



POINTS HEATING

70% ENERGI SAVING & CO2 FOOTPRINT REDUCTION

The BluePoint technology saves up to 70% energy without any efficiency losses.
Intelligent use of Multi Weather Modes including Weather Forecast.



Up to 70% Energy Saving

Intelligent use of weather forecast, local weather station and temperature feed-back.



Helps Railways to reach CO2 target

Energy savings also results in reduction of CO2 emission. Point Heating is the second largest energy consumer....



Multi Weather Modes

Every type of weather has a specific mode. This minimise energy use but maintain the efficiency.



Rock Solid Modular Control System

30 years record of successful installations in railway environment. No electronics at the track side.



Energy Management

Energy counters for every operation mode makes analysis for optimization easy.



Reduce Maintenance Cost

Bundle and prioritize service and maintenance calls based on online switch point information.

BluePoint is an intelligent heating control system. A system using the latest technology to reduce energy consumption including advanced use of weather forecast data.

The philosophy behind BluePoint is to look at the weather. Every Weather Situation has a Dedicated Control Mode.

In each control mode all triggers, parameters and settings are optimised to run the heating just enough to be efficient. Efficient to clear the turnout from snow, ice and frost.

BluePoint reduces traffic interruption with a reduced level of energy and a big CO2 footprint reduction.

ONLY HEATING WHEN NEEDED

The turnout is made of steel – a lot of steel. Heating up the critical switch point part means heating a lot of steel using expensive energy.

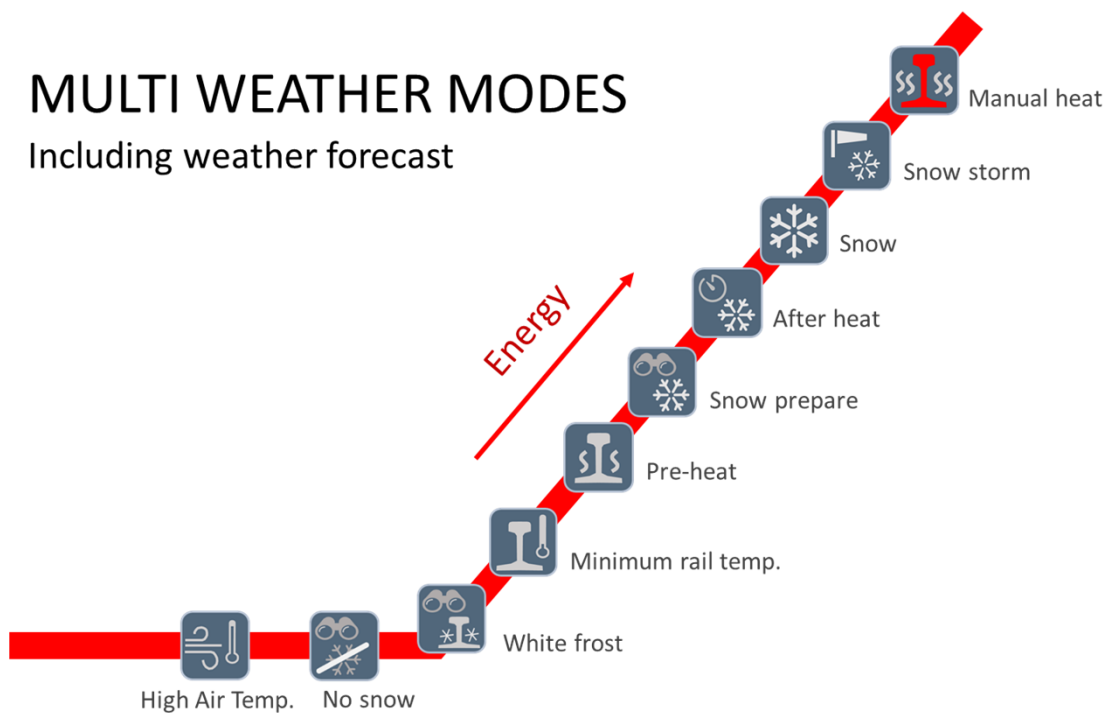
It is therefore evident to make sure that the installation uses the right amount of energy and only when needed. At the same time it is important not to jeopardize the reliability of the railway traffic.

