

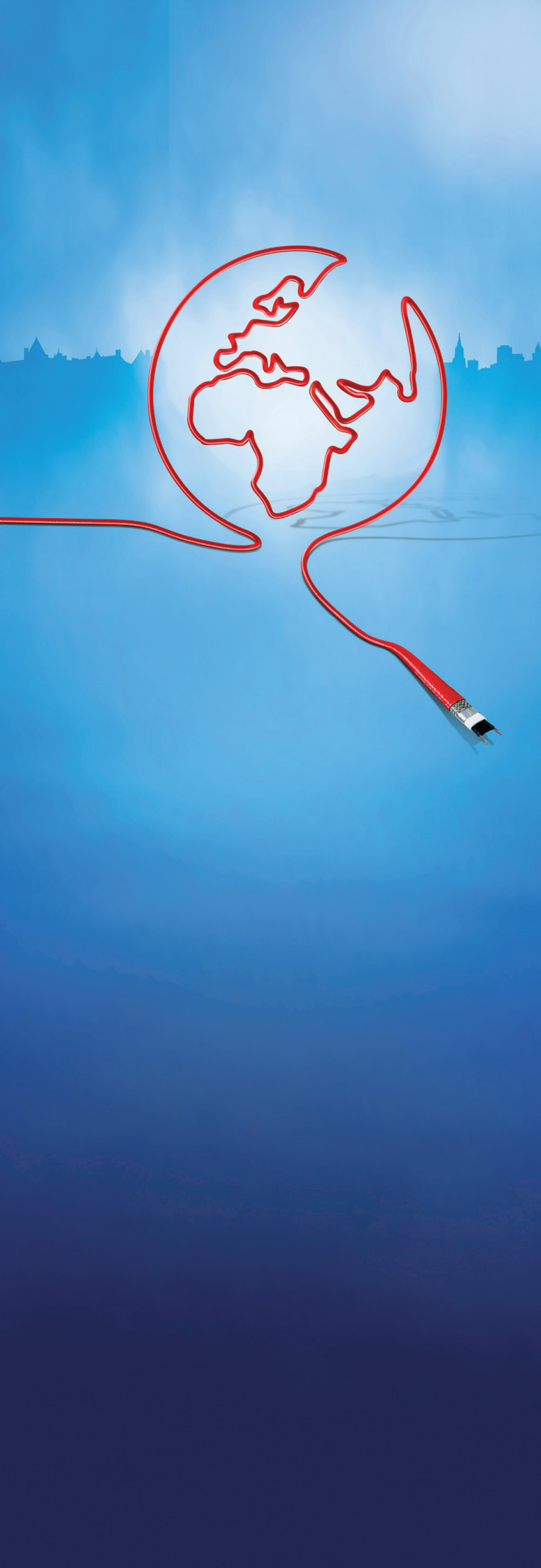


CONNECT AND PROTECT

SUSTAINABLE SOLUTIONS,
FULL HEAT TRACING CAPABILITIES


nvent

RAYCHEM



A SOLUTIONS COMPANY

nVent is the world leader in heat-tracing solutions for the industrial, commercial, and residential markets. Employing over 2500 people around the world, nVent is the global leader in heating solutions.

THE MARKET DEMANDS – WE SUPPLY

- Frost protection for pipes
- Snow melting for gutters, roofs, downpipes
- Snow melting for ramps, walkways and stairs
- Hot water temperature maintenance
- Underfloor heating
- Smart components
- Energy-efficient control and monitoring
- Industrial heat-tracing

WORLDWIDE APPROACH

With operations in 48 countries and worldwide experience, nVent supports your project efforts anywhere, anytime. Whether it's for superior products or turnkey services, nVent has the solution.



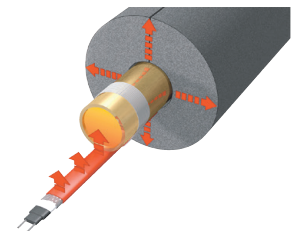
Frost protection
for pipes



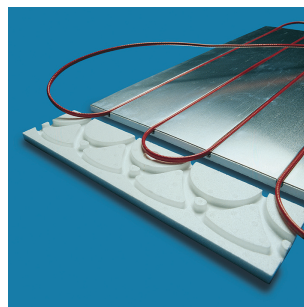
Snow melting for gutters,
roofs, downpipes



Snow melting for ramps,
walkways and stairs



Hot water temperature
maintenance



Underfloor heating



Smart components



Industrial heat-tracing



Control and Monitoring

Energy Savings

Nowadays, everybody needs to take responsibility with regard to the consumption of energy, in order to safeguard the future.

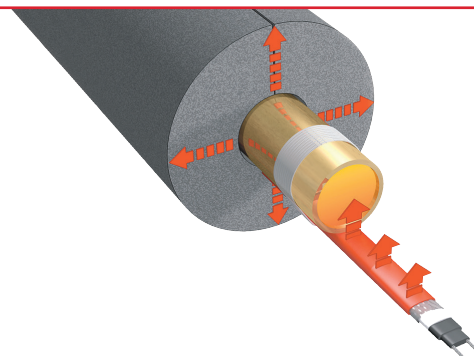
The selection of suppliers, systems and products that comply with the new standards has become a daily concern of architects, engineers and installers.

As a world leader in heat-tracing systems for various applications, nVent can offer you complete systems that will help realise energy savings up to 80%. Based upon proven, smart technology our heat-tracing solutions will help you to answer your customers' requirements.

SELF-REGULATING TECHNOLOGY ...

The heart of all our heat-tracing systems is the nVent RAYCHEM **self-regulating heating cable**. This 'intelligent' cable is the first step towards energy savings. As the name suggests, this cable - a RAYCHEM invention - automatically regulates the heat it produces, all along its length.

