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Thanks for joining us
The webinar will begin shortly

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Roof Insulation Design - Revised H1 Schedule Method

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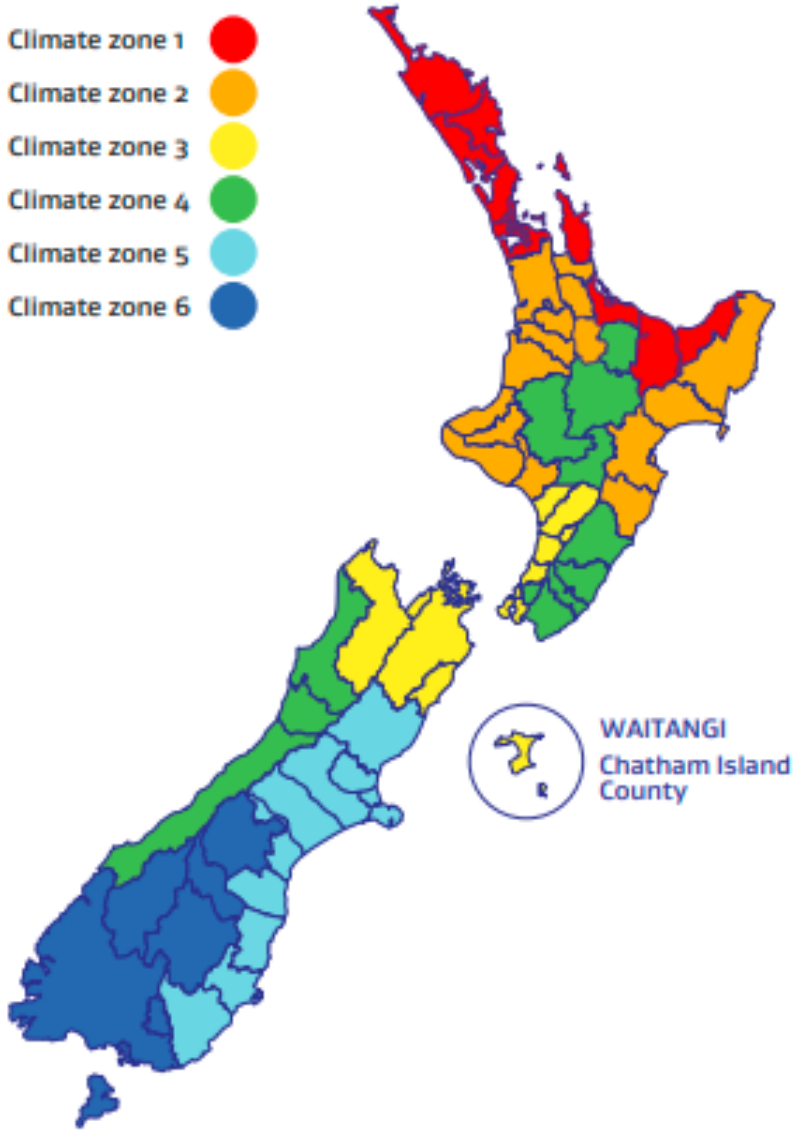
New Zealand Climate Zones



