



Case study

Swalec Smart Energy Centre, Treforest

Client: SSE

Architect: Glanville Consultants Ltd

Principal Contractor: Interserve

Mechanical and Electrical Contractor:
Southern Electric Contracting

**Mechanical and Electrical Design
Consultants:** Vector Design Ltd

Installation Contractor: Massey Cladding

Tata Steel Products: Colorcoat Renew SC® active solar air heating system manufactured from Colorcoat Prisma® pre-finished steel in Anthracite supplied in a micro-perforated C32 profile.

Year: 2013

The £7 million Swalec Smart Energy Centre in Treforest, South Wales, provides a training centre for specialist SSE installation and advisory teams focusing on the fast-changing energy market. The centre was designed to incorporate and showcase innovative, energy-saving systems.

Tata Steel's Colorcoat Renew SC® active solar air heating system was chosen for installation at the centre. Colorcoat Renew SC® uses freely available, renewable solar radiation – captured on the building elevation - and provides controllable, fresh, heated ventilation air to maximise occupant comfort. This sustainable system lowers the building's carbon footprint.

Colorcoat Renew SC® is certified to BES 6001, tested to EN ISO 9806:2013 and provides a route to obtaining BREEAM credits.



BUILDING ELEVATION ACTS AS SOLAR COLLECTOR

The requirement

Major energy provider, SSE, developed the Swalec Smart Energy Centre as an education and training facility for SSE engineers. The training would encompass installation and maintenance of the latest technology including renewable energy generating systems. The new centre involved a complete refurbishment of an existing steel-framed, two-storey building at Treforest in South Wales. Energy saving systems which would fit within the existing building footprint were therefore particularly advantageous.

Design criteria included additional heat recovery from in situ gas boilers and incorporation of a Colorcoat Renew SC® active solar thermal collector within the heat recovery and air handling system. The design brief also featured good levels of air tightness, a high level of wall and roof insulation, LED lighting and solar photovoltaic cells and solar thermal panels on the roof.

“It was our intention when designing the centre to incorporate as many innovative energy-saving methodologies and devices as reasonably practical,” said Mark Curran, SSE Project Manager for the design and construction of the centre.



The solution

SSE was introduced to Tata Steel's Colorcoat Renew SC® active solar air heating system through an association with the Built Environment Team at Cardiff University. Colorcoat Renew SC® uses a micro-perforated solar collector installed to a southerly-facing building elevation to capture and absorb the sun's energy. This solar radiation is then converted into fresh, heated air.

SSE's design team made a preliminary visit to the Sustainable Building Envelope Centre at Shotton in Wales to find out more about Colorcoat Renew SC®. The team quickly recognised the potential benefits of incorporating the system at the Swalec Smart Energy Centre.

"To cut a long story short, our mechanical and electrical design consultants, Vector Design, and architects, Glanville Consultants, met further with the Tata Steel team and went into design mode to incorporate Colorcoat Renew SC® into the full air handling system design," said Mark Curran.

"We were convinced that the solar collector would make a valuable contribution to our energy-saving ambitions. Close work between Vector Design and the Tata Steel design team led to a full design being produced," explained Mark Curran.

The system at the centre uses 140m² of Colorcoat Prisma® pre-finished steel in Anthracite as the micro-perforated solar collector. This was installed vertically as an additional skin onto the centre's south-west facing elevation. Colorcoat Prisma® has been proven to provide superior solar absorption and durability for maximum collector efficiency and longevity.

Colorcoat Renew SC® uses solar heat to pre-heat inlet air for gas heating systems – reducing the overall demand for gas and therefore lowering a building's carbon footprint.

"At the Swalec Smart Energy Centre, Colorcoat Renew SC® is working as a pre-heat installation in conjunction with a conventional gas burner and ventilation system to improve the performance and efficiency of the established equipment and technology," explained Andy Allen, Tata Steel's Sales Development Manager for Colorcoat Renew SC®.

An engineered control system – enabling easy control of airflow rate and temperature – helps to maximise occupant comfort in the centre's double-height practical training area. "Importantly, it is also helping the centre to maximise heating and ventilation efficiency and ensure that energy performance is optimised. It's a highly efficient and non-intrusive renewable energy generating system," said Andy Allen.





The benefits

The Colorcoat Renew SC[®] active solar air heating system installed at the Swalec Smart Energy Centre was predicted to deliver a heat output per annum of approximately 71MWh. The consequential savings in gas consumption translate into a CO₂ saving of around 15,000kg per annum.

The installed system is monitored and metered, with information being provided to the centre's building management system so that its contribution can be measured. Actual performance of the installation is currently being assessed by the Sustainable Building Envelope Centre, a collaboration between

Tata Steel and The Low Carbon Research Institute based at the Welsh School of Architecture in Cardiff University.

Contact us

Our dedicated team of experienced construction professionals have designed Colorcoat Renew SC[®] and are on hand to advise you on all aspects of its design, integration and control. They can provide feasibility assessments and estimates of the energy savings and payback period to ensure that you have the optimum system for your project.

Tata Steel products:

Colorcoat Renew SC[®] uses solar heat to pre-heat inlet air for gas heating systems, reducing the demand for gas, a non-sustainable fossil fuel source, lowering the building's carbon footprint and helping you to meet your requirements for a sustainable building.

Supplied through Tata Steel, Colorcoat Renew SC[®] is certified to BES 6001. This means that not only does it supply sustainable energy, but is itself responsibly sourced. It has also been successfully tested to the requirements of EN ISO 9806:2013 by the Fraunhofer Institute for Solar Energy. Its use provides a route to obtaining credits under the Responsible Sourcing of Materials sections of BREEAM, the Code for Sustainable Homes and CEEQUAL.

Colorcoat Prisma[®] pre-finished steel is technically and aesthetically superior pre-finished steel that represents the ultimate combination of durability and aesthetic appeal. As such, it provides the designer with the freedom to create architecturally striking buildings with exceptional performance that meets the desired functionality of the building.

To find out more, please contact our Colorcoat Renew SC[®] Integrated Sales Team at:

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