

## GLASGOW MUSEUM OF TRANSPORT

### PROJECT DETAILS

<b>Client:</b>	Glasgow City Council
<b>Location:</b>	Clydebank, Glasgow, Scotland, UK
<b>Completion Date:</b>	August 2010
<b>Contract Scope:</b>	Design, Supply, Installation
<b>Applications:</b>	Frost protection for gutters and downpipes
<b>Technology:</b>	nVent RAYCHEM IceStop GM-2X cable with EMDR-10 controllers, RayClic connection system



### KEY CHALLENGES

The new Glasgow Museum of Transport is a world-class architectural landmark with complex geometry and nowhere is this more so than in its imposing 'zig-zag' metal roof design. To protect the roof from snowfall and create pathways for water flow after it melts on the roof, consultants Buro Happold identified the requirement for an energy-efficient, easy to design and install roof and gutter heating system that would be compatible with the building's central management system. With a lengthy supply and approvals chain, the initial challenge was to educate the consultants in the workings of an electric heat-traced roof and gutter system, enabling them to convince the project architects.

### SOLUTION

With all parties convinced of the benefits to be offered by an electric heat-traced solution, nVent designed and supplied a system based on its RAYCHEM IceStop GM-2X self-regulating heating cables. The cable's self-regulating technology regulates its own heat output in response to ambient conditions, eliminates hot spots and results in better temperature control to protect roof and gutter materials. This provided considerable benefits in energy-efficiency.

The cable's parallel circuitry allowed it to be cut to the exact length required, simplifying installation even on this complex roof design and with no wasted cable, provided a cost-effective solution. The RayClic connection system enabled the system to be installed speedily in a highly-exposed location. Some 1200 metres of cable were installed and this is managed by 13 RAYCHEM EMDR-10 units to provide smart control and integrate with the building management system.



## PRODUCTS

RAYCHEM IceStop GM-2X is a self-regulating heating cable specifically engineered for roof and gutter de-icing. Its heating element consists of a continuous core of conductive polymer extruded between two copper bus wires. As current flows through the core, the heating cable regulates its own heat output in response to ambient conditions. This self-regulating effect saves energy by automatically increasing its heat output in icy water and decreasing its output in dry air. Simple to install, the cable can be closely spaced in gutters without the risk for overheating or burn-outs.

The RAYCHEM EMDR-10 is a smart control unit that incorporates both temperature and moisture sensors. The unit only switches the heating cable on when necessary: after the detection of both low temperature and moisture, enabling power savings of up to 80% to be achieved.

The RAYCHEM RayClic connection system is a simple, fast and reliable set of connection kits which requires no wire stripping because the insulation displacement connector makes the electrical connection.

## BENEFITS

- Fast and economical to install
- Highly energy efficient
- Reduced capital, maintenance and energy costs
- BMS compatible



The new Riverside Museum, Scotland's Museum of Transport and Travel, is located on a dramatic site close to Glasgow Harbour at the point where two rivers, the Clyde and the Kelvin, meet. As well as providing a permanent home for collections not previously on public display, the new museum exhibits the contents of the old Glasgow Museum previously held at Kelvin Hall. Designers for the project were Zaha Hadid; Buro Happold were building services engineering consultants; FES the M&E contractor and the nVent system was supplied by its distribution partner Smith Electrical.

The system has provided an overall reduction in capital, energy and maintenance costs for the protection of a highly complex roof design.

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