H1 – Residential and Small Buildings

Increase in minimum R-values for residential and small buildings

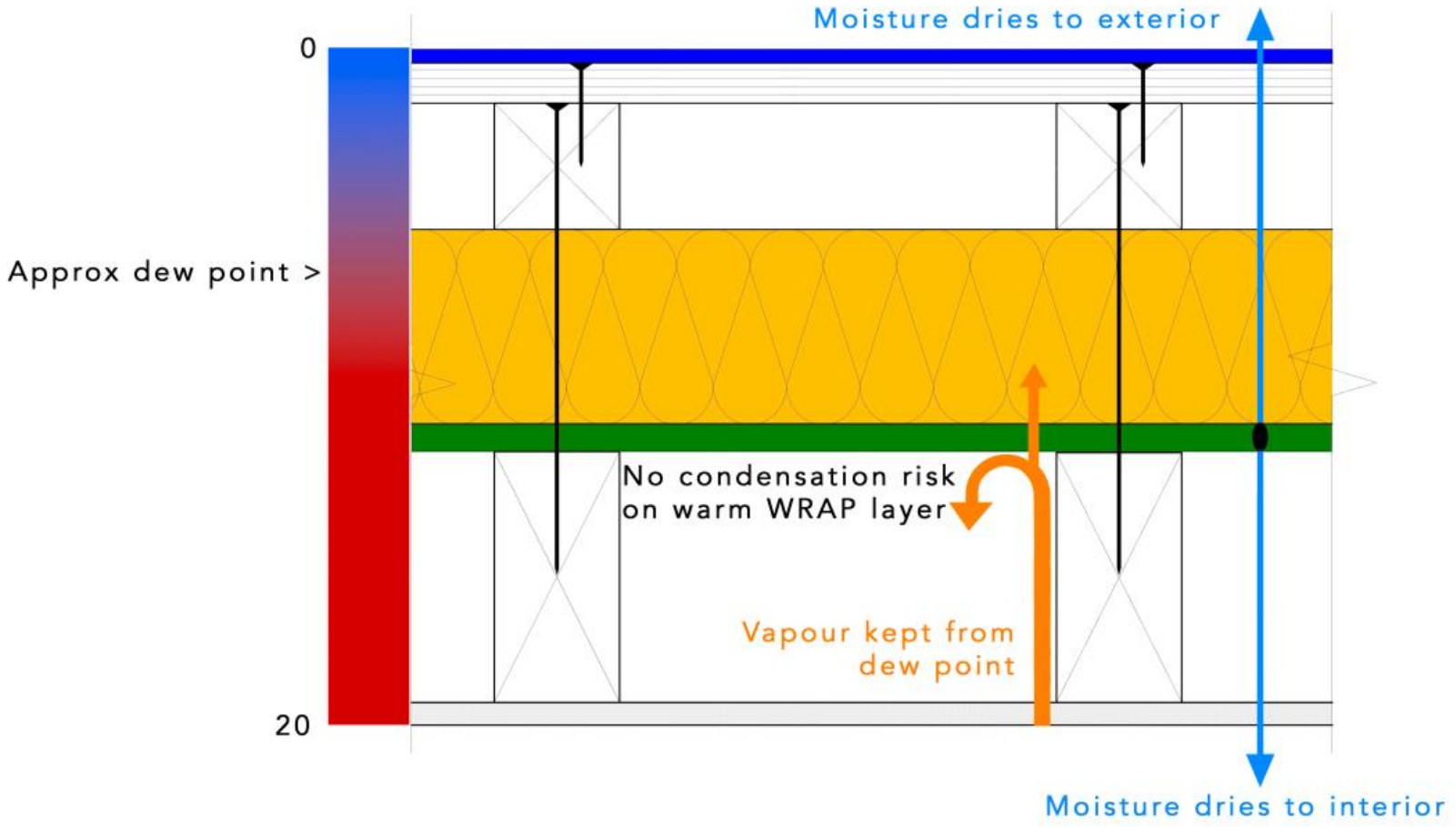
ROOFS	1	2	3	4	5	6
Was	2.9		2.9/3.3		3.3	
Now	6.6					

H1 – Large Buildings

Increase in minimum R-values for large buildings (over 300sqm)

