Radmat®
building products

GUARANTEED ROOFING SOLUTIONS

ProTherm Quantum®

The world's thinnest inverted roof insulation

What is Quantum®?

The world's first BBA Certified Inverted Roof Insulation

The limitation of traditional inverted roof insulation products can make it difficult for a designer to insulate above a habitable space against the backdrop of increasing thermal requirements when meeting the desire to maximise the glass facade and cater for a level threshold; creating a near impossible task, now made easier with Quantum®.

ProTherm Quantum VIP Inverted Roof Insulation System provides a state of the art insulation solution for inverted roofs designed to be used as balconies, terraces, podiums and green roofs built over heated space. Thanks to its ultra-high thermal performance the Quantum system can dramatically reduce the thickness of an inverted roofing system without compromising on thermal performance, whilst still achieving level thresholds.

The power behind the high thermal efficiency of the **ProTherm Quantum VIP Inverted Roof Insulation System** is a rigid Vacuum Insulation Panel (VIP). Consisting of a compressed fumed silica sand microporous core which is evacuated of air and moisture the core is encased in a special thin, gas-tight, hybrid aluminium foil envelope before having all air removed and the overlap joints sealed. The resulting VIP panel gives an outstanding thermal conductivity, providing the thinnest possible Inverted Roof insulation solution currently available.

British Board of Agrément Certified (No. 16/5347) for inverted roofing applications, ProTherm Quantum has been assessed in accordance with ETAG 031 and has a Declared (aged) thermal conductivity of 0.008 W/mK, up to five times better than other commonly available inverted insulation materials

Whether designing an inverted roof to achieve the lowest possible Surface Slab Level to Finished Floor Level (SSL-FFL), or rectifying unexpected slab or floor level issues **ProTherm Quantum VIP Inverted Roof Insulation System** is rapidly becoming the system of choice for inverted roofs, terraces, podiums and balconies.

Lose height, gain value

Developed by inverted roof experts to solve regularly occurring challenges created by the drive for more thermallyw efficient buildings, safer access and more external space, the **ProTherm Quantum VIP Inverted Roof Insulation System** enables architects to dramatically reduce the depth of a finished roof system; providing the solution to counter low upstands against the increasing thickness of traditional EPS & XPS products specified in order to meet more stringent thermal demands.

Where is it best used?

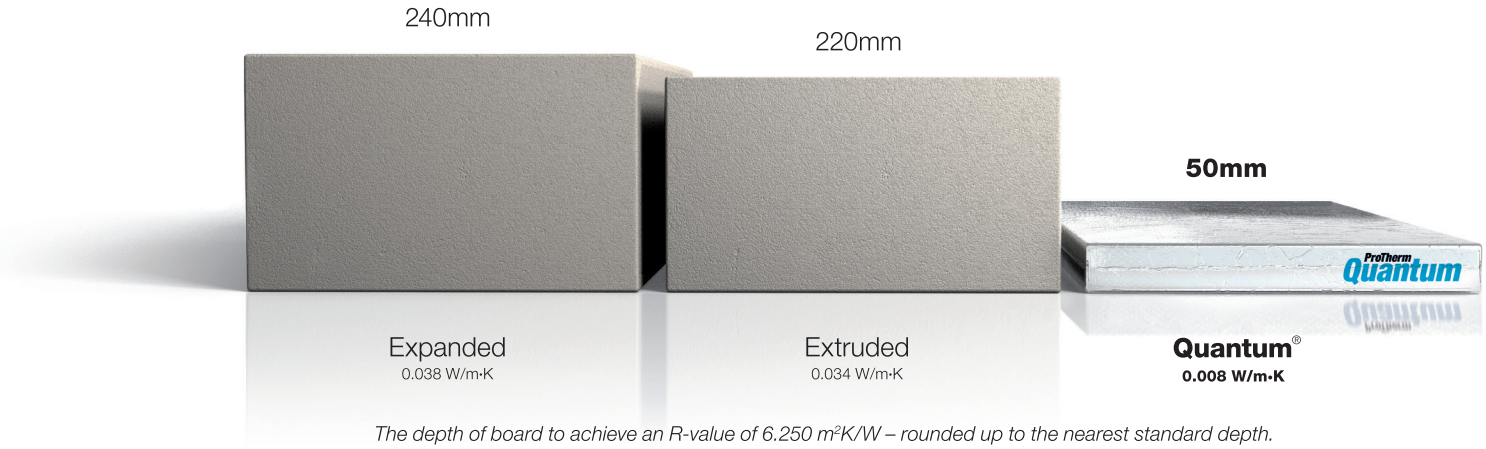
On terraces and balconies where there is a requirement for thermal performance, and any insulated area where depth is critical to the overall construction.

