



ArcelorMittal



# TACKLING N° 1 CHALLENGE IN CONSTRUCTION: ISOLATION AND ENERGY

Pascal Magain, CEO France, ArcelorMittal Europe - Construction  
Conference: ArcelorMittal Europe's innovations for sustainable constructions from floor-to-ceiling  
BATIMAT, Paris Nord Villepinte, 3 November 2015



# Thermal economical and aesthetic innovations for construction

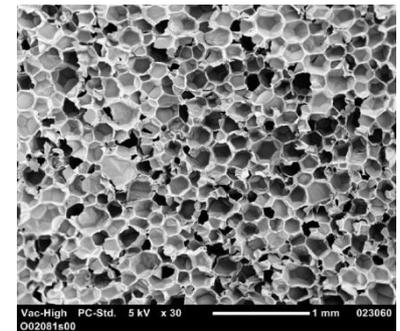
- Arval by Arcelormittal continue on the path of innovation in order to offer to the construction market new solutions. Three innovation will be presented at Batimat :
  - A new range of sandwich panels with the recently developed foam polyisocyanurate PRT-Hexacore® that includes the new Archisol system.
  - Window Pre frame for wall sandwich panel developed in partnership with DEYA group.
  - “Eclectic” a new aesthetic profile to support the growth of external thermal insulation
- Solarwall system : building integrated solar air heating system
- Phoster project : advanced solution to integrate photovoltaic roof



# Sandwich Panels

## our new foam PRT Hexacore certified

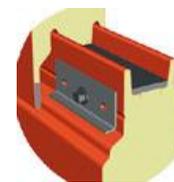
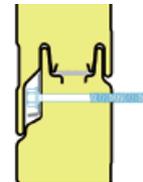
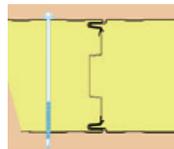
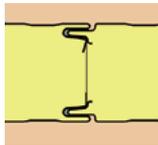
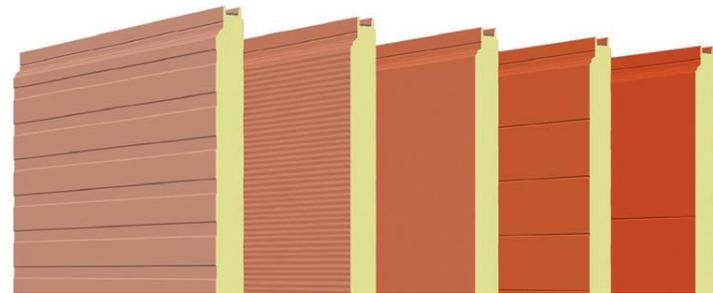
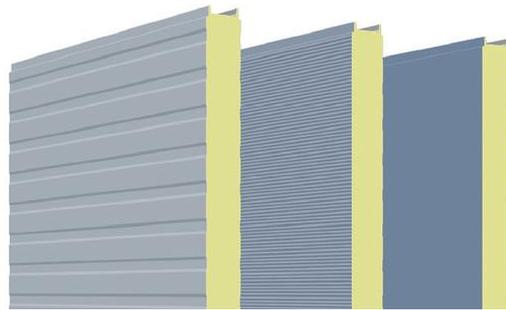
- In line with the Arcelor Mittal code of business conduct we focus on reliable technical product datas delivered by a notified body (Acermi).
- To meet the thermal regulation becoming more and more severe we have launch the certified new foam PRT-Hexacore .
- This great thermal performance is the outcome of a 3 years research program





# Wall panel Promisol®

- Double joint improving the air tightness
- U of 0.20 W/m<sup>2</sup>.K for 120 mm thickness
- Large range of aesthetics



