

CASE STUDY

ROOF COVER BOARDS SPECIFIED FOR DATA CENTRE IN NORTHERN SPAIN

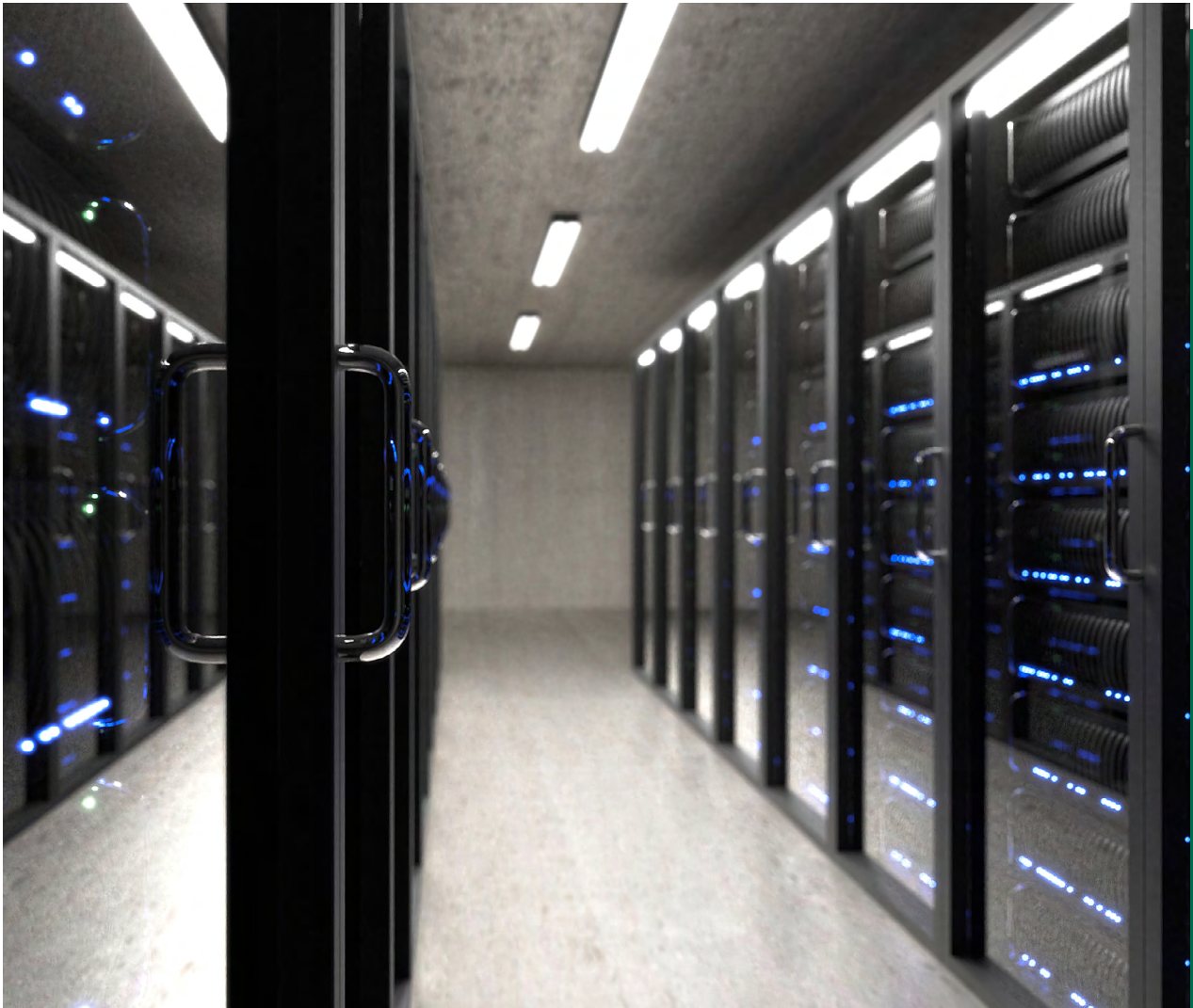


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DensDeck® Prime Roof Boards were specified as cover boards for the steel deck flat roof build-up on a mission critical data centre in northern Spain.

This particular data centre is part of a multi-site data centre development in the Aragon region. The work on site commenced in December 2020, and the data centre was ready for operation in May 2021.

The original specification for the steel deck flat roof system featured cementitious cover boards. This was changed to gypsum core [roof cover boards](#) early on. Jesús Huerta, Specification Manager for BMI Iberia, oversaw the new specification for the roofing system plans. He explains: "The key drivers for the cover board selection were fire and puncture resistance and Factory Mutual (FM) approval for the whole [datacentre roof assembly](#)."



WHY WAS PUNCTURE RESISTANCE AMONG THE MAIN SPECIFICATION FACTORS OF COVER BOARDS FOR THE DATA CENTRE PROJECT?