The cable provides exactly the heat that is needed at a given time and place. This of course results in **substantial energy savings** as compared to conventional cables, which have a constant heat output and energy consumption.



ENERGY EFFICIENT SYSTEMS ...

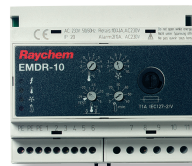
Additional energy savings are realised by combining the self-regulating cable with a range of **smart control units**. These allow for a dynamic management of the power output of the cable in function of various parameters such as ambient temperature or humidity.



HWAT ECO



RAYSTAT-ECO-10



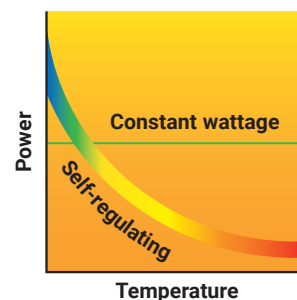
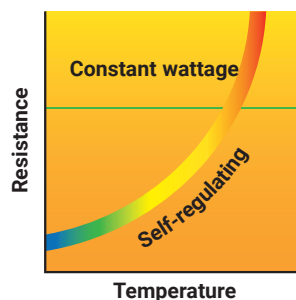
EMDR-10



VIA-DU-20

We do not merely offer you heating cables by the metre, but offer **complete heat-tracing solutions that were especially designed for energy efficiency and easy installation.**

This will help you and your customers to realise major energy savings and hence comply with today's governmental regulations.



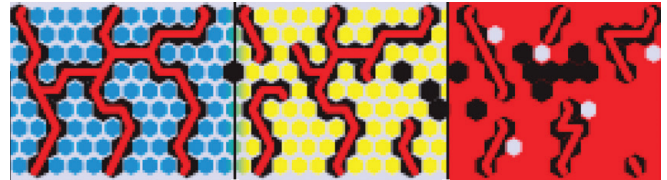
Your Concern Is Ours.

... DESIGNED FOR EACH APPLICATION

Based on the technology of the self-regulating cables, we propose energy saving solutions for various applications that answer your customers' needs for comfort and safety:

- Frost protection for pipes
- Frost protection for gutters and drainpipes
- Snow melting for ramps, steps and footpaths
- Hot water temperature maintenance system
- Underfloor heating

HOW SELF-REGULATION WORKS IN THE RAYCHEM CONDUCTIVE-POLYMER HEATERS:



At low temperature,

there are many conducting paths, resulting in high output and rapid heat-up.

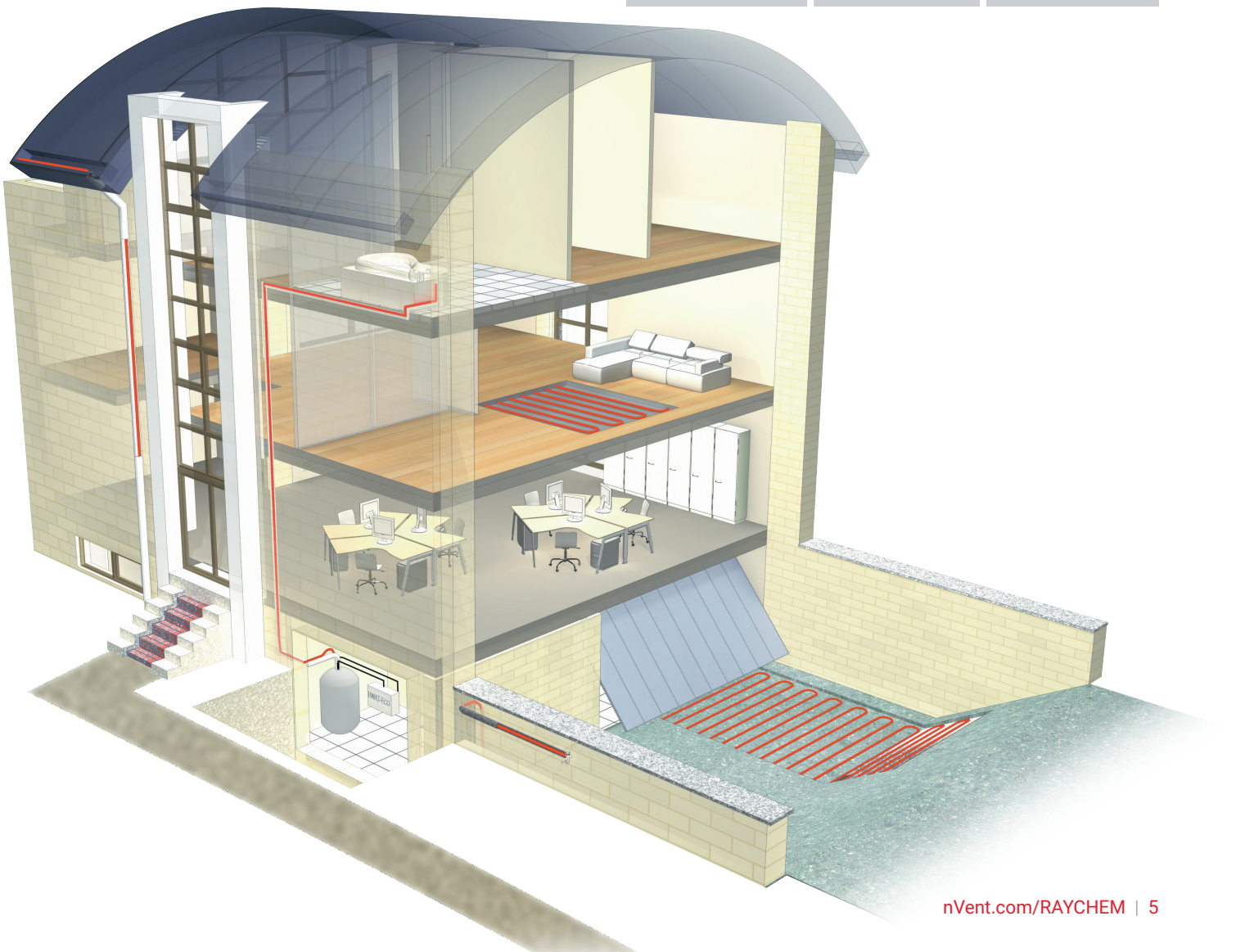
Heat is generated only when it is needed and precisely where it is needed.