ROOFS	1	2	3	4	5	6
Was	1.9					
Now	3.5	4	5	5.4	6	7

Control Layers



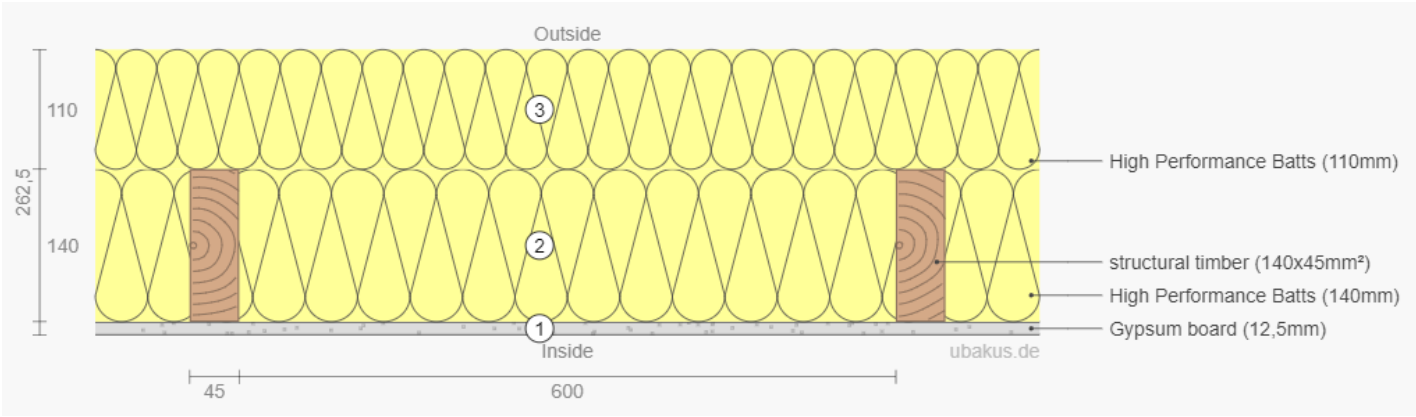
Layers

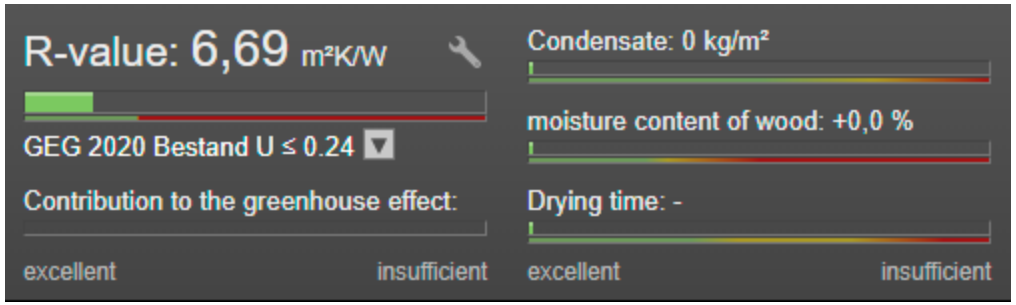
- Water Shedding
- Water, Air & Vapour Control (WRAP)
- Thermal

Source: [A Designer's Guide to Outsulation for High-Performance Walls]

