONS

CHALLENGES

A Heat Management System (HMS) is an engineered system designed to maintain process piping and equipment at pre-determined temperatures within defined design criteria. Considerations must be made from initial process design through start-up and commissioning, to ensure total reliability and to reduce total installed (TIC) and operating cost (TOC).

SOLUTIONS

Heat delivery methods

There are several technologies available including self-regulating, constant wattage, mineral insulated



heating cables, etc. As each cable type has its own features, functions and benefits, we provide expertise to identify the most appropriate solution optimised to the specific needs of the plant or application.



Control and monitoring

A proper control and monitoring strategy is of the highest importance to ensure a smooth-running process whilst minimising energy consumption and production cycle downtime. The reduction in the number of on-site maintenance personnel coupled with the demand for safe and reliable operation has increased the need for centralised access to critical information on the integrity of heat-tracing systems.

The nVent RAYCHEM control and

monitoring systems have distributed architecture which reduces wiring costs significantly, and which reports clear messages and alarms to the control room, via supervisory software or directly to your DCS system.

Utility distribution

A well designed utility distribution system balances the power requirements and also saves time and money. Power distribution and control panels should be strategically placed to lower installed costs, as well as operating costs. The distribution system and panel design are highly interlinked with the optimised control and monitoring system.

Engineering and Design

Our design tools interface directly with most industry standard 3D modelling packages such as PDMS and PDS. We are able to import electronic IDF (Intermediate Data Files) and/or PCF (Piping Component Files) from the customer's model directly into our 3D heat tracing design tools.

BENEFITS

- Widest range of heat-tracing products from industry leading brand nVent RAYCHEM for all your applications
- Highest efficiency solution resulting in reduced installed and operational costs
- Advanced control and monitoring on batch loading
- Shortened project schedule
- Minimised maintenance requirements
- State-of-the-art engineering tools
 - Flexibility in design
 - Power distribution concept in early stage of design avoiding over dimensioning
 - More accurate material estimates at an early stage
 - Minimized data transmittal and technical query issues



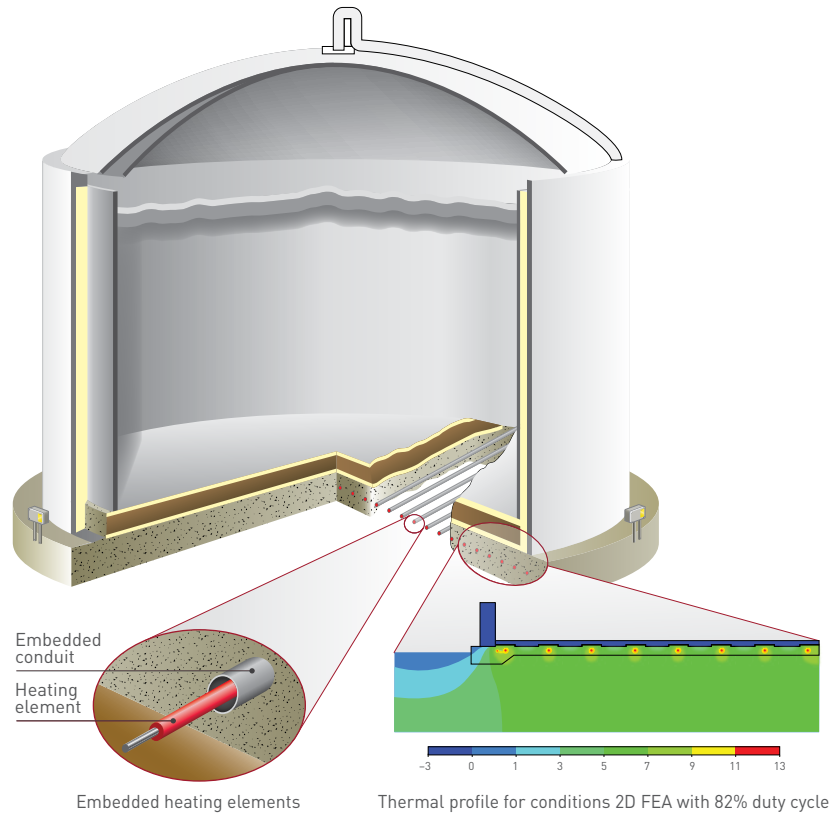
FOUNDATION HEATING

CHALLENGES

Tank Farms with cryogenic applications like LNG terminals can be exposed to the risks of frost heave. Frozen water can lead to ice buildup underneath cryogenic tanks causing problems such as unwanted or uncontrolled movement or elevation of the tank or cracks in the tank foundation.