At moderate temperature,

there are fewer conducting paths because the heating cable efficiently adjusts by decreasing output, eliminating any possibility of overheating.

At high temperature,

there are few conducting paths and output is correspondingly lower, conserving energy during operation.



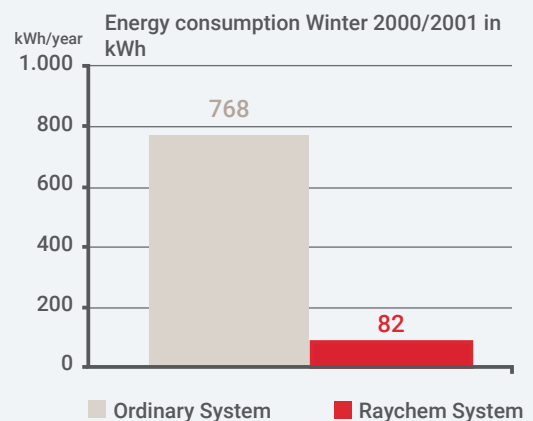
SAVING UP TO 80% IN ENERGY CONSUMPTION THANKS TO SMART CONTROL.

The Pilatusbahn Case.

THE FACTS

The car-park near the Pilatusbahn cable-lift in Kriens (Switzerland) is a covered, but open-sided construction. Because the water circuit of the fire lines is exposed to ambient temperature, it was equipped with heat-tracing controlled by a conventional thermostat. The existing installation on one of the circuits was replaced by a RAYCHEM system controlled by a RAYSTAT-ECO-10 smart ambient control unit. During the winter of 2000/2001 the energy consumption of the two systems was compared.

As the chart indicates, the intelligent RAYCHEM system consumed only just over 10% of the energy that the existing installation needed to get the water pipes through the winter.



Frost Protection for Pipes

THE SOLUTION

The Pilatusbahn case is a good example of how our technology can help you cut energy costs for frost protection of pipes dramatically. As with all our solutions the heart of the system is the self-regulating cable, now controlled by the smart RAYSTAT-ECO-10 control unit.

nVent RAYCHEM RAYSTAT-ECO-10: proportional ambient temperature control

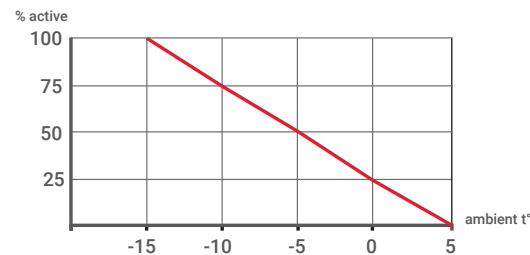
The RAYSTAT-ECO-10 is a unique intelligent control unit for frost protection. It is able to save up to 80% of energy, due to its **proportional ambient temperature control**, i.e. it calculates the optimum heat requirements as a function of the ambient temperature or the pipe temperature in line sensing applications (line sensing applications require RAYSTAT-CONTROL-10).

A conventional thermostat responds to

temperature changes by switching the system on at full power. The RAYSTAT-ECO-10 however, calculates how much power is needed on the ambient conditions and powers the cable accordingly.

Other features include:

- Remote alarm facility.
- Clear display showing actual temperature, system set point and alarm message indication.
- Up to 25 A switching capacity.