Vented Attic Roofs

Vented Attic Roofs – cold roof approach

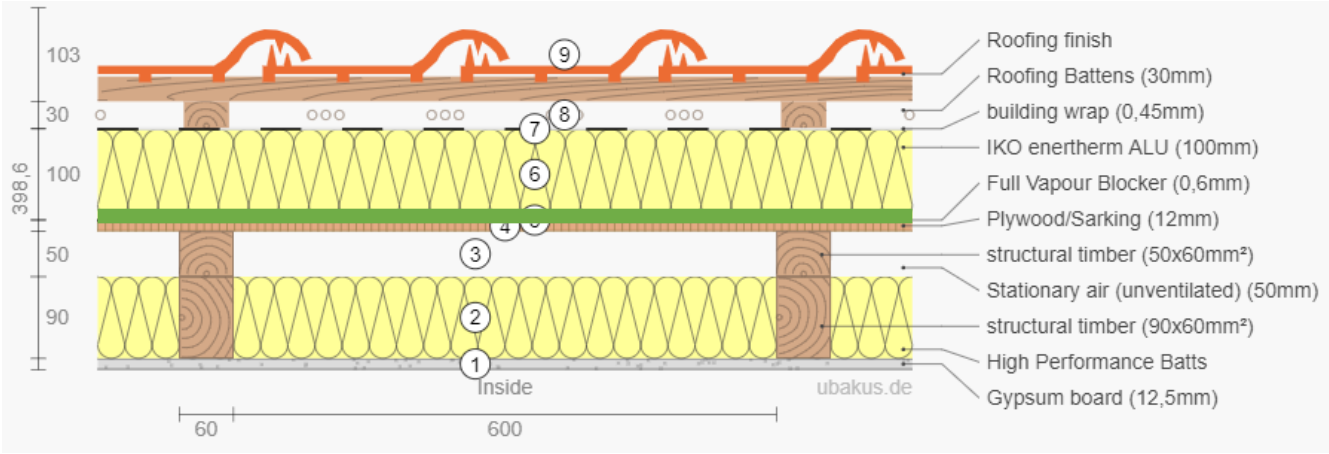


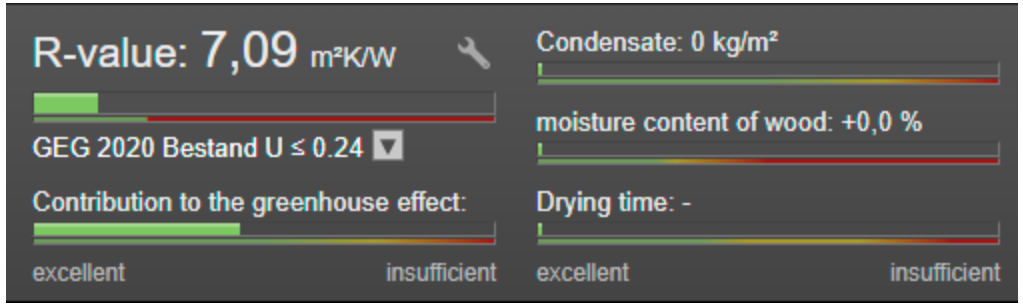


- Insulation thickness = 250mm.
- Insulation laid in two layers with one across rafters. Thinner insulation by eaves is permitted.
- Makes attic difficult to access or utilize.
- Poor air control through the enclosure.