MULTI WEATHER MODES

The BluePoint operates with multiple modes. Each mode is made to one particular weather situation. Every mode is optimized for the best possible compromise between performance and energy saving. Below shows some of the control modes sorted after energy use. Modes with the little binocular icon is driven by weather forecast.

MULTI WEATHER MODES

Including weather forecast



WEATHER FORECAST

An important part of the energy saving in System BluePoint is the use of electronic incoming weather forecasts.

The weather forecast is specific for each location. It is highly reliable because it only covers a little local area and is only foreseen +1, +2 and +3 hours ahead.

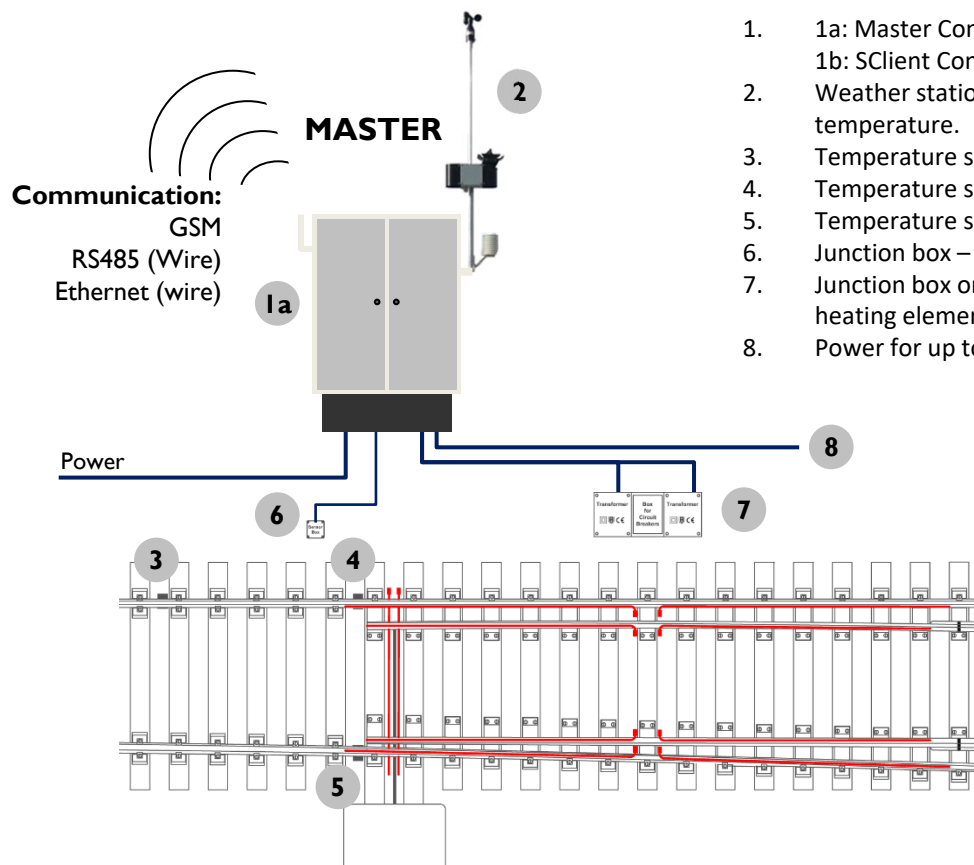
System BluePoint is primary operating with the following forecast:

Snow warning
White frost warning
Dew point forecast

More weather information can be provided to strengthen weather intelligence like: Rain, Rain volume, Temperature at different heights, sun probability and many more