THE ADVANTAGES

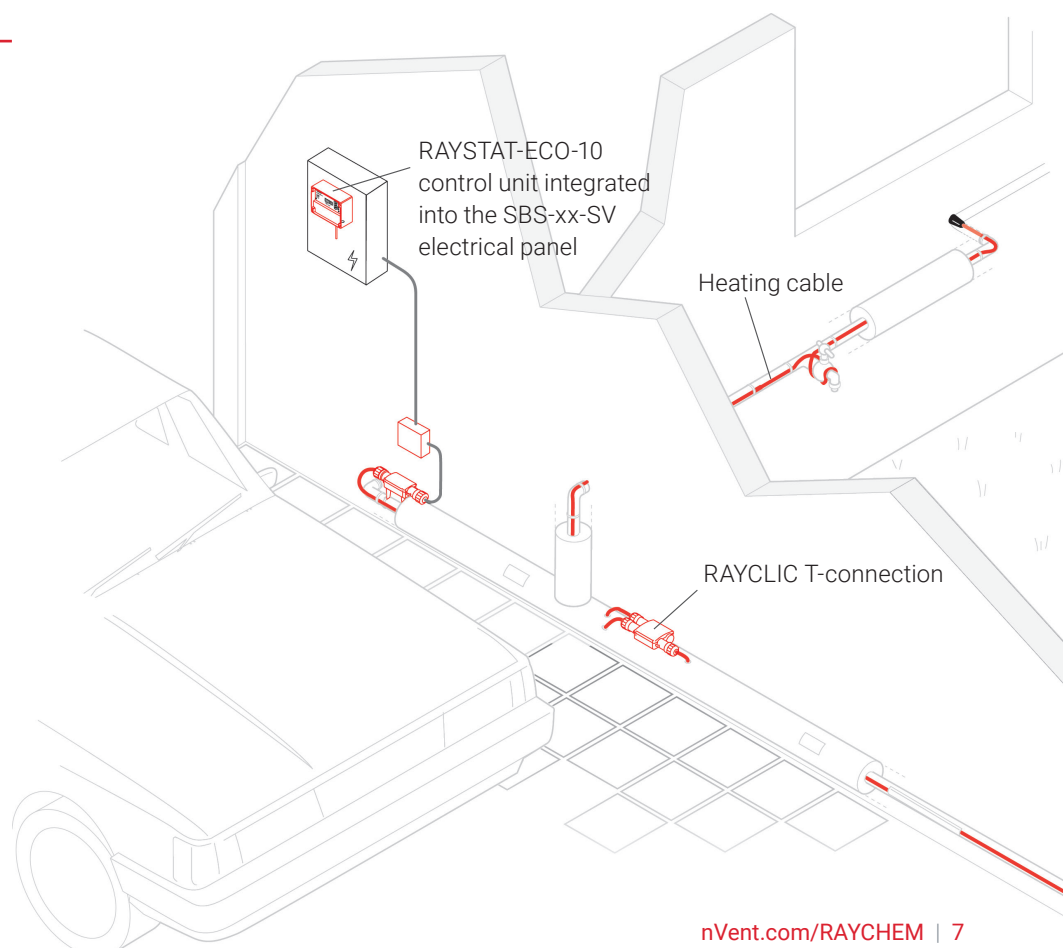
The RAYCHEM frost protection system was developed to help you keep your installation and operating cost to a minimum.

- Up to 80% of energy savings
- For all pipe applications

Versatile

- The cables go onto the pipes and are suited for plastic pipes as well.

For this application use cables FS-A-2X or FS-B-2X



REDUCING ELECTRICITY CONSUMPTION WITH 75%.

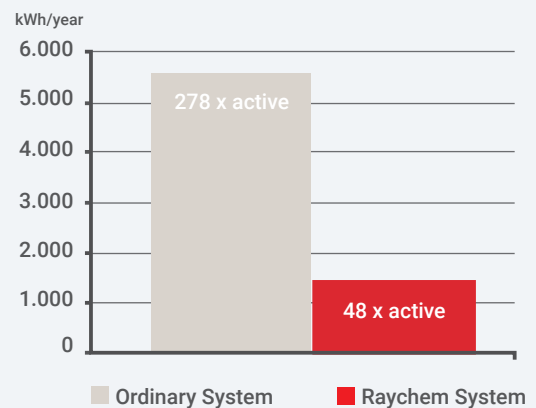
The CKW Power Plant Case.

THE FACTS

At the CKW power plant in Luzern (Switzerland), the waterflow in gutters is maintained by heat-tracing systems controlled by an ordinary ambient sensing thermostat. Part of the installation was retrofitted, using a nVent RAYCHEM **EMDR-10 control unit**. The activity and consumption of the respective cables was measured from December till March. The result was astonishing: it took the RAYCHEM controlled installation only a quarter of the electricity the conventional



installation needed to keep the gutters icefree. This **energy saving of 75%** was due to the intelligent heat management by the EMDR-10 control unit.



Frost Protection for Gutters and Drainpipes

THE SOLUTION

RAYCHEM's self-regulating heating cables prevent the build up of ice & snow on roofs, atria, in gutters and drainpipes. The cable automatically increases its heat output in icy water and decreases its output in dry air.

Its performance is at its best when controlled by a EMDR-10 unit. The Rayclac connection system allows for quick and easy installation, even outside. These elements make up a complete solution that combines longlasting performance with substantial energy savings.

EMDR-10: smart heat management

This intelligent control triggers the heating process of the selfregulating cables when and if necessary, which results in substantial energy savings. An ordinary ambient sensing thermostat starts the heating process based on the ambient temperature, dropping below the set value.