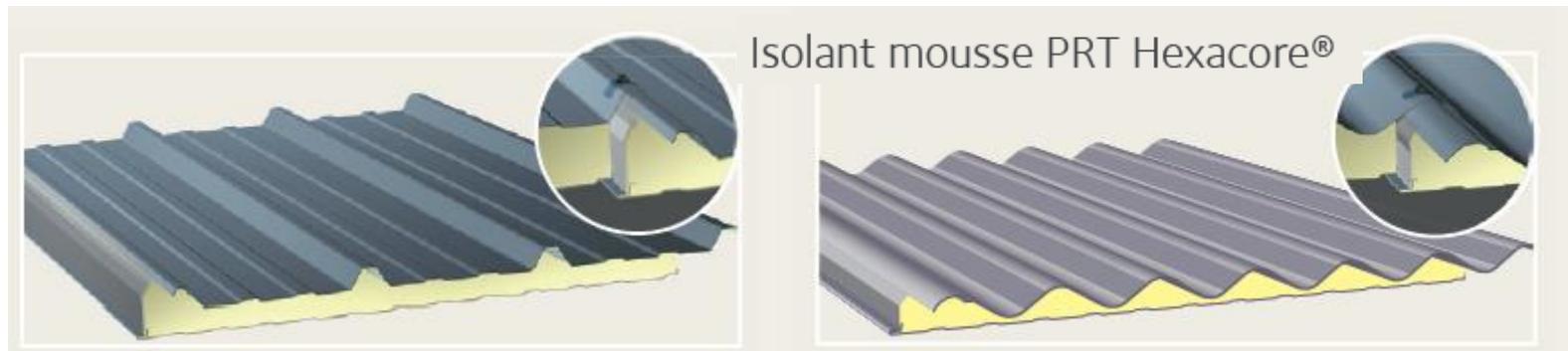
## Pre frame adjusted for our Promisol range

- Thermal efficient prefabricated frame for windows is now proposed for our Promisol® panel range to help our customer to achieve the air tightness performance of the building
- The development of this certified frame has been done in partnership with DEYA



# Roof panel Ondatherm®

- PRT hexacore , lambda certified by Acermi 
- Ondatherm® sandwich panel offering ease of installation while respecting the most demanding thermal regulation



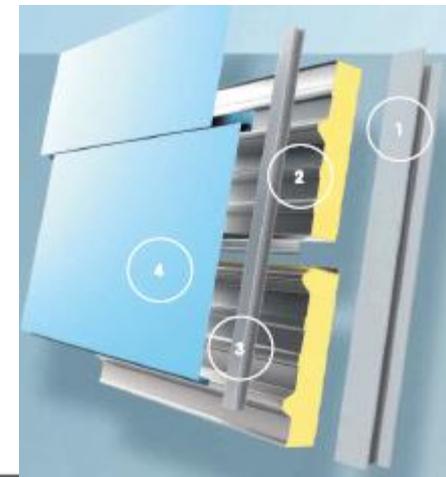
# Archisol

## All-in-one solution for Energy Efficient Building

- Airtightness without membrane installation
- Outstanding thermal insulation:
  - Up-value  $\leq 0,20$  W/m<sup>2</sup> for a thickness  $\geq 120$  mm
  - thanks to our insulation Hexacore® with Acermi certification Nr. 15/193/988
- Easy to install
  - Aesthetic freedom: the widest range of finishes
- Thinner construction:
  - saving 3% of available surface



**ARCHISOL**  
Innovation inside





# SolarWall

## → Why?

### NEW EUROPEAN REGULATION :

- Meets new EN 13779 for fresh air requirements in ventilation
- Meets new EN requirement for 20% onsite renewable energy by 2020

### SOLARWALL

- Heats fresh air using renewable solar energy
- Targets space heating energy witch can be 20- 50% of building's energy usage

### BUILDING CERTIFICATION LEED®

- Optimize Energy Performance (SolarWall 1-3 points)
- Renewable Energy production (SolarWall 7 points)
- Ventilation Effectiveness (1 point) SolarWall offers 30% increase in ventilation air
- Recycled Content (1-2 points) SolarWall made of recycled steel



Solarwall is appropriated for buildings that need more that +/- 5000m3 fresh air per year

- Commercial centers
- Industrials buildings
- Gymnasium
- Schools
- Agricultural buildings (pigs, ..)
- Multi residential buildings

# SolarWall performances

## → CO<sub>2</sub> savings

### SOLARWALL

- Reduces 20-50% of heating fuel demand
- Solar energy conversion up to 80%
- Produces 300 to 800 kWh/m<sup>2</sup> per year
- 500-600 peak watts m<sup>2</sup>