SOLUTIONS

We engineer and design complete turnkey frost heave prevention systems including heat tracing power distribution system, and control & monitoring system to fit your unique application. We apply the latest 3D thermal analysis modeling. Depending on the project requirements we offer self-regulating, constant wattage zone heaters or skin-effect tracing systems.



BENEFITS

- Stabilized soil under the cold tank foundation – no cracking problems
- Control & Monitoring integrated in nVent's Heat Management Solution
- Tank foundation heating can easily be combined with Leak detection
- One Partner for complete HMS cold tank scope - offering heating and insulation solutions

ADVANCED TANK INSULATION SYSTEMS

CHALLENGES

Traditional tank insulation systems require substantial maintenance during their life cycle. Often the ingress of water in the insulation material results in Under Insulation Corrosion (UIC). When the tank is corroded to a specified level, costly repair work has to be done resulting in a long downtime period and high revenue loss. The key challenge is to select an insulation system that can reduce or even avoid these risks.



Due to the increasing energy prices, worldwide environmental legislation on CO₂ emissions, innovative insulation systems... more attention is given to energy saving solutions.

The focus is not just on investment costs but also on the operational costs of the system over its lifetime.

SOLUTIONS

An effective and improved alternative to conventional systems are prefabricated panels constructed by laminating insulation material to a metal jacket. These are highly robust, double-locking vertical standing seam insulation panels that can be easily fitted around the tank. nVent offers this insulation system under the brand name Trac-Loc.

Due to the use of insulation materials with a much lower thermal conductivity value compared to mineral wool, the heat loss is highly reduced resulting in substantial energy savings and in direct

relation to that a reduction of the carbon footprint.

The preferred insulation material is polyisocyanurate (PIR), a non fibrous closed cell structure material resulting in minimized water/fluids absorption and degeneration, superior low lambda value and long and stable lifetime.

Trac-Loc panels are usually prefabricated offsite in a controlled workshop environment, making the installation less dependent of weather conditions. They are then assembled onsite using a hanging basket or cherry picker, eliminating the use of time-intensive scaffolding.

As a result, the installation process is safer and can be completed much quicker than conventional methods.

The fully locked seam system also eliminates water penetration, reducing the risk of under insulation corrosion and offering consistent performance levels throughout the lifecycle. As a result, the system hardly requires any maintenance and has a much higher lifespan than conventional systems. Trac-Loc is provided as a completely installed system.



BENEFITS

The listed benefits lead to substantial yearly operational cost savings.

- Reduced safety risks: no use of scaffolding
- Long lifetime (with stable insulation behaviour over the lifetime)
- High energy savings resulting in a reduction of the carbon footprint
- Reduced moisture ingress - Under Insulation Corrosion minimized
- Reduced construction time
- Minimized maintenance

ADVANCED PRE-INSULATED PIPING SYSTEMS



CHALLENGES

When it comes to long line applications, transfer pipelines are vital to transport your high value products from manufacturing plants or storage tanks to other tanks or export facilities.

Damaged cladding of the insulation followed by water ingress in the insulation package results in thermal cold spots and corrosion of the product pipe. The associated maintenance and repair activities require more field service personnel and result in longer downtimes and higher revenue losses.

SOLUTIONS

Trac-Loc for pipes provides the level of protection you are looking for. This advanced pre-insulated piping concept of nVent might be the solution for your piping application.

By pre-fabricating the pipe insulation in a professional workshop off site, the construction time on site can be reduced drastically resulting in improved safety records and shortened installation schedules.

A seaming machine creates a continuous casing into which is slid the product pipe equipped with

heat-tracing tubes. Injection of PIR foams creates the necessary thermal barrier to limit heat losses. Robustness of external cladding and rigid insulation structure of foam allow clamping of pipe support brackets on the outer casing. This eliminates local thermal losses. By using superior closed cell insulation and unique seaming of the pipe sections, moisture ingress is reduced drastically and Under Insulation Corrosion is eliminated. This guarantees a longer life of your equipment.