THE ADVANTAGES

- Up to 75% of energy savings

Versatile

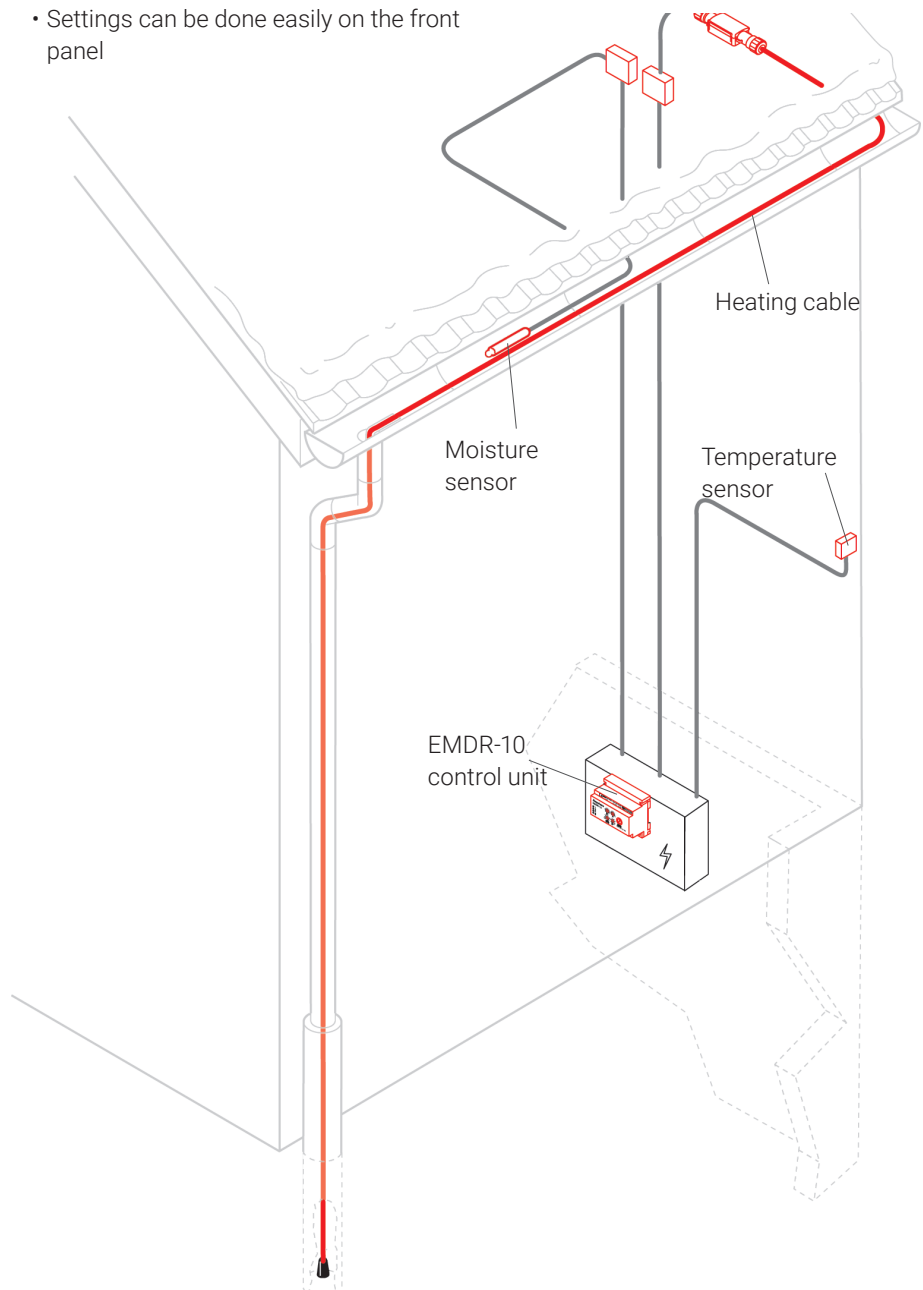
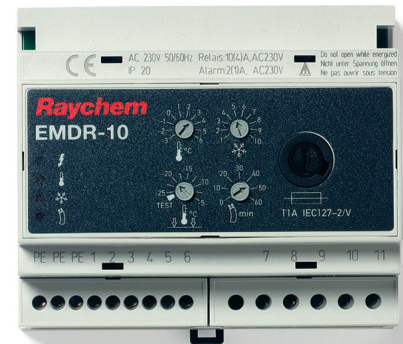
- The RAYCHEM self-regulating cable applies to all roof materials: wood, plastic, asphalt and metal, and for metal or plastic gutters.

For this application use nVent RAYCHEM cables GM-2X or 8BTB-2-CT

The EMDR-10 will start the heating process only after detection of low temperature and humidity. The heating cable is deactivated when air temperature rises above the set value, or when moisture is below the set value.

Other features include:

- Secure and easy to monitor by means of LED display
- Alarm function
- Easy access for fast wiring
- Settings can be done easily on the front panel



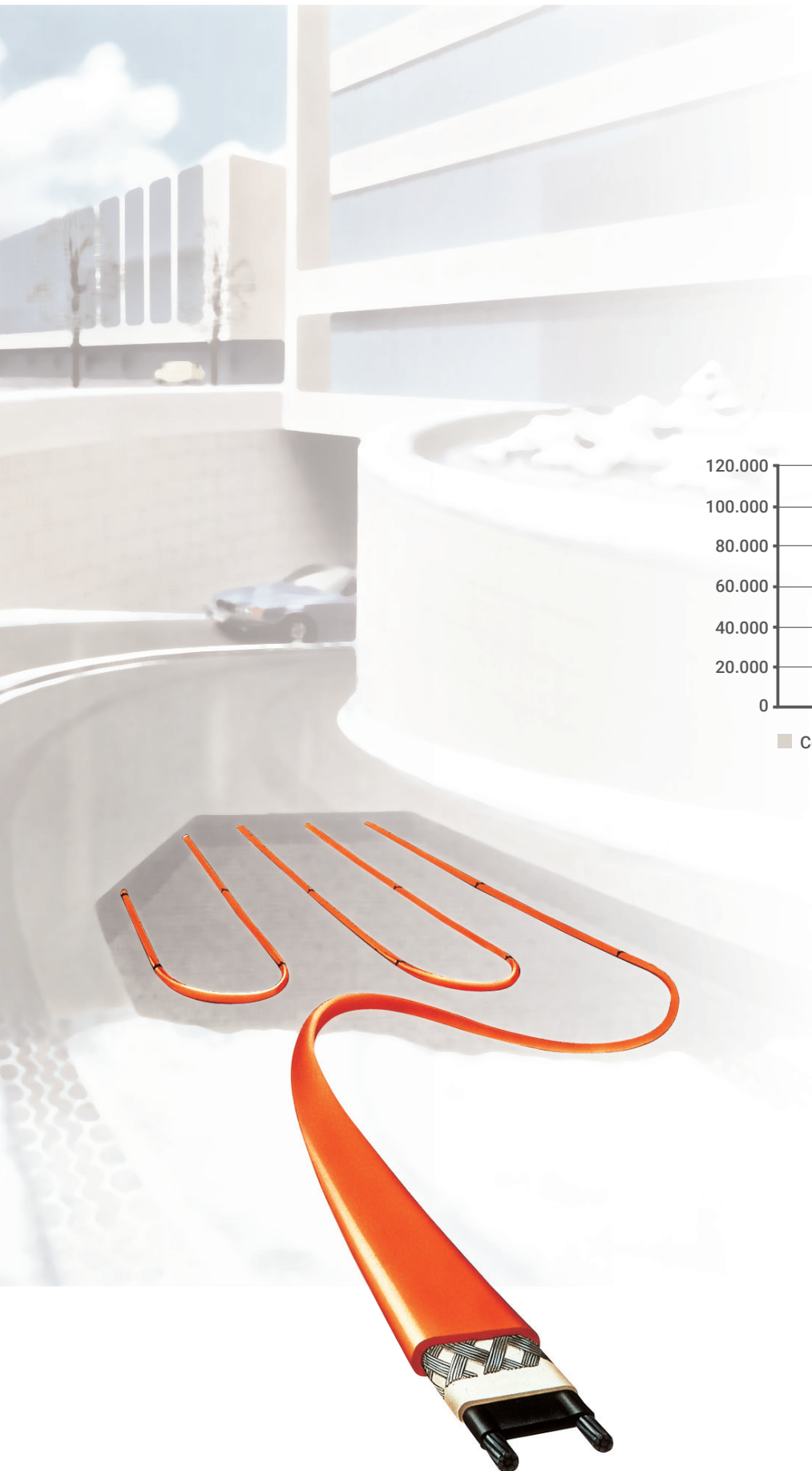
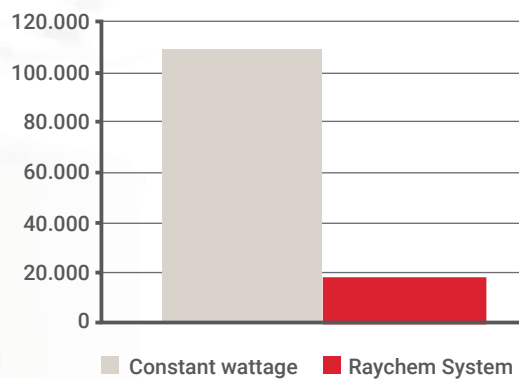
CUTTING ENERGY COSTS WITH 80%.