What can it help to deliver?

- **Part M Compliance:** Level threshold to external balcony ✔
- **Part L Compliance:** Exceptional thermal performance ✔
- **NHBC Chapter 7.1 Compliance:** Insurance and warranty requirement of 75mm threshold achieved ✔

What does it save?

ProTherm Quantum® delivers an exceptional reduction in overall depth compared to a traditional inverted system. The image below highlights the impressive thermal performance.



The depth of board to achieve an R-value of 6.250 m²K/W – rounded up to the nearest standard depth.

Scan the code or visit the Quantum® website at:

prothermquantum.com

The Anatomy of Quantum®

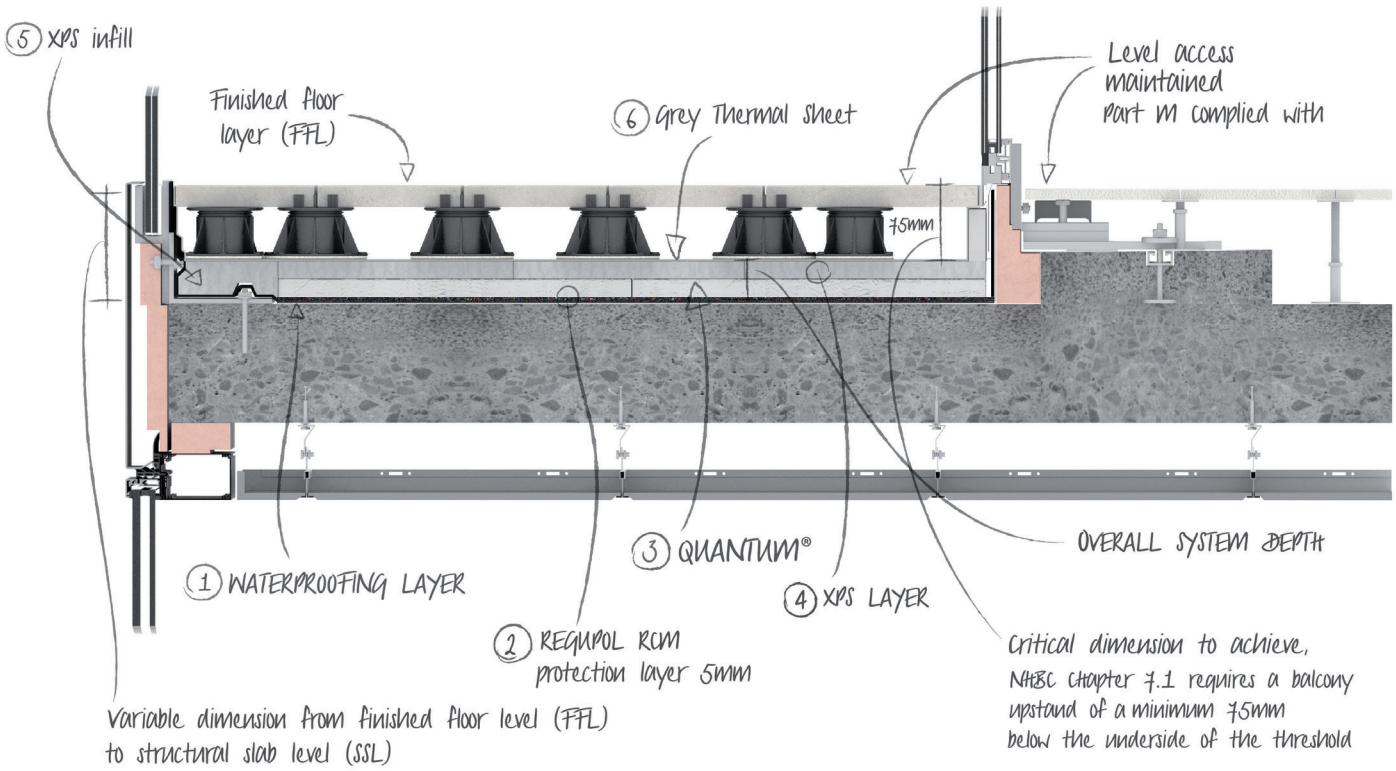
The ProTherm Quantum® system is made up of a rubber crumb base layer factory bonded to the VIP insulated panels, with the exceptional performance of the Quantum® VIP being achieved by the retained vacuum; requiring the Quantum® panels to be used in their supplied size only i.e. they cannot be cut under any circumstance. Using a range of panel size ranging from 300 x 300mm to 1200 x 600mm the Quantum® Design Team create an optimized laying pattern for every project, using 'Flex Infill', a high performance XPS insulation, where the insulation is required at perimeter infills or where they need to be cut on site to fit around penetrations, outlet, curved upstands etc.

