



BluePoint - Points Heating

Energy Saving · Climate Adaptive · Safety Assured



SAN[®]
Electro Heat



Adapting to Climate Change with BluePoint

Prepare for the unpredictable weather with BluePoint – the ultimate solution designed to meet the challenges of ever-evolving weather conditions in a changing climate.

The era of consistent winters is behind us. With climate change, each year brings a mix of weather challenges, making it crucial to be prepared for whatever weather comes. For this reason, we have designed the BluePoint heating system.

Reducing the Carbon Footprint

The BluePoint heating system has been designed to measure and respond to alternating weather conditions, detecting high fluctuations from the extremely cold, snow and ice, to warmer winter days when it could just be raining.

The BluePoint heating system design focuses on efficiency, energy saving, reducing CO₂ footprint (de-carbonisation) and offers extended lifespan for the switch point heating installations worldwide.

The Safe Reliable Choice

The BluePoint system is based on more than 50 years experience in de-icing of railway infrastructure. The applications cover switches and crossings, conductor rail and overhead wire systems. BluePoint installations are active all over Europe, North America, Canada and Japan.

Man Out of the Loop

The BluePoint heating system is a fully automatic points heating system. Every part in the system is designed to match each other from the clips and brackets through to heating elements to the intelligent controller and the supervision software, Proprietary Scalable Software System (SCADA)

Customized Solutions

- Main Lines
- High Speed Lines
- Branch Lines
- Depots
- Light Rails/Tram Lines
- Metros/Commuter Lines

The Green Choice

- Energy saving of typically 40-80%
- Equivalent CO₂ emission reduction
- Extended lifespan - reduction of resources for replacements
- ISO 14001 for environmental management

The Economic Choice

- Substantial reduction of energy cost
- Reduced maintenance cost, lifespan of 20-25 years
- Reduced penalties for traffic delays and service disruptions
- Man out of the loop, automatic and fully remote system

The Safe Choice

- 50 years of points heating experience
- Fullfill the highest railway standards
- Fully automated and possible manual operation
- Monitoring & control software.
- ISO 9001 certified for quality
- ISO 45001 for occupational health and safety management

40-80% Energy Savings

You can save energy and reduce CO₂ emission by using the BluePoint system. BluePoint saves between 40-80% of the energy used by a typical existing installation.

BluePoint Stays Efficient

The BluePoint heating system offers a high level of energy savings without losing any efficiency in critical weather situations.



Energy Conservation

Traditional points heating systems waste energy heating rails during cold hours - when it is not snowing. The traditional systems heat for many hours in preparation for eventual snow.

The BluePoint heating system uses weather forecasting to reduce unnecessary heating. This method is very cost efficient.

Control Modes

BluePoint can adapt to any kind of weather situation and secures optimized heating and energy saving, because of the weather dependent control modes..

Large Potential

Points heating systems are the 2nd largest energy consumer for a railway company. Only traction power is larger. Therefore, every % of saving will result in large energy savings, reduce CO₂ emission and costs.

Weather Input

To make the right choice of control mode the controller reads important inputs from:

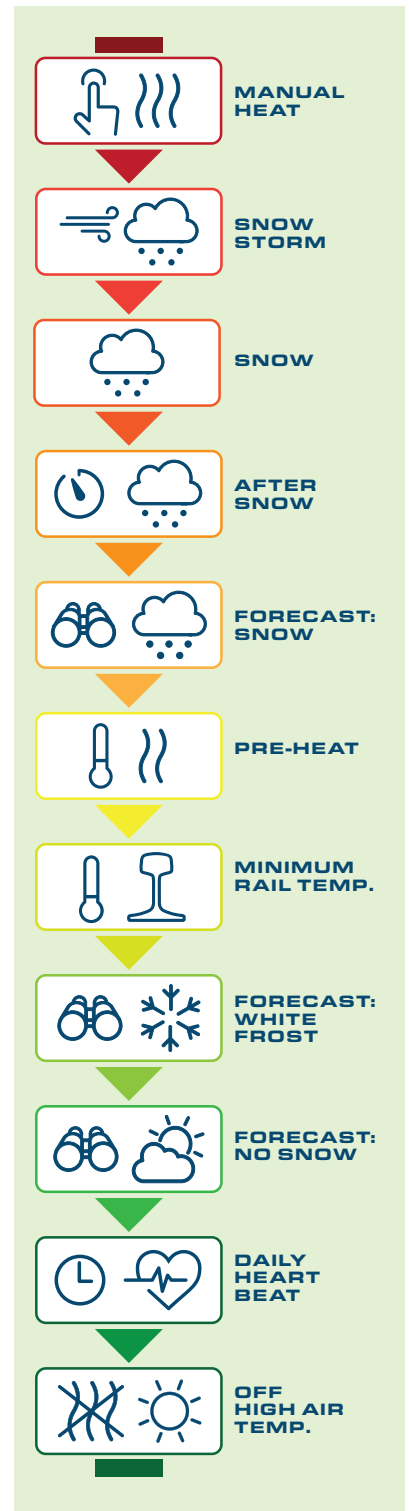
- Weather Forecast
- Heated Rail Temperature
- Cold Rail Temperature
- Air Temperature
- Snow (Precipitation)
- Wind Speed