The Davos Case.

THE FACTS

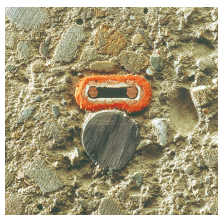
At the ARA Gadenstadt water treatment plant in Davos (Switzerland) basins' pathways were kept free of ice by a constant wattage heat-tracing system. The installation was retrofitted with a complete snow melting system consisting of self-regulating cables and a VIA-DU-20 control unit. As a result of this investment, electricity consumption dropped from 110.000 kWh/year to 19.000 kWh/year!

All basins: kWh/year



Snow Melting of Ramps, Steps and Paths

THE SOLUTION



The system melts snow and ice on outdoor paths, steps and ramps. It consists of self-regulating heating cables

which are embedded in the concrete or sand sub-surface. The sturdy cables are especially designed for application under tough installation conditions and can be cut-to-length in the field for maximum flexibility. The system is controlled by the smart **VIA-DU-20 control unit**.

VIA-DU-20 control unit: manages the heat you need

The combined moisture & temperature sensor of the unit activates the heating cable only when necessary.

Whenever the sensor measures a specific minimum temperature in combination with a high moisture value, it will trigger the heating cable to raise the temperature of the outside surface and thus prevent ice formation and snow accumulation.

THE ADVANTAGES

- **Up to 80% of energy savings**
(im Falle Davos bis zu 80%!)

Versatile

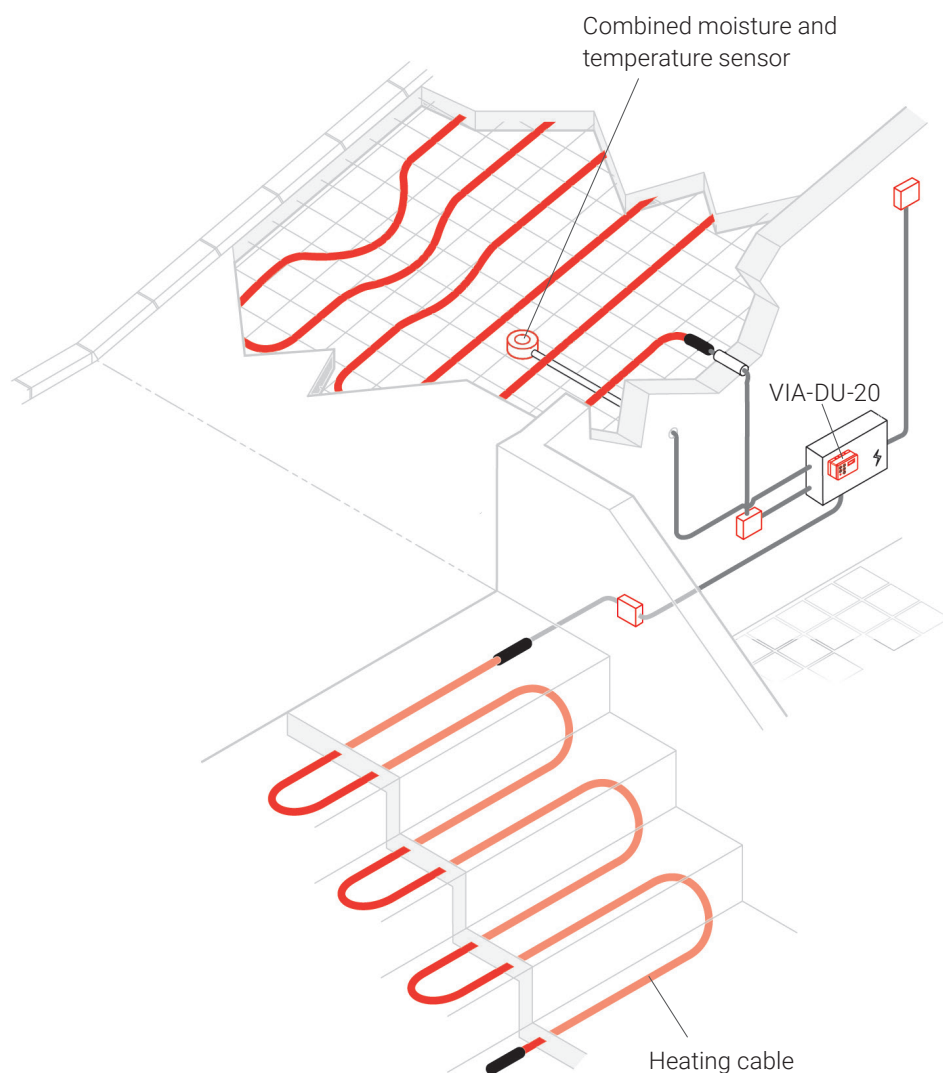
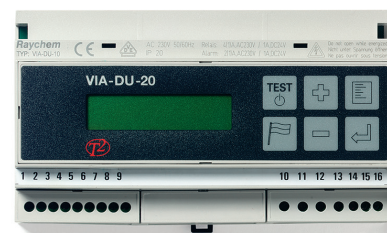
- Fine tuning for individual sites possible
- Also for retrofitting
- Robust cable construction allows for only 1 concrete pour