Hybrid Warm Roof approach

Illustrative only

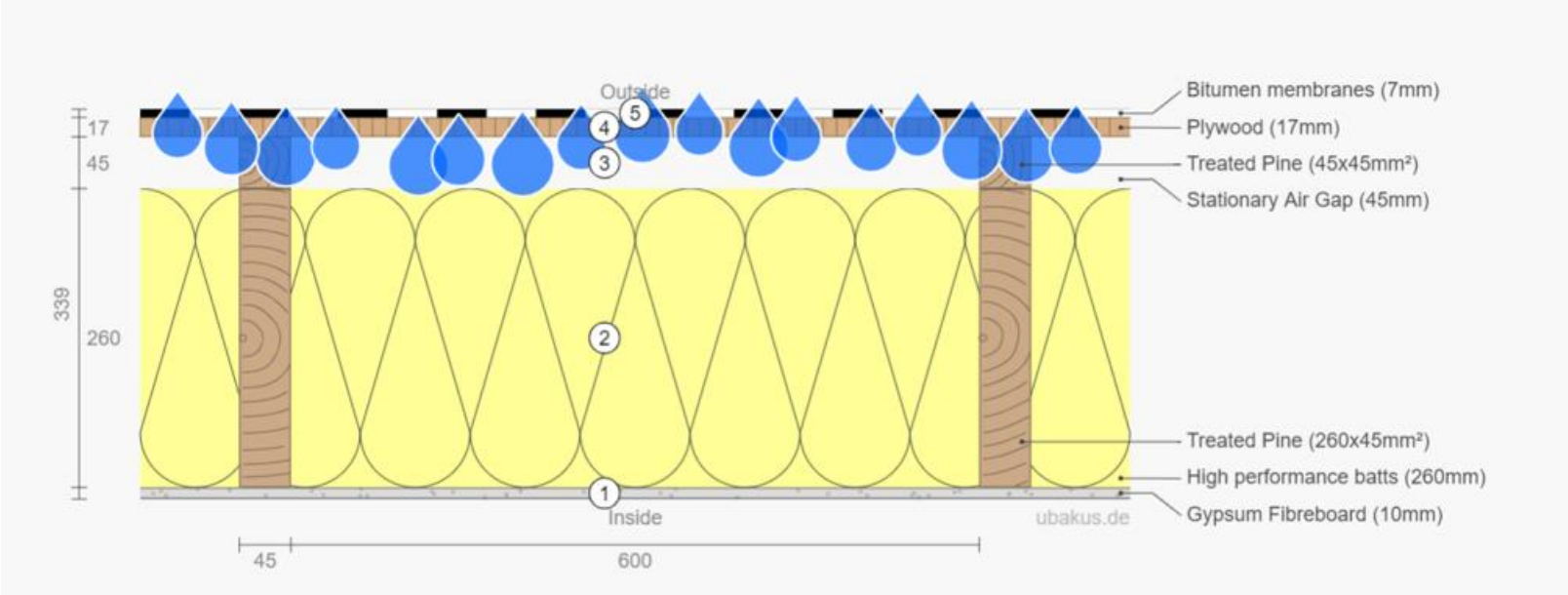




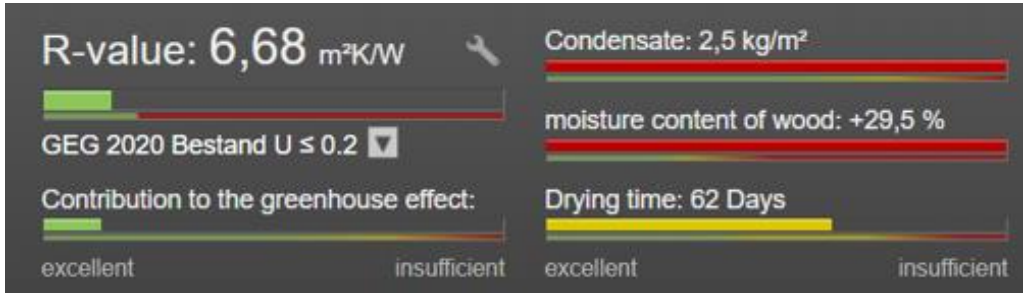
- Insulation thickness = 190mm.
- Attic is conditioned which is preferrable for mechanical ventilation.
- Create a usable attic space.
- WRAP layer is compatible with high performance walls.

Flat Roofs

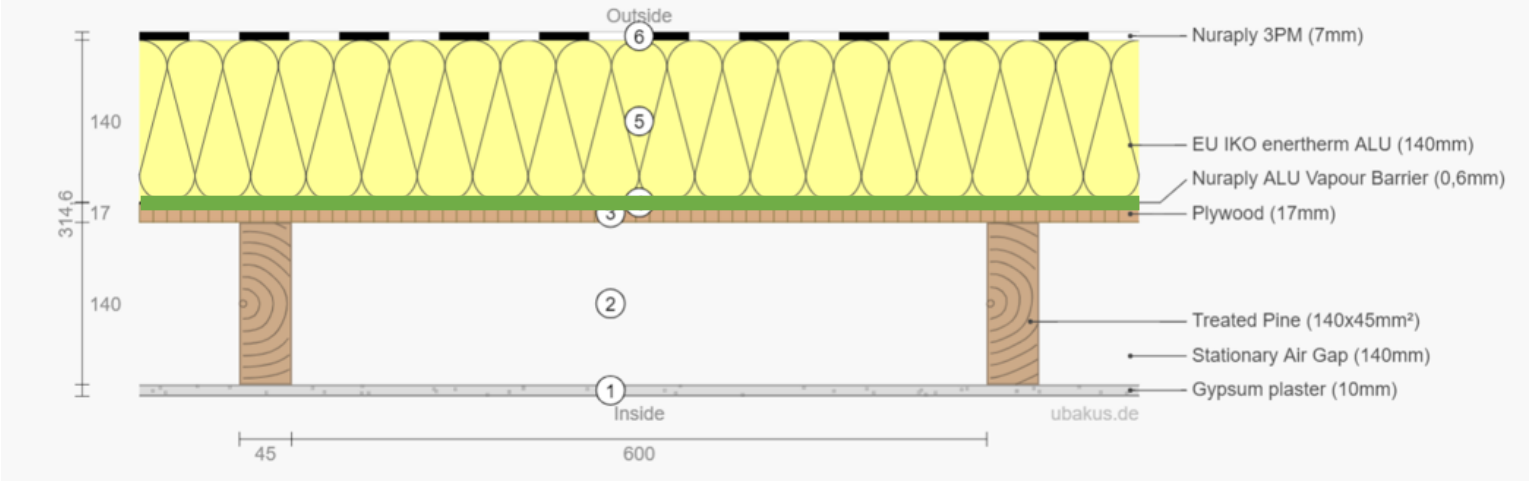
Flat Roofs – Cold Roofs are a poor solution