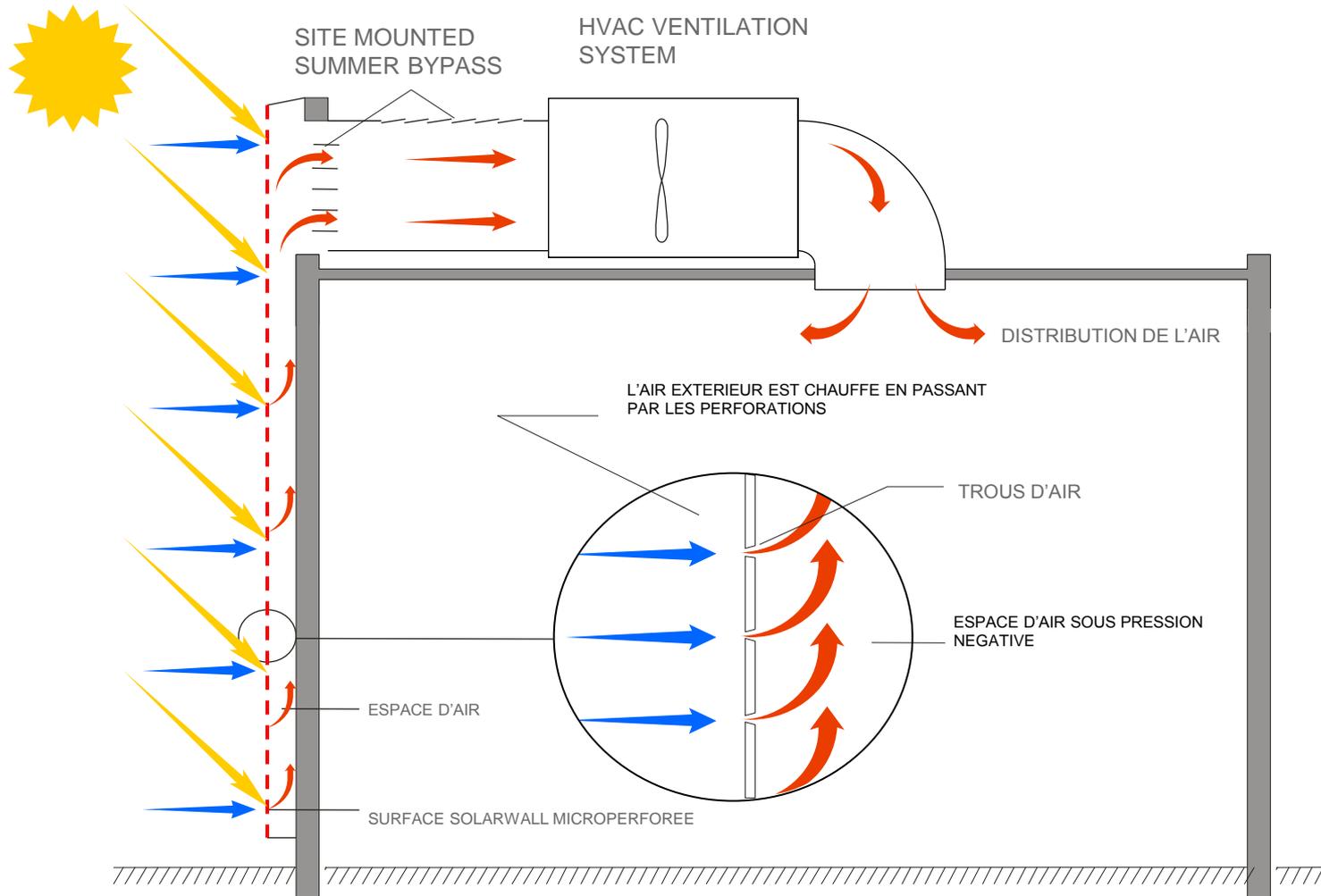
⇒ CO<sub>2</sub>

Displacement = 200 kgs of CO<sub>2</sub> /m<sup>2</sup> / year,





# SolarWall : How is it working ?

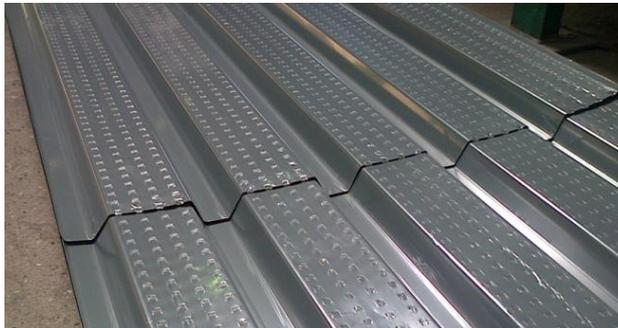
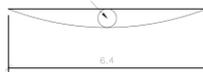