For this application use EM2-XR cable

Thanks to the combined sensing operation, the VIA-DU-20 reduces the cost of operating the snow melting system by up to 80%. Whereas conventional systems start working when temperature falls below set point, even without precipitation, the system is never activated in dry atmospheric conditions.

Other features:

- BMS-compatible
- Easy to programme
- Freezing rain warning
- Clear display showing actual temperature and set point
- Alarm message



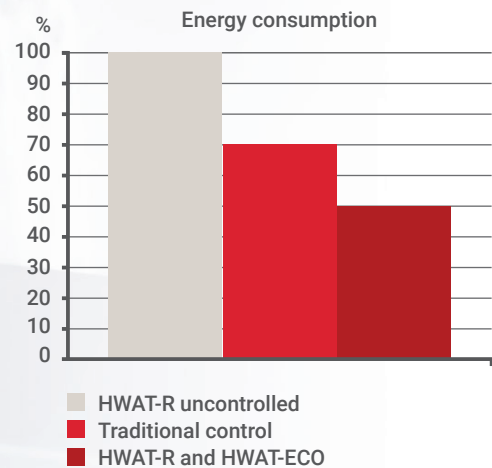
Saving Up To 50% in Energy Consumption.



THE FACTS

RAYCHEM's hot water maintenance systems are installed in hundreds of hotels, hospitals and commercial buildings. The Eiffel Tower as well as the newest constructed terminal in Paris' international airport Charles de Gaulle have been equipped with this system. The performing system with the nVent RAYCHEM **HWAT-ECO control unit** reduces the running cost of the hot water maintenance system tremendously. Whereas traditional control equipment and timers might save up to 30% compared to an uncontrolled system, the implementation of a HWAT-ECO controlled system will **save up to 50% energy**.

A retrofit operation of an existing traced hot water system with HWAT-ECO control units is worthwhile and results in a short investment pay back period.