- Insulation thickness = 260mm.
- Not possible to ventilate adequately.
- Installing a vapour barrier at the gib layer is not possible (without creating another ceiling layer which adds more depth).
- Considerable depth of insulation required to achieve the needed R-value.

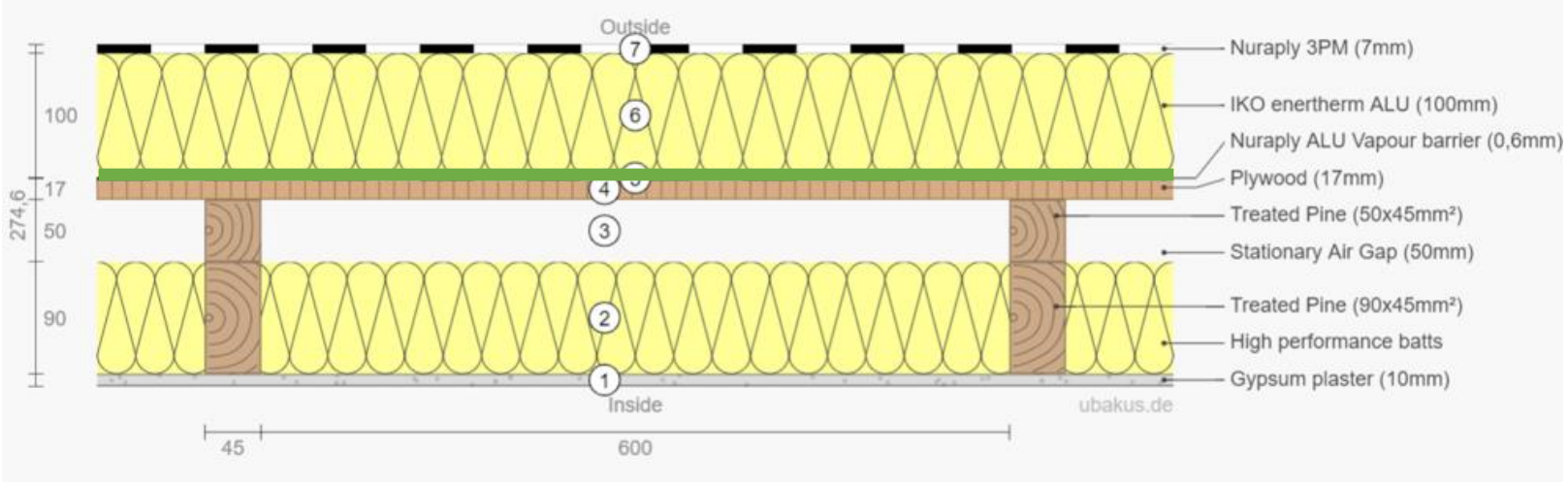


Flat Roofs – Warm Roof system



- Insulation thickness = 140mm (2 x 70mm).
- Far more robust and lower profile system.
- WRAP layer is compatible with high performance walls.