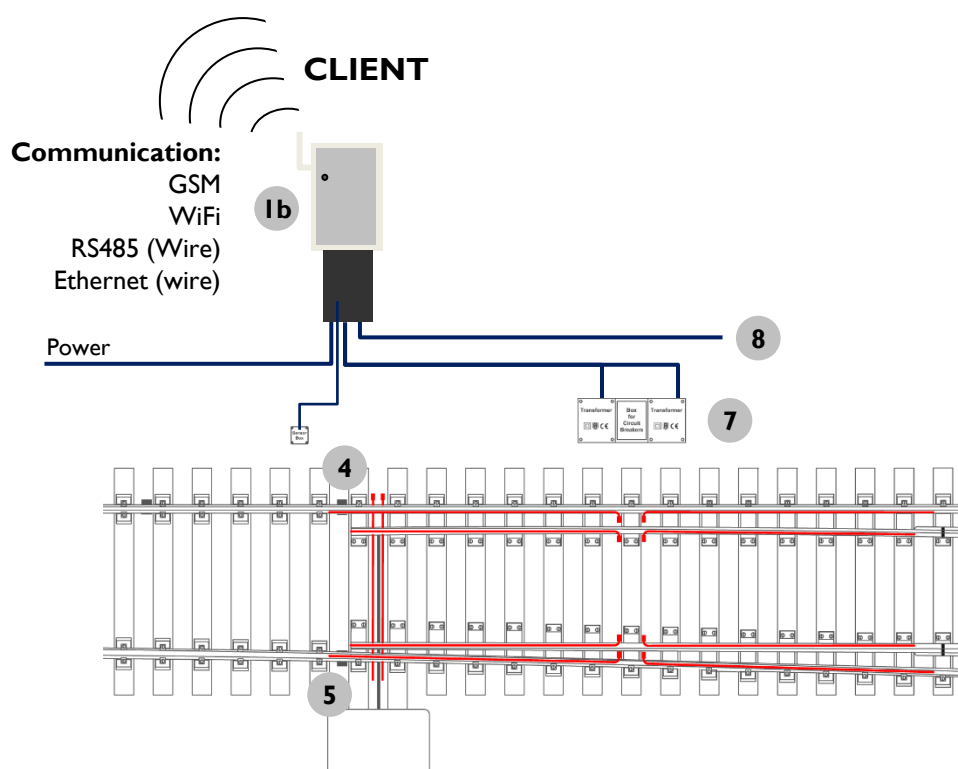
CONTROL CUBICLE INSTALLATION



1. 1a: Master Control Cubicle
1b: SClient Control Cubicle
2. Weather station: Wind speed, Snow detector, Air temperature.
3. Temperature sensor – Cold Rail (reference)
4. Temperature sensor – Hot Rail 1
5. Temperature sensor – Hot Rail 2
6. Junction box – Temperature sensors/tx
7. Junction box or safety transformers – power to heating elements
8. Power for up to 7 more switch points



Stainless steel cabinet



Painted steel cabinet

SCALABLE SYSTEM

The BluePoint system is a modular scalable system to cover installations from a single stand alone installation on a small station to a whole country.

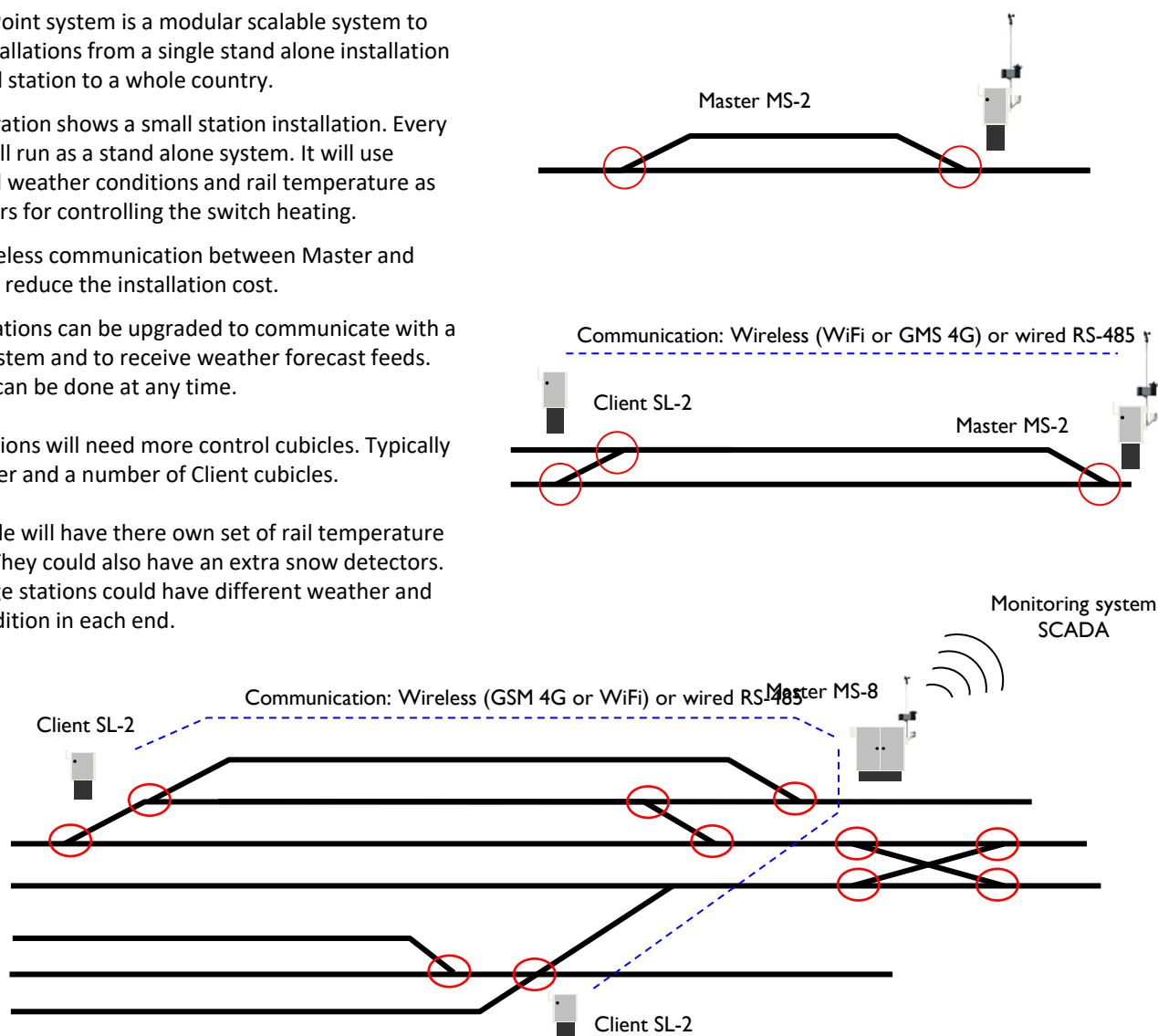
The illustration shows a small station installation. Every station will run as a stand alone system. It will use measured weather conditions and rail temperature as parameters for controlling the switch heating.