Hot Water Temperature Maintenance

THE SOLUTION

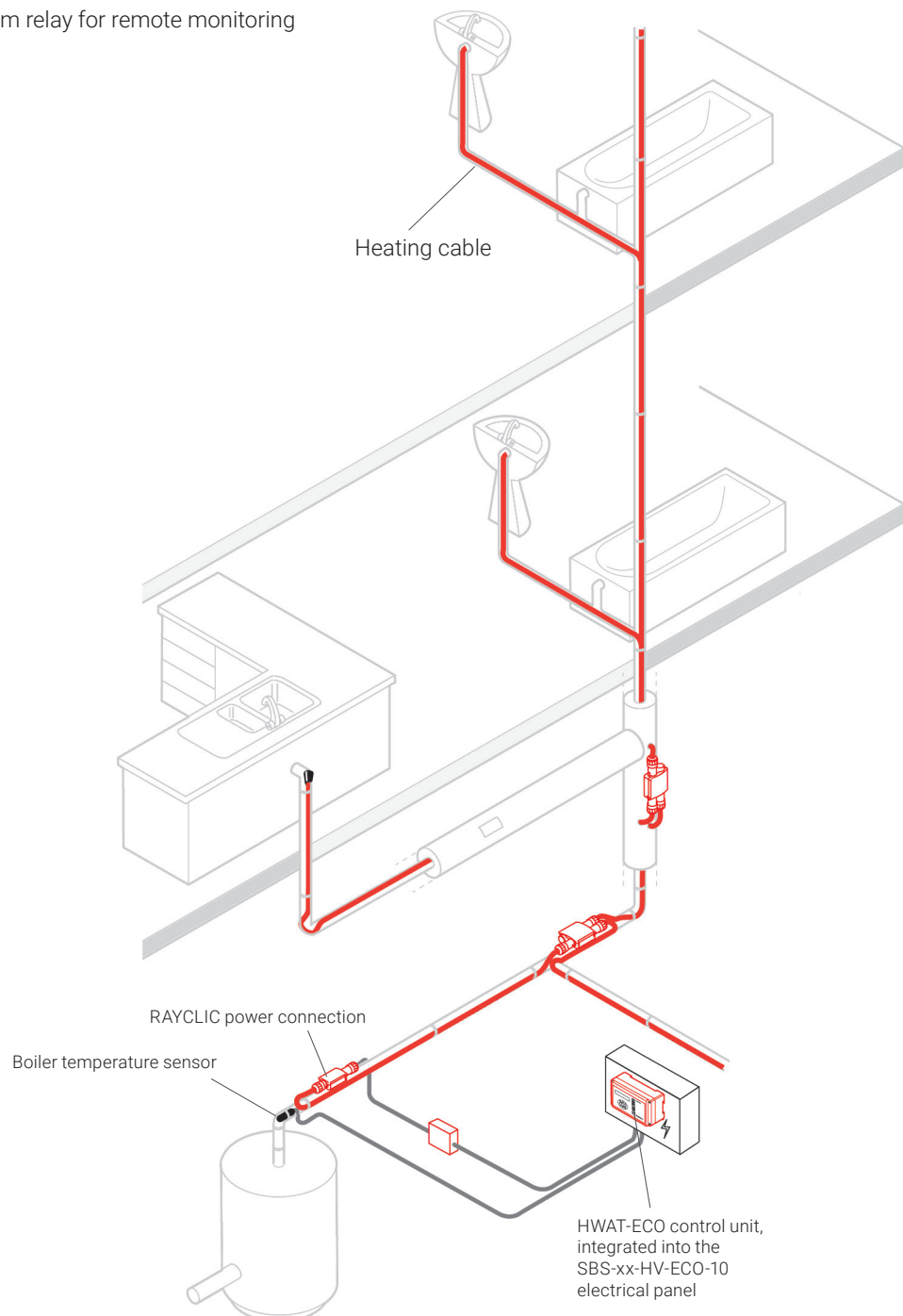
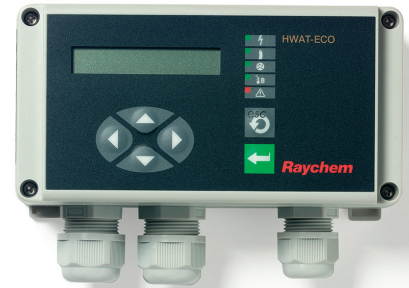
The RAYCHEM hot water temperature maintenance system offers an intelligent way to instantly supply hot water in hotel rooms, office buildings, ... The heating cable's flat construction allows design and installation flexibility. Engineered for direct application on hot water pipes the RAYCHEM system does not require return pipes, valves or pumps. The intelligence of the system resides in the self-regulating cables and the RAYCHEM HWAT-ECO control unit.

HWAT-ECO: avoid superfluous heat production and minimise energy consumption

The HWAT-ECO is a smart control unit that limits the heat output of the self-regulating cables according to the specific requirements of the building. It combines the clock time functions with the monitoring of the boiler temperature in order to ensure that the system is used solely for temperature maintenance. Thus avoiding superfluous heat production and minimising energy consumption.

Other features include:

- Selectable temperature levels: Maintain or Economy temperature
- Thermal Legionella prevention programme
- BMS compatible
- Control units can be put in a network for fast programming
- Nine building-specific programmes
- Alarm relay for remote monitoring



THE ADVANTAGES

- Up to 50% of energy savings
- Thermal legionella prevention

For this application use cable
HWAT-L/M/R

RAYCHEM First Class Services

RAYCHEM offers a set of tools and services that aim to simplify the professional's life.

Not only do we offer the best quality products, we also support them with unrivalled services.

LARGE TECHNICAL SUPPORT TEAM

- Technical advice and product selection
- Design support
- Specification guidance
- Cost estimation
- Project specific support:
 - Complete materials "take-off" from building design drawings, bill of materials production and budgetary quotation.
- Cost modelling & comparison for single pipe hot water systems versus traditional recirculation. (Capital and running costs.) **SaveWatt**
- Engineering Toolbox
- The "**Engineering Toolbox**" is provided to engineers free of charge to support the building services engineers design process, it includes:
 - Technical design guides
 - Design overview-flow chart format
 - Design checklists
 - Typical schematic layouts
 - Specification guides
 - Engineering drawing notes



ONLINE DESIGN GUIDE

Design wizard TraceCalc Net

- Online technical Support
nVent.com



A PROFESSIONAL CUSTOMER SERVICE CENTRE

- Multi-lingual customer service representatives to answer all your questions
- Fast order handling & shipment Europe-wide
- Free documentation service



APPROVED CPD TRAINING COURSES



nVent is also a proud industry supporter offering approved CPD courses via the Chartered Institute of Building Services Engineers. Courses include technical and application information for electrical underfloor heating and hot water temperature maintenance systems.

For further information, please consult the CIBSE Course Directory 2010 or contact nVent.



10 Years Warranty

EXTENDED WARRANTY

As an endorsement of our product quality and our commitment to providing customer value & peace of mind, nVent has introduced a **10-Year extended product warranty programme**.

This applies to heat-tracing cables and standard components sold under the brand names **RAYCHEM**, **Hew-Therm**, **Pyrotenax**



A PROVEN TRACK RECORD

All RAYCHEM for energy-efficient heattracing have a proven track record.

With more than 30 years of experience, we have delivered more than 200.000 km of heating cable for installations in more than 100 countries world wide.

Architects, engineers and installers around the world have chosen RAYCHEM to offer their customers optimum safety and comfort whilst keeping energy consumption to a minimum.

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Our powerful portfolio of brands:

CADDY ERICO HOFFMAN RAYCHEM SCHROFF TRACER



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