The Quantum® Systems

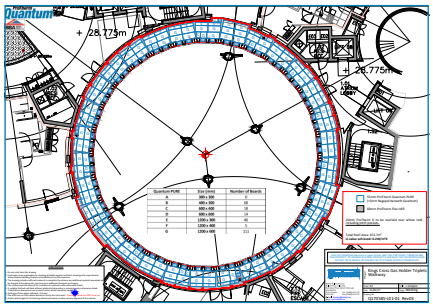
A **ProTherm Quantum® *Hybrid*** inverted roof system is our most popular solution. Using a combination of both XPS and Quantum® we can normally supply an exceptional thermal outcome without compromising the internal upstand and deliver the ability to maintain a level floor between both internal and external spaces.

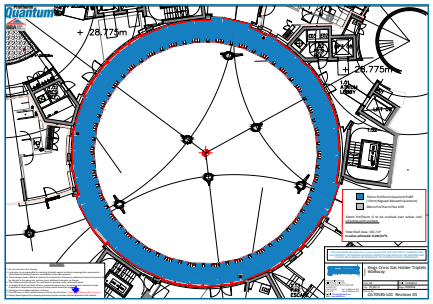
A **ProTherm Quantum® *Pure*** inverted roof system is the thinnest solution possible where the severe lack of space calls for using just the Quantum® panel. Even in these challenging conditions this system will offer outstanding results.

In the example U-Value Calculation chart opposite (column 1), we have inserted common measurements from a structural slab to a finished floor level. As highlighted on the 2D section below, an overall system depth (column 7 of next page) can be measured once the 75mm needed to comply with NHBC requirements has been deducted.



Quantum® Performance





Radmat Building Products design and calculate every Quantum schemes in house, offering a full service from initial outline design, thermal calculation to pre-delivery site survey. Considering the insulation early in the design process will ensure maximum thermal performance achieved, by the minimum available thickness.

Calculating the 'U' Value accurately requires a good understanding of the roof dimensions and the location of anything bridging the insulation zone. Examples being: Fall arrest and balustrade posts, plinths, rooflights, Soil Vent Pipes etc. The location of these bridging elements will have an effect on the percentage of Flex Infill required, this percentage is then considered when calculating the U. Value for the roof area by an 'area weighted U. Value calculation'.

To illustrate the effect on the thermal performance of the flex percentage please see below three examples using the same thickness of Quantum with a range of Flex Infill percentages:

Quantum System thickness 85mm*

Flex percentage	10%	15%	20%	25%
Area weighted 'U' value (W/m²K)	0.12	0.14	0.15	0.16

