

Using steel to save - and produce - energy

Thermal insulation is an essential component of a building's environmental footprint. Insulating materials are thus highly sought after by architects and designers. To mark the occasion of Batimat 2015, ArcelorMittal, the European market leader for value-added steel products that provide effective thermal insulation, is presenting a number of innovations in this field.

Increasing thermal performance by 10% with ArcelorMittal's revolutionary insulating sandwich panel mousse: PRT-HEXACORE®

Arval by ArcelorMittal, the construction branch of the group ArcelorMittal, offers a full range of highly insulating sandwich panels suitable for all types of cladding, façades, roofing and partitions. Following two years of research, the branch has developed a revolutionary new mousse called PRT-HEXACORE®, strengthening its market position in Europe, and especially France. PRT-HEXACORE®, certified by ACERMI¹ and recognised as the most thermally efficient material on the French market, has enabled ArcelorMittal to improve the thermal performances of its sandwich panels by 10%, reaching a thermal conductivity of 0.023 W.mK. ArcelorMittal is working to decrease the thermal conductivity of PRT-HEXACORE® by a further 20% supress in the coming months.

Archisol: combining thermal insulation with aesthetics

Arval by ArcelorMittal has recently created its innovative wall system Archisol, which combines a sandwich panel with a finished façade to provide an all-in-one answer to questions of thermal insulation, airtightness, and aesthetics. In Archisol, the traditional load-bearing tray has been replaced with an Archisol Ondatherm® sandwich panel, specially conceived for its heightened load-bearing capabilities. This ensures airtightness, excellent thermal and acoustic performances and overall energy efficiency. ArcelorMittal's cladding panels Trapeza, Océane and Fréquence and Eclectic – or any other type of decorative cladding - may be fitted directly onto this. Thanks to ArcelorMittal's revolutionary new mousse PRT-HEXACORE®, Archisol provides excellent thermal insulation ($U_p=0,20W/m^2.K$) without additional wind tight membrane.

A unique solution for windows: ensuring thermal efficiency with ArcelorMittal's galvanized steel subframes

When it comes to installing windows, subframes are essential for ensuring thermal efficiency and airtight/watertight protection. In partnership with the group DEYA, a specialist producer of steel subframes, Arval by ArcelorMittal has devised a made-to-measure, ready-to-install system composed of a galvanized steel subframe and a mounting frame – a unique solution on the market. Expressly designed to fit snugly around the perimeter of ArcelorMittal's Promisol® sandwich panels, the system is easy to install (75 minutes vs. 180 minutes for traditional solutions) and ensures that the area around the window is thermally insulated, watertight and airtight.

¹ ACERMI (Association pour la Certification des Matériaux Isolants) is a recognised association that certifies the thermal performance of insulation materials. The ACERMI certificate takes into account the ageing of the mousse, and thus the thermal performance of buildings over time.

ArcelorMittal's Eclectic range: a new asymmetrical cladding profile that combines external thermal insulation with a beautiful façade

Marking the occasion of Batimat 2015, Arval by ArcelorMittal has launched Eclectic, a new range of asymmetrically profiled cladding with an eye-catching wave-effect that plays with light and shade, placing the accent on aesthetics while ensuring proper external thermal insulation.

Steel solutions that produce energy

Not only is ArcelorMittal working with industry actors to create steel solutions that insulate better. The group is also investing in R&D to develop revolutionary new solutions that actually create energy.

PHOSTER

ArcelorMittal has developed a whole new range of innovative steels for the solar construction market – steels that serve as construction materials while simultaneously producing energy. This move to endow steel with new properties was made to assist the evolution of the market towards a model that directly integrates renewable energy sources into buildings, meeting European regulations that require new buildings to be energy-positive by 2020.

This technological breakthrough has been made possible thanks to ArcelorMittal's expertise in metallurgy and steel structures, as well as its experience in vacuum coating technologies to endow steel with optoelectronic properties. The PHOSTER project (Photovoltaic Steel Roof) is part of this initiative. Launched in July 2013, the PHOSTER project aims to develop an energy-efficient, eco-designed building that integrates a photovoltaic (BI-PV) roofing element that combines, for the first time ever, the functions of a building envelope with the production of electricity. The pilot project is located at the site of ArcelorMittal Construction in Lorraine, France.

SolarWall®

In 2014, ArcelorMittal entered into a partnership with the world leader in solar air heating, Conserval Engineering, to manufacture SolarWall®, a technology that uses solar radiation to heat buildings while reducing a building's heating costs by up to 50%. This "superstar" technology, entirely made of steel, is installed as an additional skin on a building and produces up to 600 watts/ m² of thermal energy per year, thus making a major contribution to meeting the EU's 2020 energy targets. SolarWall® is already being used in thousands of commercial, industrial and agricultural buildings around the world.