Using wireless communication between Master and Client will reduce the installation cost.

All installations can be upgraded to communicate with a SCADA system and to receive weather forecast feeds. Upgrade can be done at any time.

Large stations will need more control cubicles. Typically one Master and a number of Client cubicles.

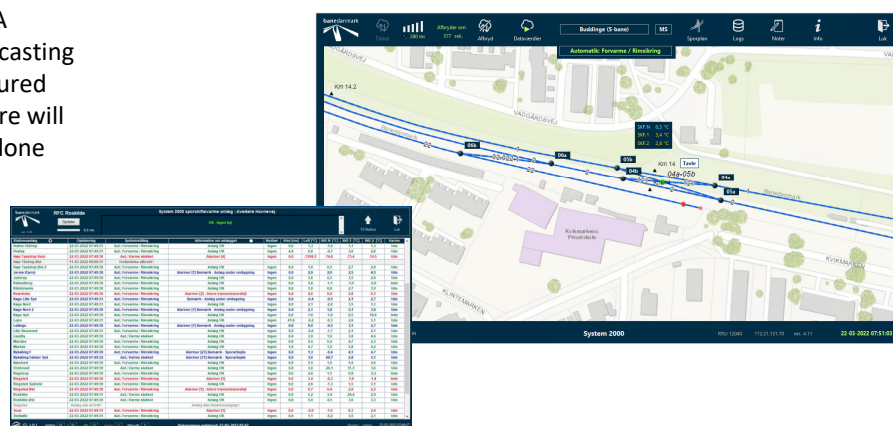
Any cubicle will have there own set of rail temperature sensors. They could also have an extra snow detectors. Some large stations could have different weather and wind condition in each end.



TERRITORY SOLUTION

Multiple stations connected to BluePoint SCADA supervision system. The SCADA system is broadcasting weather forecast to supplement the local measured weather and rail temperatures. This extra feature will reduce the energy consumption for the stand-alone controllers by additional 40%.

System BluePoint Control Cubicles can be interfaced to almost any SCADA systems.



CONTROL CUBICLE

The control cubicle handles all control for the switch point heating. The cabinet is made for the railway environment and contains all necessary electrical components to source power and protect the system. This includes Colour touch screen, anti condensation heater, light, auxiliary power, lightning protection and documentation pocket.