** 5mm Regupol, 75mm Quantum, 5mm Regupol with 250mm concrete deck, ceiling void and plasterboard ceiling.*

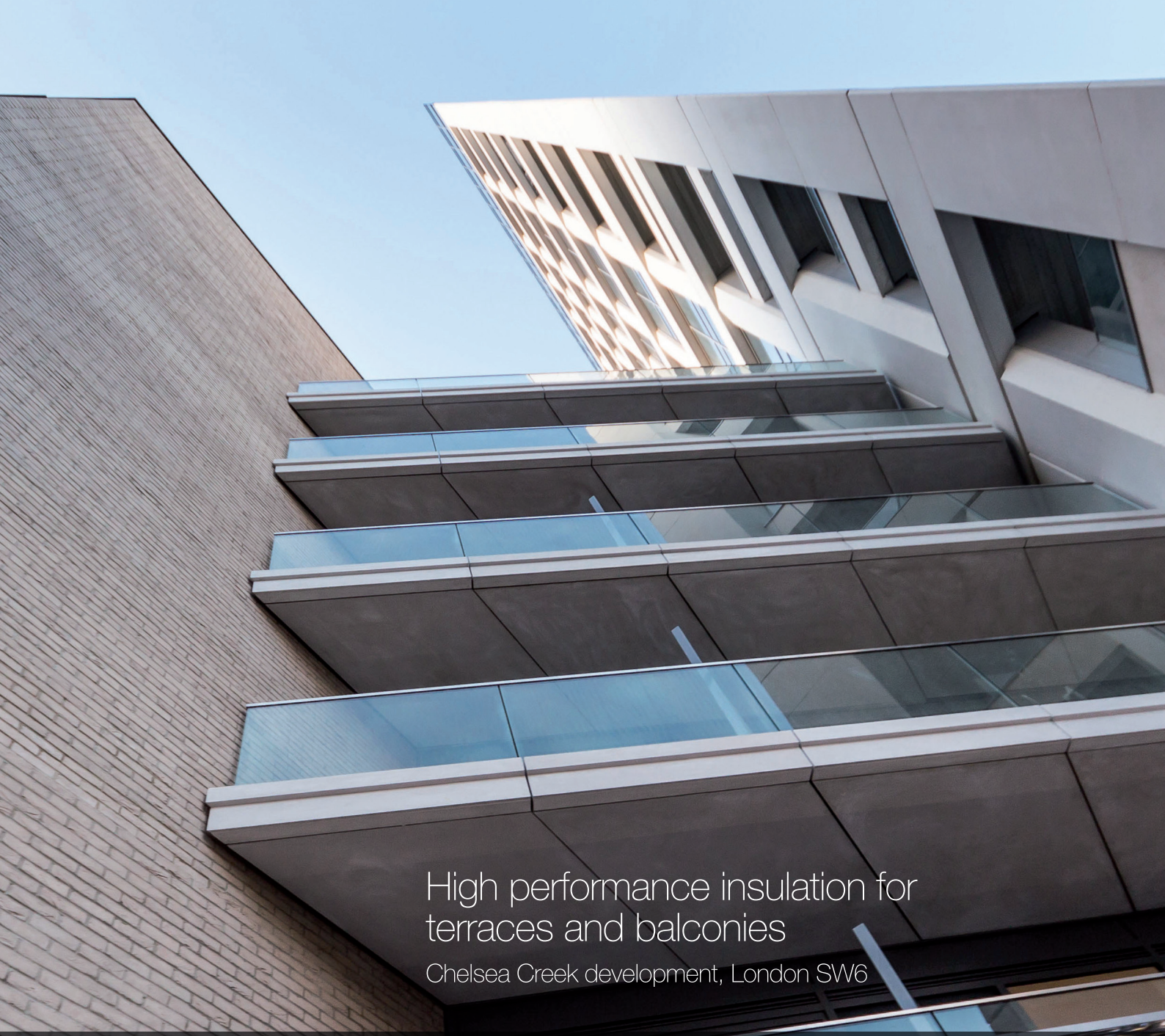
ProTherm Quantum Hybrid

ProTherm Quantum System, U' values based on 15% Flex installed over 250mm concrete deck, ceiling void and plasterboard ceiling.						
1	**2**	**3**	**4**	**5**	**6**	**7**
U-value W/m²K	**SSL-FFL (mm)**	**System Height (mm)**	**XPS (mm)**	**Quantum® (mm)**	**Regupol RCM (mm)**	**Waterproofing (mm)**
0.20	190	115	80	20	5	10
0.15	250	175	140	20	5	10
0.14	190	115	50	50	5	10
0.13	190	115	30	70	5	10
0.13	250	175	120	40	5	10
0.11	250	175	100	60	5	10
0.09	250	175	80	80	5	10
0.08	250	175	50	110	5	10

ProTherm Quantum Pure

0.23	135	60	5	40	5	10
0.21	140	65	5	45	5	10
0.18	150	75	5	55	5	10

These U-values are based on the construction shown on the 2D section, however to obtain a specific thermal performance for your project please contact our technical department on 01858 410372 or email techenquiries@radmat.com



High performance insulation for terraces and balconies

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