Continuous manufacture of metal faced insulated building panels

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What are metal faced insulated building panels?

These are a <u>composite</u> of

Thicker, low strength core (mineral wool, glass wool, PUR/PIR foam, aluminum honeycomb, etc.)



Thinner, higher strength facing materials (steel, PVC, aluminum, OSB, plywood, fiber cement board, etc.)







Composite parts



3) Thick but weak insulated core

Benefits of a composite

• By <u>combining</u> the materials together you achieve a

material with properties greater than the sum of its parts:

High strength combined with low weight

- Tailored engineered properties (e.g. thermal, acoustic, strength and flammability)
- A durable and aesthetic surface finish



High strength and low weight



Sandwich panel behaves in same way as an I-Beam.

- Lighter weight steel framing can be used
- Reduced foundation thickness
- Rapid installation per m² wall
- Light weight handling systems (telehoist / vacuum lifters)





Engineered properties – Acoustics



Perforated panels for increased sound absorption



Engineered properties – Fire properties



ISO 9705 - Room corner test

Controlled calorific value of panel materials to meet new Euroclass A2 classification



Durable and aesthetic appearance

- Maintenance and inspection free coatings
- > Up to 40 year guarantee
- > Available in a wide range of RAL colours
- A range of surface profiles can be used to improve visual flatness of finished panel surface





Manufacturing technology

- 2 principle methods of continuous manufacture
 - > Auto-adhesive bonding foam injection
 - Adhesive bonding slab stock fed



Manufacturing technology



- 1. Upper and lower de-coiling units
- 2. Lower face and edge steel profiling
- 3. Upper face and edge steel profiling
- 4. Slab stock processing & in-feed
- 5. Adhesive application

- 6. Heated press unit
- 7. Flying saw
- 8. Vacuum stacker
- 9. Spiral wrapper

1. De-coiling units



- Steel sheet feed stock for upper and lower faces
- Typically primed / painted steel (0.5 -0.7mm thick)
- Single or twin coils per face



2/3. Upper and lower face & edge profiling



- Face roller to give aesthetic profile
- Edge rollers to form male/female interlocking joint
- Can also include slitting rollers for width changes

4. Slab stock processing & in-feed



- Mineral fibre slab stock cut to thickness
- Turned 90° to orient fibres vertically
- Inserted into line in offset pattern (usually arrow head)
- Board stock entered in line without pre-processing
- Online edge machining to give side profile

5. Adhesive application



Automatic adhesive application controlled by line speed
Application by bead, drip dosing, low/high pressure spray
1,2 or 3 component systems used but usually 2C

On line cleaning and flushing systems for fast adhesives

6. Pressing



- Caterpillar or roller presses
- Ducted hot air or infrared heating (35 60°C)
- > 2 10m/min line speed depending on line
 - Compression ~1% of panel thickness

7. Flying saw



- Usually band saw or circular saw
- Flying saw unit clamps onto and cuts across moving panel
- Band saw can rotate blade to cut from both sides

8. Vacuum stacker



- > Panel lifted on top face using vacuum cups
- Stacked on out-feed conveyor ready for packing

9. Spiral wrapper



- Panel stack fed automatically by conveyor
- EPS bearers added at this stage avoids need for pallets
 - Stack is wrapped with protective film (including front & back of stack)

On-site installation



- Installation on metal frame building skeleton
- Can be installed vertically or horizontally
- Vacuum lifter or panel clamps for installing panels
 - Overhead crane or telehoist depending on height

On-site installation









On-site installation - fixing methods





On-site installation – fixing methods



End use examples – Industrial building





Channel Tunnel Rail Link

Eurobond supplied over 12,000 sqm of its Rockspan Extra composite panels for the construction of the Temple Mills train depot, a key part of the Channel Tunnel Rail Link (CTRL) at Stratford. The panels not only satisfied stringent fire performance requirements, but also provided the facades with an impressively flat and lightweight appearance.

End use examples - Supermarket





Asda, Hereford

Planning demands, build time and cost were all key to the specification of Eurobond's Rockspan panels at the new Asda store in Hereford. Manufactured from a non-combustible mineral wool core, the panels will also limit flame spread in the event of a fire.

End use examples - School



Boldon School

Boldon School in the North-East reflects the extensive schools building programme taking place across the UK. The School, had certain concerns about insurers' requirements plus a desire to increase levels of sound and thermal insulation. Europanel provided the right solution.

End use examples – Food processing plant





Noon Products Ltd, Southall

The 10,034sqm building is the world's first anti-bacterial food processing plant. Eurobond's Firemaster panels coated with CES 120 Anti-static with Assure[®] from Corus were used for the walls and ceilings to reduce the potential for bacteria in overhead ceiling condensation and mould growth on walls and ceilings and tackled cross contamination from wall surfaces.