Case study

Hospital uses ROCKWOOL® insulation to meet acoustic and thermal targets

Grange University Hospital, Cwmbran

ROCKWOOL®

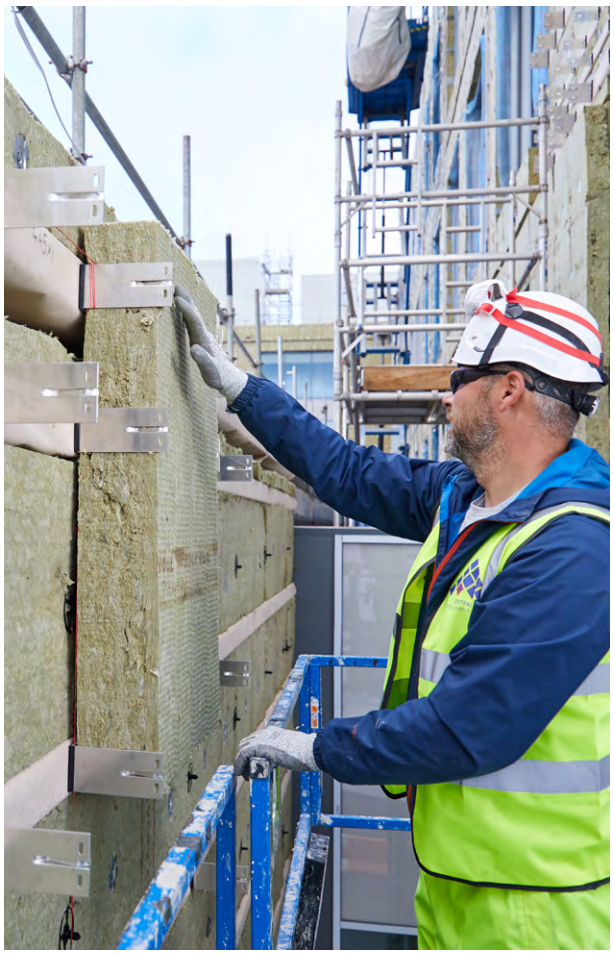
The project

The Grange University Hospital is a new £350m hospital in Cwmbran, Wales. This state-of-the-art facility forms part of a wider strategic plan which will see Aneurin Bevan Health Board significantly modernise its health service provision.

Originally known as the Specialist Critical Care Centre, the 471-bed facility will bring together more than 40 complex and more acute services onto one site and serve over 600,000 people per year.

As a major healthcare project, main contractor Laing O'Rourke commissioned Central Roofing South Wales Ltd to design and install the roofing and cladding systems – with ROCKWOOL® providing the ideal solution to meet the architect's non-combustible specification.

The site is expected to be operational in November 2020, much earlier than a previously announced date of 2021. This is due to construction programmes being accelerated to ensure the facility could be partially opened as a Nightingale (COVID-19) Hospital, if needed.



The challenge

Plans for the Grange University Hospital were finally given the go ahead in October 2016, with Central Roofing South Wales Ltd working to a façade design which specified PIR insulation on the external of the steel frame structure.

By the time construction started in July 2017, the architect upgraded the specification to non-combustible insulation. This left Central Roofing South Wales Ltd with the challenge of updating the design while minimising impact on the building footprint.

In addition to fire protection considerations, the building design also demanded that a U-value of 0.18W/m²K be achieved in the through-wall construction.

The use of non-combustible insulation was also a key requirement for areas of the flat roof, particularly in critical areas above compartment walls. Central Roofing South Wales Ltd highlighted that non-combustible insulation was needed to insulate the metal deck profiles. This was to provide effective protection in the event a fire started inside the building.

As the architect upgraded the insulation specification to be non-combustible, the design had to be updated while minimising impact on the building footprint.

The solution

Having partnered with ROCKWOOL on previous projects, Central Roofing South Wales Ltd knew that stone wool insulation is rated non-combustible and felt confident in the company's ability to meet the high volumes of insulation which would be required for the specialist site.

Moreover, as the design had to be changed to stone wool insulation and the package revised in a matter of weeks, Central Roofing South Wales Ltd was confident that ROCKWOOL could provide the necessary technical partnership via U-value calculations and supporting the system design.