Businesses and critical infrastructure worldwide depend on data centres' secure and round-the-clock operation. Any downtime can be costly to the data centre, and the operations contingent on the data centre providing uninterrupted service. Emerson Network Power study estimated the average total cost of outage per minute at \$7,918 in 2016 (approximately €7,355). Reducing the risk of operational downtime and expediting project delivery is critical for any data centre project.

Planned and designed by [*Ingennus Urban Consulting SLP*](#) and [*Arup Group Limited*](#), three of the data centres in the development span over 40,000 m². The roof systems consist of steel decks, BMI self-adhesive vapour barriers, Hardrock 391 stone wool panels overlaid with DensDeck® Prime Roof Boards and mechanically fixed BMI TPO single ply membranes. The cover boards were therefore installed over the insulation layer and below the single ply membrane.

DensDeck® Prime Roof Boards are compatible with the installed BMI membrane and created a flat, firm substrate to aid the mechanical fixings. This helps protect the membrane from puncture and the insulation boards from damage. The roof of the data centre houses a large amount of heating, cooling, and air conditioning technology. The installation of the heavy plant, such as mechanical ventilation with heat recovery (MVHR), and other heating, cooling, ventilation and air conditioning equipment, and the need for frequent, regular maintenance, warranted that every effort was made to offer extra protection for the roofing membrane.



DENSDECK® PRIME ROOF BOARDS HELP ACHIEVE FIRE PERFORMANCE REQUIREMENTS

Both gypsum and fibreglass, used to manufacture DensDeck® Prime Roof Boards, are classified as non-combustible materials as described and tested by ASTM E136. The cover boards are also included in over 180,000 roofing assemblies with a [Factory Mutual](#) (FM) Class 1 fire rating. The glass mat-faced gypsum core boards help increase the fire resistance of the roof assembly from external fire sources when installed as a cover board. This is key for the data centre roof with many electrified HVAC systems, plant, and technologies. Incidentally, the cover boards also help protect the membrane from externally transferred fire sources, such as embers, that can often be carried by wind and cause unexpected fires.

Jesús explains what certification he looks for when specifying coverboards: "There are certifications that I often prerequisite for a project; UL Class A1, BRoofT1 and Bs1-d0 as per BS-EN 13501-1. The FM 4470 is now a standard requirement for many clients."



WHY WERE FM APPROVALS CRITICAL FOR THE DATA CENTRE FLAT ROOF?

FM Approval is one of the main specification drivers in the US. Each building product that passes the five-step approval process is issued with an FM mark to support property loss prevention and signify that FM believes the products will perform as expected. FM has their own fire performance testing, and this is extraordinarily stringent. European designers, specifiers and installers are increasingly leaning on FM Approval when selecting roof build-ups.

Jesús continues: "Due to the cost implications of any unexpected roof maintenance, the client was looking for building materials capable of delivering something that would correspond to the well-known warranty known in the US as NDL – No Dollar Limit. This means that the warranty covers the cost of any repairs, regardless of the cost. We at BMI offered our Solution Guarantee, which matched the NDL. However, the FM Approval of the roof system was critical for the specification."

The concept of FM Approval is concerned with property protection and property loss prevention. The FM Approval strategy is based on collected data of losses incurred over the years. This set the development of over 200 approval standards. Specifying a product such as DensDeck® Prime Roof Boards, a product with FM credentials available for a significant number of installations across flat and low slope roofs, offered the client extra assurance of quality and durability.

We asked Jesús if he had specified DensDeck® Prime Roof Boards before. "In my opinion, they are a building element that offers the opportunity to improve the quality of construction and improve technical figures and performance of our (BMI) roofing systems."



[Contact us](#) for more information on DensDeck® Prime Roof Boards. We are happy to discuss how our range of roof and cover boards can help overcome project-specific challenges with data centres and achieve performance requirements.

DENSDECK RESOURCES

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And you can read more case studies [here](#)

CONTACT US: densdeck.buildgpc.com/contact-us

EMAIL: DensInternational@GAPAC.com



GP Gypsum LLC, 133 Peachtree Street, N.E. | Atlanta, Georgia 30303

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FIRE SAFETY

CAUTION: Passing a fire test in a controlled laboratory setting and/or certifying or labelling a product as having a one-hour, two-hour, or any other fire resistance or protection rating and, therefore, as acceptable for use in certain fire rated assemblies/systems, does not mean that either a particular assembly/system incorporating the product, or any given piece of the product itself, will necessarily provide one-hour fire resistance, two-hour fire resistance, or any other specified fire resistance protection in an actual fire. In the event of an actual fire, you should immediately take any and all actions necessary for your safety and the safety of others without regard for any fire rating or any product or assembly/system.