XL-TRACE LSZH SYSTEM

nVent RAYCHEM

SPECIFICATION GUIDELINE
FLOW MAINTENANCE OF GREASY WASTE PIPES

GENERAL

All insulated greasy waste pipes exposed to risk of lower temperature, viscosity inhibited flow shall be fitted with an energy efficient self-regulating trace heating system, known as nVent RAYCHEM XL-Trace, manufactured by nVent.

The system shall be complete with low smoke zero halogen self-regulating heating cables, advanced energy efficient controller and cold applied components, CE marked and certified according to IEC (EN) codes by VDE.

The manufacturer shall have a minimum 40 year experience in producing self-regulating heating cables and offer an extended warranty of 10 years for heating cables/connection components, 2 years for controllers and make available the following documents for submittal: data sheets (for heating cables, interconnection & termination components and controller), system design guide, typical schematic drawings, controller wiring diagrams and system installation/operation manual, along with approval certificates on request.

SELF-REGULATING HEATING CABLES

The self-regulating heating cables shall be tested and compliant with IEC 61034-2, IEC 60754-1, IEC 62395, IEC 60068-2-5 and 2-9 (for low smoke emission, zero halogen, self-extinguishing properties, UV resistance and colour fastness under UV exposure), qualified for a useful lifetime in excess of 25 years, highly flexible with a 10mm bend radius and suitable for use with 20A circuit breakers.

The self-regulating heating cables shall include a conductive polymer core, modified low smoke zero halogen electrical insulation (radiation cross-linked to ensure long life expectancy), tinned copper braid and modified low smoke zero halogen over jacket printed with cable model, batch number and metre marks for ease of installation within maximum circuit lengths.

All insulated pipework exposed to risk of lower temperature, viscosity inhibited flow shall be fitted with self-regulating heating cables 31XL2-ZH and installed to a maximum circuit length of 118m at 5°C switch on.

INTERCONNECTION AND TERMINATION COMPONENTS

Interconnection and termination shall be with cold applied insulation displacement connectors and gel type end seals that are UV resistant, IP68 and 65°C rated, suitable for 2500Vdc insulation resistance test, with Torx head fittings and both audible and visual installation confirmation, known as RayClic, manufactured by nVent.

THERMAL INSULATION

Insulation selection and thickness shall be strictly in accordance with the XL-Trace design guide.

ENERGY EFFICIENT, CONTROL SYSTEM [Select One or More Options]

[1] Single Circuit, Single Application Controller

All greasy waste flow maintenance circuits shall be controlled using a programmable, energy-efficient line sensing thermostat, complete with adjustable hysteresis, high and low temperature alarm function, digital display, 'offsite programming' without external power supply, 25A switching capacity, sensor and voltage failure alarms, selectable fail safe mode (either ON or OFF), alarm relay for remote BMS monitoring and system error codes for quick diagnostic of system failure. The control thermostat shall be RAYCHEM RAYSTAT-CONTROL-10 as manufactured by nVent.

[2] Multi Circuit, Panel Mounted, Single Application Controller

All greasy waste flow maintenance circuits shall be controlled and monitored by an integrated, multi-circuit, electrically protected control panel that is EN60204-1/EN61439-1 compliant with RAL7035 (light grey) coated metal housing (IP54 rated), complete with type C circuit protection and RCD (30mA rated) per circuit, proportional ambient sensing (PASC) and line temperature sensing control with simultaneous operation capability, integrated potential free alarm contact (to signal circuit breaker failure or RCD failure or loss of power or controller failure), selection switch to enable system testing and override [automatic mode/off mode/on mode (override of control and sensor)], lights to indicate when circuits are on (green) and warning lights to indicate alarm or failure (red). The control panel shall be RAYCHEM SBS-xx-SV as manufactured by nVent, available as standard in the following formats: SBS-03-SV (up to 3 circuits); SBS-06-SV (6 circuits); SBS-09-SV (9 circuits); SBS-12-SV (12 circuits)

[3] Multi-Circuit, Distributed Digital Control System, Single or Multi-Application

All greasy waste flow maintenance circuits shall be controlled and monitored using a centralised control system with distributed power and control modules, complete with colour LCD touch screen, password protected user interface terminal (UIT) for central programming; power connection modules (PCM) to provide distributed power, circuit protection, control & monitoring; remote monitoring modules (RMM) for additional temperature measurement; integrated energy saving proportional ambient sensing programmable controller (PASC); BMS interface using ProtoNode high performance multi-protocol gateway, to allow translation from native ModBus to BacNet protocols; pre-programmed parameters, to deliver concurrent control for heating cables used for pipe freeze protection, hot water temperature maintenance, flow maintenance, surface snow melting, roof/gutter de-icing and floor heating applications. One UIT shall be included in the system, along with at least 1 PCM (to maximum 52), each PCM shall control up to 5 circuits. The UIT shall accept up to 16 RMM, each having up to 8 temperature inputs. The control system shall be RAYCHEM ACS-30 as manufactured by nVent.

EXECUTION

Design

The manufacturer shall be able to provide all design calculations, including heat loss and corresponding selection of heating cables; electrical schedules providing cable lengths, circuit breakers, circuit start up currents, operating currents and loads, line list summary and single line details; system layout and schematic drawings indicating power connections, tees and end seals; controller configuration listing and wiring diagrams.
The manufacturer shall provide a BIM add-in for Autodesk Revit MEP to automate the design process within a BIM model.

Installation and System Commissioning

All greasy waste flow maintenance circuits shall be installed in accordance with the design plans, within the defined maximum circuit lengths, tested and commissioned strictly in accordance with the manufacturer's instructions (IM-CDE1547) using a 2500Vdc megger. Installation of thermal insulation shall be closely coordinated with the responsible sub-contractors. Connections between the electrical supply, control panel and greasy waste flow maintenance circuits shall be installed by an approved electrical contractor and protected by MCB (BS EN 60898 type C or D) and RCD (30 mA sensitivity, tripping within 100ms).

[Select One Option]

[1] The system shall be installed, tested and commissioned by the manufacturer.

[2] The system shall be installed and tested by trained installers certified by the manufacturer, commissioned by the manufacturer.

[3] The system shall be installed, tested and commissioned by installers trained and certified by the manufacturer.

[4] The system shall be installed, tested and commissioned under periodic supervision by the manufacturer.

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