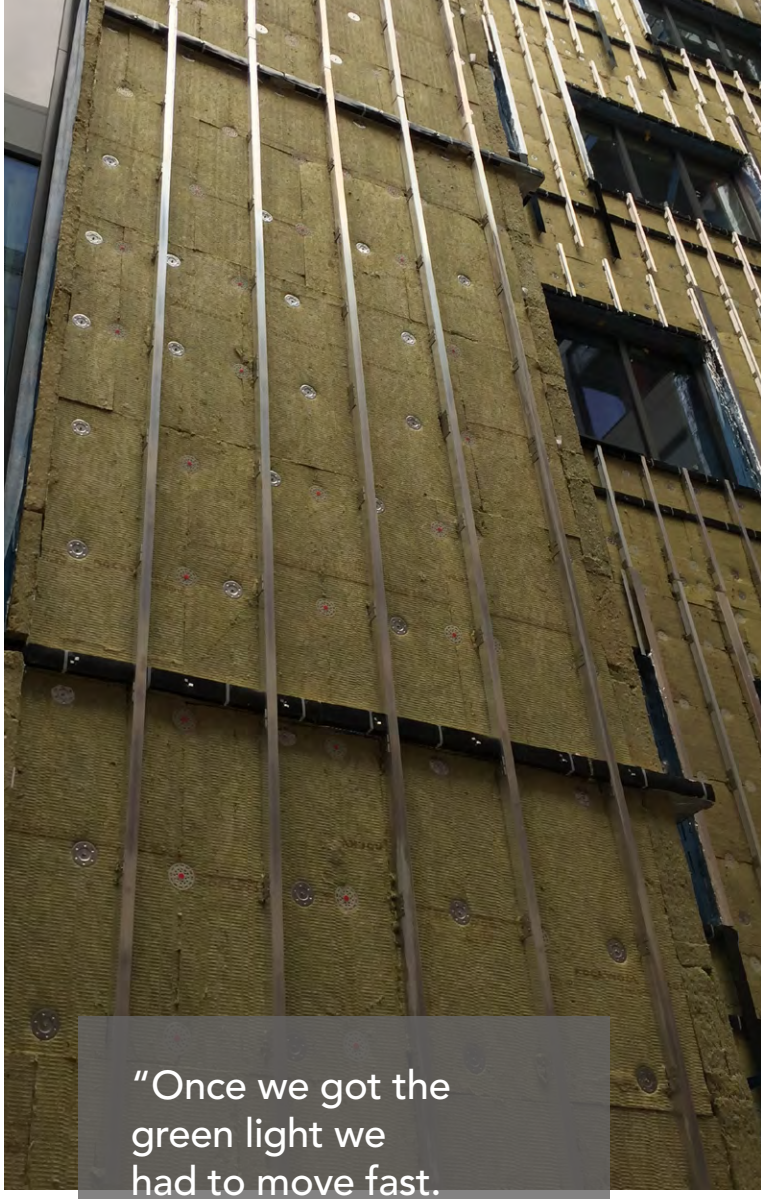
Working in partnership with ROCKWOOL, Central Roofing South Wales Ltd revised the façade insulation design to incorporate ROCKWOOL RainScreen Duo Slab®, a dual-density and BBA-certified stone wool insulation product which delivers acoustic, thermal, and fire performance all in one solution.

Once installed, the robust outer surface of the slabs, in combination with a factory applied water repelling agent, acts to resist rain ingress during construction.

Over the duration of the 18-month site programme, Central Roofing South Wales Ltd installed 9,840m² of ROCKWOOL RainScreen Duo Slab, completing the through-wall build-up with a series of non-combustible exterior rainscreen cladding finishes.

On the flat roof 3,930m² of liquid membrane system was installed, with ROCKWOOL HardRock® Multi-Fix Dual Density laid above the metal deck areas to ensure regulation compliance.

For the firestopping, approximately 25,000 penetration seals were installed throughtout the scheme using 3rd party certified products from the ROCKWOOL FirePro® Range.



"Once we got the green light we had to move fast. ROCKWOOL was instrumental in helping us to revise the designs at short notice, providing robust technical calculations that gave us confidence in product performance. The fact that we could deliver a non-combustible façade solution with such a small increase in footprint, was a real achievement."

Tony Davies
Managing Director
Central Roofing South Wales Ltd

The result

The transition from PIR insulation to stone wool insulation is traditionally associated with an increase in wall thickness. However, leveraging intelligent system design with ROCKWOOL RainScreen Duo Slab enabled Central Roofing South Wales Ltd to deliver a non-combustible façade build-up with just a 100mm increase in wall depth.

Central Roofing South Wales Ltd accommodated the accelerated build programme by working in close partnership with ROCKWOOL and SIG.

Although the expedited installation resulted in some supply chain issues with the cladding finishes, Central Roofing was able to continue its works as scheduled because RainScreen Duo Slab could withstand exposure to the elements, without product performance being compromised.

"The Grange University Hospital is one of the largest projects we have delivered as a business. It proved a critical success factor that we could continue constructing the façade without having to protect the insulation as this saved us valuable time on-site – enabling us to complete ahead of schedule."

"It's only a matter of time before the building regulations stipulate non-combustible insulation should be used in all building facades – not only dwellings above 18m. Working with ROCKWOOL on this project was a gamechanger. They gave us the support we needed – from design through to installation – to deliver a healthcare building that we know is not only safe, but will also create a comfortable interior environment for visitors, staff and patients."

Tony Davies
Managing Director
Central Roofing South Wales Ltd