Weather Forecast

Every hour the BluePoint heating system receives weather forecast. The forecast covers a very small geographical area, and the time frame is only +1, +2 and +3 hours ahead. The forecast is refined to deliver data about critical winter weather.

Every Degree and Minute Counts

Heating up the rails takes a long time and consumes a lot of energy. For energy saving purposes it is evident that the system should only heat just enough to clear the ice and snow situation and only heat when it is required. Every single degree of less heating and every minute without heating, saves energy and reduces costs.



The Energy Ladder

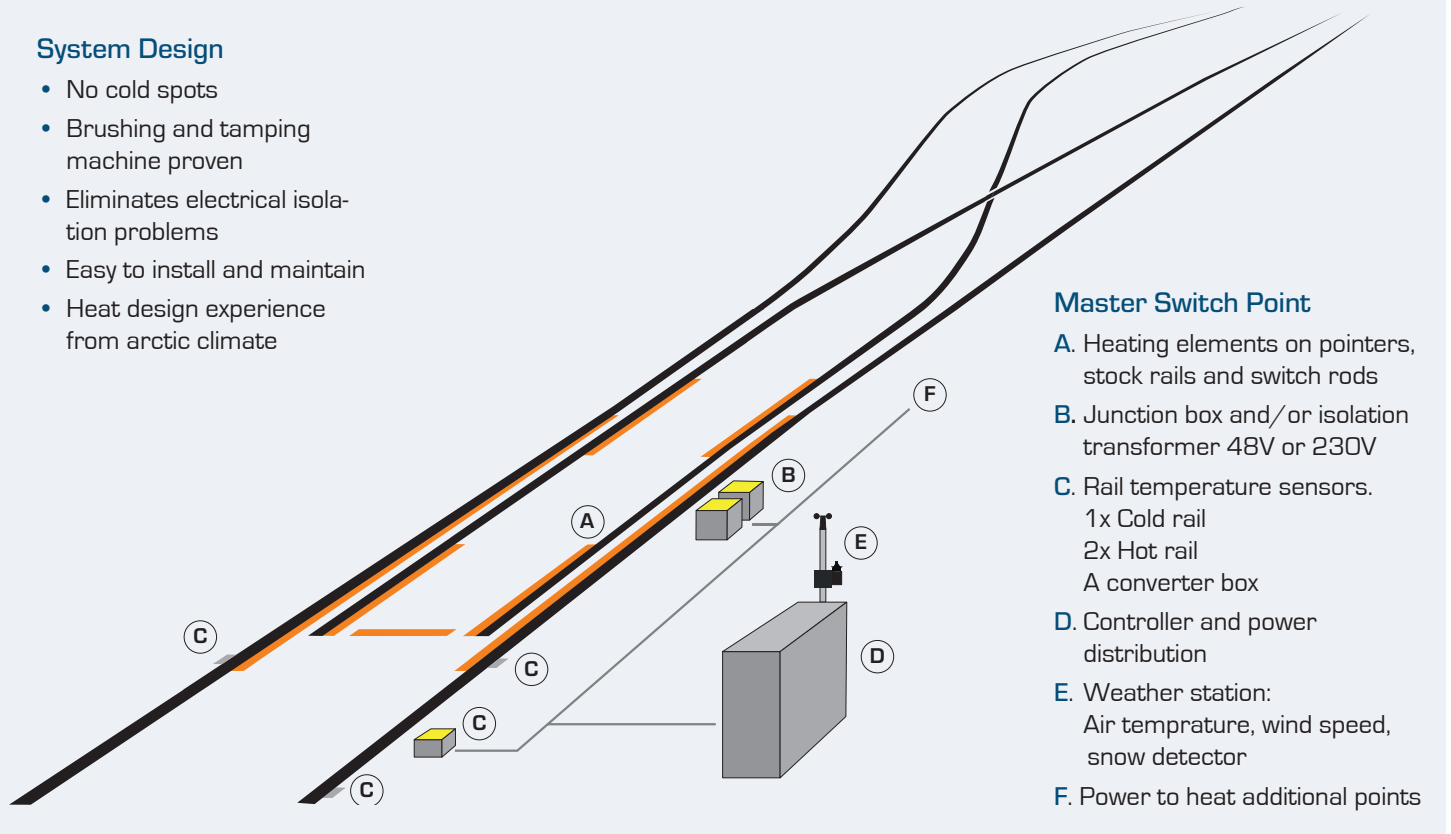
The ladder shows the dynamics of the BluePoint heating system control modes. The further down the ladder, the more energy is saved.