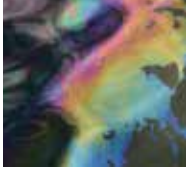
BENEFITS

- Improved safety records
- Long lifetime
- Uniform thermal profile
- High energy savings
- Under Insulation Corrosion eliminated
- Reduced installation schedule
- Minimized maintenance

LEAK DETECTION SYSTEMS

CHALLENGES

Safety is the number 1 concern of most companies involved in the handling of



flammable or polluting fuels and fluids and protecting the environment is a close second.

The regulatory framework in both areas is getting progressively tighter, so if your business involves the production, transportation and storage of fuels, you need to consider the possibility of a leak.

Fitting systems for leak detection means you need to think about

hazardous area certification, costs and other issues. The challenge is to meet these complex criteria and find a system that is robust enough for real life, will last a long time, be able to be



fitted to new builds or existing sites and be added to later. Most important is that the system will work at some time in the future should

a leak happen.

The key is quick detection and accurate location at the source of the leak.

SOLUTIONS

Since the 1980's TraceTek products have been helping operators detect spills, locate the source of leaks and take corrective action before an incident becomes a "news story." TraceTek cable sensors are laid under, around or alongside tanks, pumps, pipes and other equipment in positions that give good coverage of possible leaks. Fast acting point sensors can "float" to give coverage in sumps or other areas that see water levels rise & fall.

For a limited retrofit, sensors can be installed around the periphery (or horizontally drilled under) tanks with battery powered flashers providing a "walk the site" system. Increasing complexity or higher requirements typically sees both cable and point sensors installed with sensor interface modules back to a control room where the alarm panel sits.

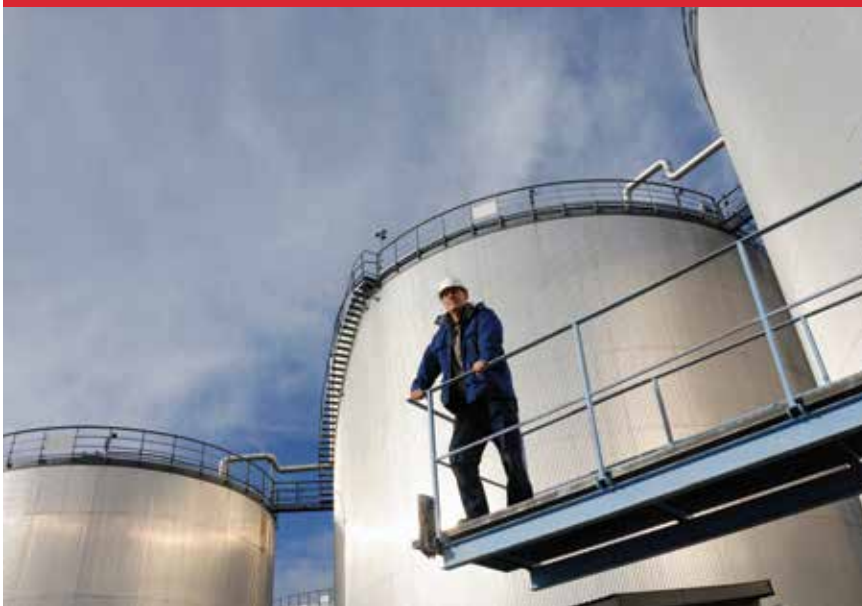
If cabling costs become too high as with large tank farms, we can supply an industrial level hazardous area safe wireless system.

Signals are available in a variety of digital comms protocols for integration in plant management system. Our system can be configured to shut off valves, send emails or SMS where large complex sites are remotely managed.

A full range of accessories and tools based on decades of real industrial expertise rounds out the product line.

BENEFITS

- Reliable and accurate fluid leak detection systems for pipelines, tanks, wharfs, pumps and valves.
- Sensor cables and probes that directly detect and pinpoint the source of petroleum leaks
- Configuration options that automatically shut off pumps or valves where appropriate.
- Digital communications with local or remote alarms and diagnostics including plant management systems, email, web or SMS.
- Modular units so that simple or complex systems can be configured



Go to our youtube channel and watch the short comprehensive video on tank farm leaks and our solutions.

www.youtube.com/user/ThermalControls

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Our powerful portfolio of brands:

CADDY ERICO HOFFMAN RAYCHEM SCHROFF TRACER



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