Point Heating Control based on:

- Cold rail temperature (not heated rail)
- Hot rail temperature (heated rail)
- Weather inputs:
 - Air temperature
 - Wind speed
 - Precipitation
- Received weather forecast
- Remote control (on demand)
- Locale operator panel (service switch)

Self diagnostics / Alarms:

- Power failure
- Power phase failure
- Communication error
- Point heating element error
- Weather sensor error
- Rail sensor error
- Ground fault detection RCD
- Battery and UPS failure

Fail-Safe operation:

- for any broken sensor combination
- for missing weather forecast
- for missing communication
- Build-in back-up temperature sensor in cubicle

Energy statistics:

- Power hour counter
- Energy consumption
- In/Out cycles
- Operation time for each mode
- Actual heating time for each mode

Communication:

- Communication with all connected Slave cubicles
- Communication with SCADA supervision system
- Communication with connected PC (Maintenance)



MS-2 in a plastic cabinet mounted in a painted steel outdoor cabinet



User interface – Color touch screen and big operation buttons and signal lights

CUBICLES

Master and Client cubicles can be delivered with 2, 4, 6 or 8 outputs as standard. Named:

MS-2, MS-4, MS-6 and MS-8
SL-2, SL-4, SL-6 and SL-8

BluePoint CUSTOMER DESIGN

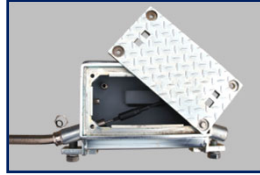
A BluePoint controllers will be build to customer demands.

There could be a series of adjustments like the power line as 3 or 3+N phases etc. RCD, choice of circuit breaker etc.

The controlling software could also be a little different. It could be special demand for extra modes like modes dedicated rush hour mode or immediately "reduce Peak Load" mode or it could be a need for hardware remote control.

TRAM LINE – POINT HEATING

Heating elements designed for the big corrosion challenges the street embedded switches gives. Complete city systems including control and weather forecast service.



25% ENERGY SAVING – POINT HEATING

Rail insulation to boost the system or save energy. Easy to install. No conflict with the tampering machines.



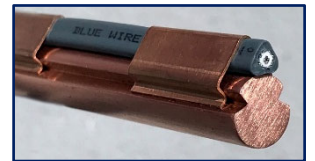
HEATING ELEMENTS – POINT HEATING

IP68, Designed for long life time. Dual layer electrical insulation. Vibration resistant technology. On-site bending for optimal mechanical solution



OVERHEAD LINE DE-ICING

BlueWire, Permanent de-icing solution on bridges, in depots, up-hill lines etc. Special heating wire for all light rail and trolley OHL 600-1500 V systems. Complete systems.



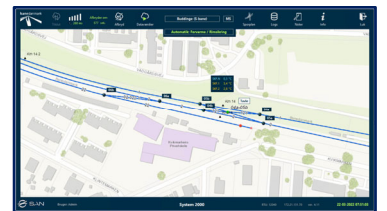
METRO 3rd RAIL DE-ICING

Heating cable solutions for all light-rail with an open 3rd power rail. Complete systems including controllers and SCADA for supervision.



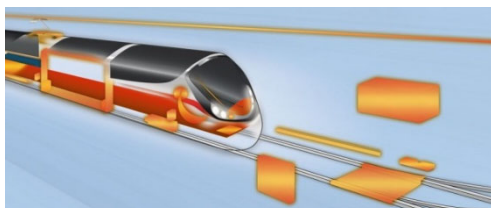
SCADA SOFTWARE

Supervision of the entire system. (cloud based or On-premise).



SAN Electro Heat A/S (Member of the NIBE group)

Danish located international company offering more than 50 years of experience in development and manufacture of advanced technical electric heating solutions and components. Products are highly cost and energy optimized, and developed together with our customers. Our focus and know-how is divided into four business areas: Railway Systems, Wind Power, Process Heating and Heating Cables.



SAN - Railway (Part of NIBE Railway Components)

Supply of complete systems, which secure optimum operation under any winter weather situations: Switch point heating, overhead wire de-icing and third rail de-icing. Our aim is to supply highly efficient systems that reduce energy consumption as well as the total cost of ownership. From heating elements through intelligent controllers to advanced server based computer monitor programs. Including all necessary fittings, power transformers, weather stations etc. Rolling stock comfort heating, door step de-icing, heating of hydraulic systems, toilet/waste water systems and test load resistors. Our design has proven its reliability through thousands of installations all over Europe.

SAN Electro Heat a/s - Railway

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