A Complete Hardware Solution

System Design

- No cold spots
- Brushing and tamping machine proven
- Eliminates electrical isolation problems
- Easy to install and maintain
- Heat design experience from arctic climate



Master Switch Point

- A. Heating elements on pointers, stock rails and switch rods
- B. Junction box and/or isolation transformer 48V or 230V
- C. Rail temperature sensors.
1x Cold rail
2x Hot rail
A converter box
- D. Controller and power distribution
- E. Weather station:
Air temperature, wind speed, snow detector
- F. Power to heat additional points



Strong magnetic temperature sensor:

True Rail Temperature

BluePoint has a magnetic sensor in a special housing to ensure the correct temperature feedback from the rail. It is very easy to install and no brackets are required.

Correct Installation Made Easy

Stainless steel: Wrap-around clips, Knock-on clips and fixation brackets to:

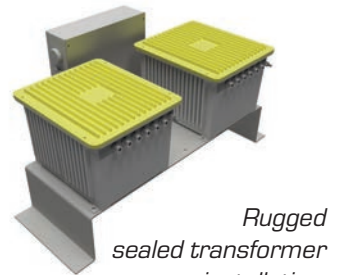
- Secures a good thermal contact to the rail
- Designed for thermal expansion of the heater
- Resistant to grinding, tamping and brush machines



Heat retainer on rail.

SAN Rail Insulation Saves about 25% Extra Energy

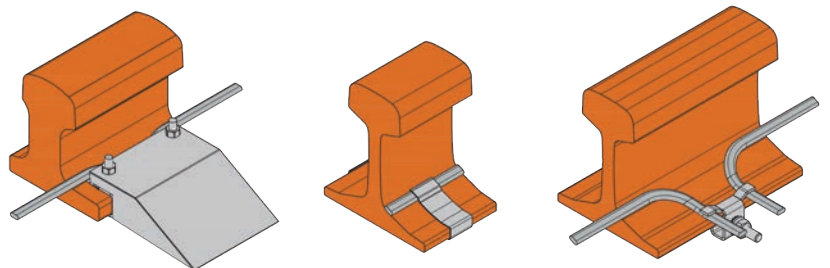
BluePoint rail insulation reduces cooling of the rail. It is used for energy saving and to boost the system during snow storms. There are systems for both stock and pointer rail.



Rugged sealed transformer installation.

Trackside Safety Transformer

48, 110, 230, 480 or 750V transformers supply power to the heating elements. The 48V supply eliminates problems with low isolation resistance.



Large variation of fixation brackets and clips for multiple rail profiles.



Heating Elements for Decades of Use



The welding-free steel termination head features two color rings for easy identification.

The Leading Heating System

The basic design of heating elements of the BluePoint series has been in use for more than four decades. The system has proven its durability, longevity and effectiveness in thawing snow and ice across Europe, the US and Canada.

Features & Benefits:

- Dual isolation layer providing best possible electrical isolation
- Multi wire design, improving homogenous heating
- Fiberglass braiding, improving vibration resistance

- Uses welding free stainless steel termination, reducing corrosion
- Customized shape and electrical specifications, ensuring that elements will always fit

Reliability Saves Money

It is expensive and difficult to replace components track-side. Consequently SAN manufactures the highest quality heaters tested against the highest Railway on-track standards and requirements.