# Solarwall Production & Thermal study



Profile Trapeza 39B /4 porosity



- Solarwall produced in Arcelormittal plant Hainonville , for deliveries all over Europe
- Thermal studies made with the expertise of Conservall Energies

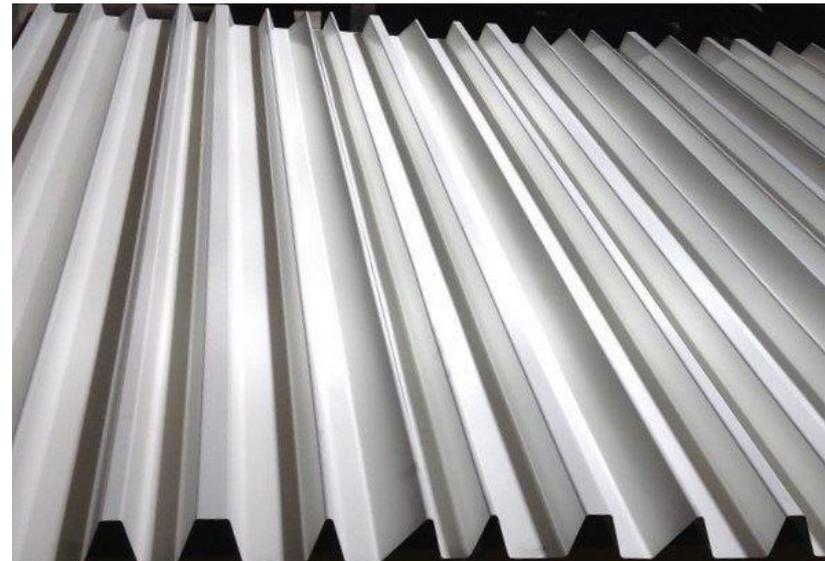
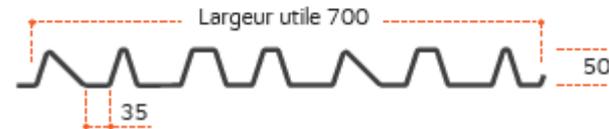
# Eclectic

- Innovative & aesthetic steel cladding for external thermal insulation work
- The product is in line with the precepts of environmental architecture requiring external insulation

**Eclectic® 7.61.50B/HB** Profil asymétrique



**Eclectic® 7.35.50B/HB** Profil asymétrique



# Phoster

## 4 PARTNERS INVOLVED IN THE PROJECT

ArcelorMittal Maizières  
Research S.A., France  
(Coordinator)



Advanced Coatings &  
Construction Solutions SCRL,  
Belgium



ArcelorMittal Construction,  
France



Commissariat à l'Énergie  
Atomique et aux Énergies  
Alternatives, France



A research project to develop a  
**universal solar steel roof envelope**

Ready-to-plug in BIPV roofing steel envelope based  
on innovative green technologies and processes



# Phoster

- A research project to develop a universal solar steel roof envelope Ready-to-plug in BIPV roofing steel envelope based on innovative green technologies and processes
- The PHOSTER project consists of the development of a highly efficient eco-designed building-integrated photovoltaic (BIPV) roofing element using an innovative and greener manufacturing process. The project intends to contribute strongly to the expansion and promotion of solar energy and to address the climate change environmental problem
- From Dec 2015 ArcelorMittal moves into the second phase of the project consisting in making the first prototype of a new universal solar steel roof .

## 5 ENVIRONMENTAL OBJECTIVES

In order to support the further expansion of solar energy and to limit as much as possible its environmental impact, five environmental targets are set for the project:

- 1 **Reduce** by up to **30% the Global Warming Potential (GWP)** with respect to a framed PV module on a metal roof
- 2 **15% reduction** of **carbon footprint** and **primary energy use** for the manufacture of copper, indium, gallium, selenium (CIGS) modules
- 3 **1.5% increase** in the **kWh/kWp** produced
- 4 **Reduce** the amount of rare toxic elements including the substitution of **cadmium**
- 5 **Recyclability** of at least **85%** (by weight) of the BIPV roofing envelope