Standard-shaped elements or custom-shaped elements to fit the installation are available.

- Protection Class
- Vibration and Shock on Track
- Dielectric Strength
- Leak Current
- Icing/Freezing Rain
- Composite Temperature and Humidity Cyclic Test



The elements can be adjusted on-site using our special tool.



All heating elements are produced at our factory in Denmark.

On-site Adjustments

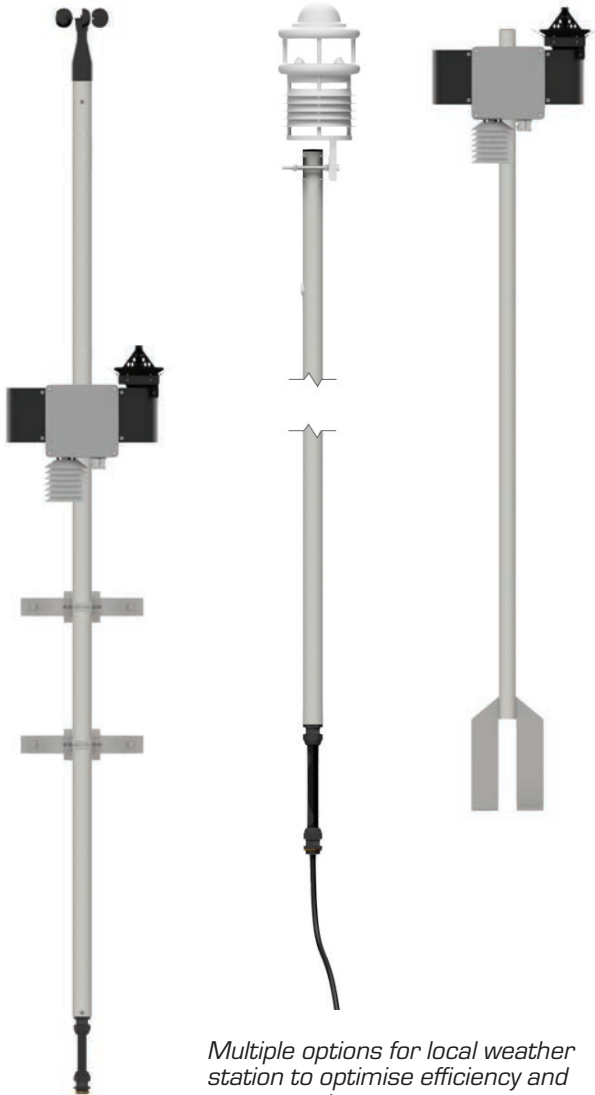
Our heating elements are designed for on-site shape modifications. They can be bent during installation to accommodate unexpected obstacles. A tooling kit is required.

Providing High Quality

The production of heating elements for railway and industry is the core of our business at SAN Electro Heat and it has been so since 1950.



Intelligent Controller & Power Distribution



Multiple options for local weather station to optimise efficiency and energy savings.

An Intelligent System

The BluePoint heating system utilizes a Master and Clients architecture. The Master controls multiple points, measures local weather



Graphical user interface for reading operation status, failures, and settings.

and rail temperature, and receives weather forecasts. This information is processed and shared with clients in the same area via fiber optics, Ethernet, or GSM 4G – Modbus TCP/IP.

Every control cubicle has an easy to use user interface and are able to run as a stand alone controller.

Documentation Package

Delivery includes valuable design documentation, installation instructions, and maintenance guidelines. Our commitment to quality is evident in the inclusion of all necessary certificates, and tests covering:

- Commissioning
- Factory Acceptance Test (FAT)
- Site Acceptance Test (SAT)
- System Integration Test (SIT)

Fail-Safe Operations

Self-diagnostic routines will identify any faulty conditions from heating elements, rail or weather sensors, the weather forecast, condition communication, etc. For every fault the system will select a fail-safe mode. When running in fail-safe mode the priority is always traffic accessibility.

The Weather Station

Available in various versions, from a single air temperature gauge to a comprehensive weather station. Features include wind speed, snow detection, air temperature, and moisture measurement. Additional track-side snow detectors are available for drifting snow. The most advanced version includes a dual radar that precisely detects the type, volume, and intensity of precipitation.



Control cubicle with user interface.



Control cubicle enclosures are available in stainless steel, painted steel, or reinforced fiberglass.

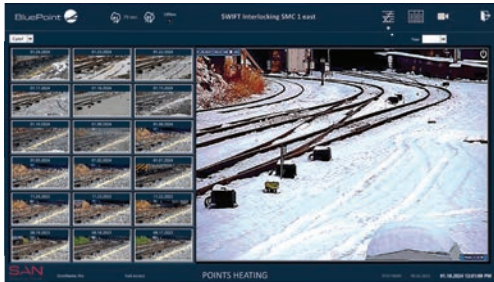
The measured and received weather information generate weather data that can be used for applications in other areas of the organisation

Custom-Made designs

Every railway has unique needs, rules, or demands. The BluePoint controller features a basic design but can be customized for specific requirements such as choice of enclosure, addition of a surveillance camera, electrical isolation measurements, a SCADA interface, and more.



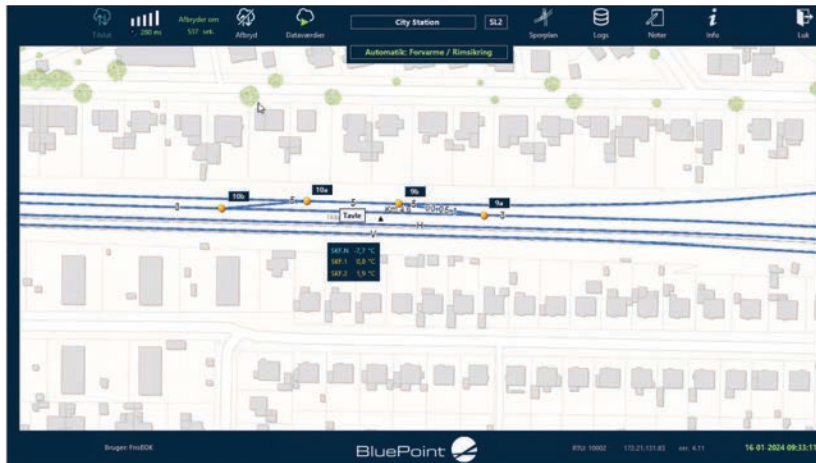
Monitoring and control of the entire point heating system.



Surveillance camera for critical points or specialized tests.



Operational status tables for selected installations or the entire system.



Overview as a graphic track map or an integration with a GIS system like Google Maps.

Get Full Remote Control

Unlock and get complete control with our Scalable Software System (SCADA), connecting all heated switches in a territory.

- Energy analysis (counters and statistics)
- Critical system alarms (direct message)
- Make notes and call for maintenance
- Individual system settings for every station
- Lookup local weather forecast and conditions
- Force individual switches for extra heat
- Alarm log
- Data log every 20 minutes.
- Search and analyze data
- Possible to export to spreadsheet
- Surveillance camera with time lapse movie

Key Data Acquisition

Receive essential insights tailored for the Traffic Control Department, Maintenance Department, and Technical Department.

Enhanced Cloud Solution

Experience a high level of security with BluePoint Cloud Solution, accessible via any web browser. On-premises solutions are also available.

System Integration

Integrate the BluePoint system directly by parallel communication to the controller or use an interface at SCADA level.

Start Saving Energy (CO₂ reduction)

Our team is ready to help you - contact us today

- **Create a Business Case:** Calculate your potential energy savings
- **Present References:** Present comparable reference installations
- **Test:** Propose a design and a test program, including cloud SCADA software
- **Price Proposal:** Present an offer based on your requirements
- **Start saving energy and reduce CO₂ emissions.**



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SAN Electro Heat A/S designs and manufactures electric heating solutions.

Established in Denmark 1950, our innovative solutions prioritize energy efficiency and fossil free solutions.

At SAN Electro Heat we are committed to global sustainability.

The two main business areas are railway infrastructure de-icing and industrial heating solutions.

Our intelligent railway de-icing solutions are contributing to a substantial reduction in CO₂ emissions for railway companies.

SAN Electro Heat is certified by Bureau Veritas in the following ISO standards: 9001 for Quality, 14001 for Environmental Management, and 45001 for Occupational Health and Safety.



NIBE ELEMENT
RAILWAY SOLUTIONS

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Points Heating system

- A complete system for de-icing switches and crossings
- Energy saving and long lifespan



Conductor rail (3rd rail) Heating

- A complete system for de-icing conductor rails
- Line or city powered



Overhead wire de-icing

- A complete system for de-icing contact wire
- Powered directly from a catenary system