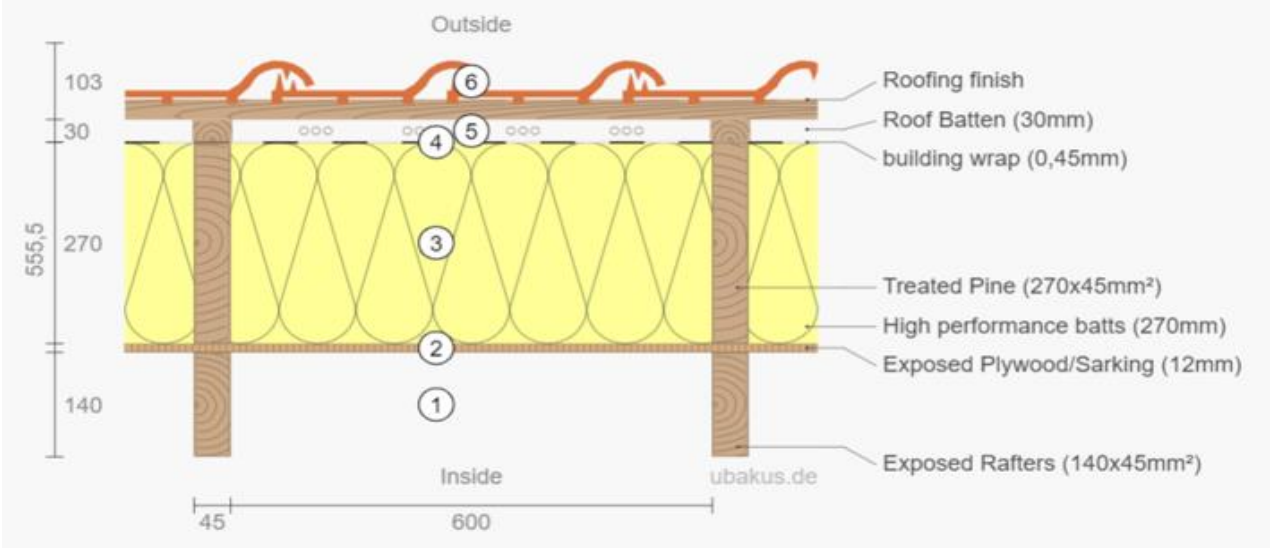
Flat Roofs – Hybrid Warm Roof system



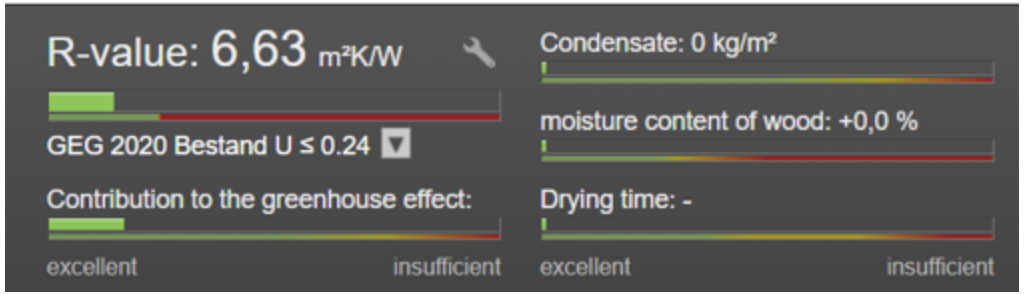
- Insulation thickness = 190mm.
- A thinner system again but requires a careful balance of insulation above and below the vapour barrier.
- WRAP layer is compatible with high performance walls.

Skillion Roofs

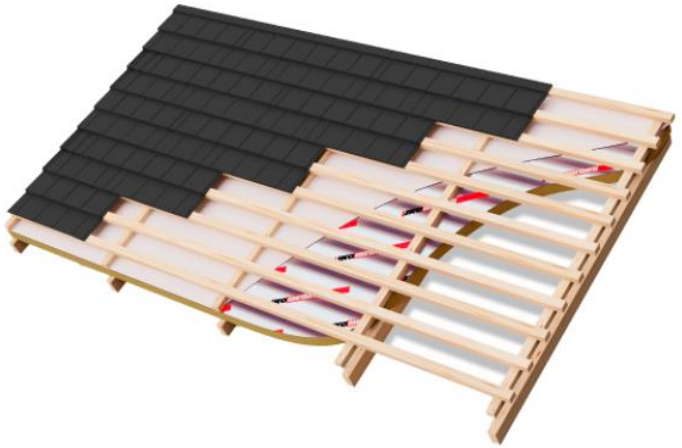
Skillion Roofs – Traditional approach



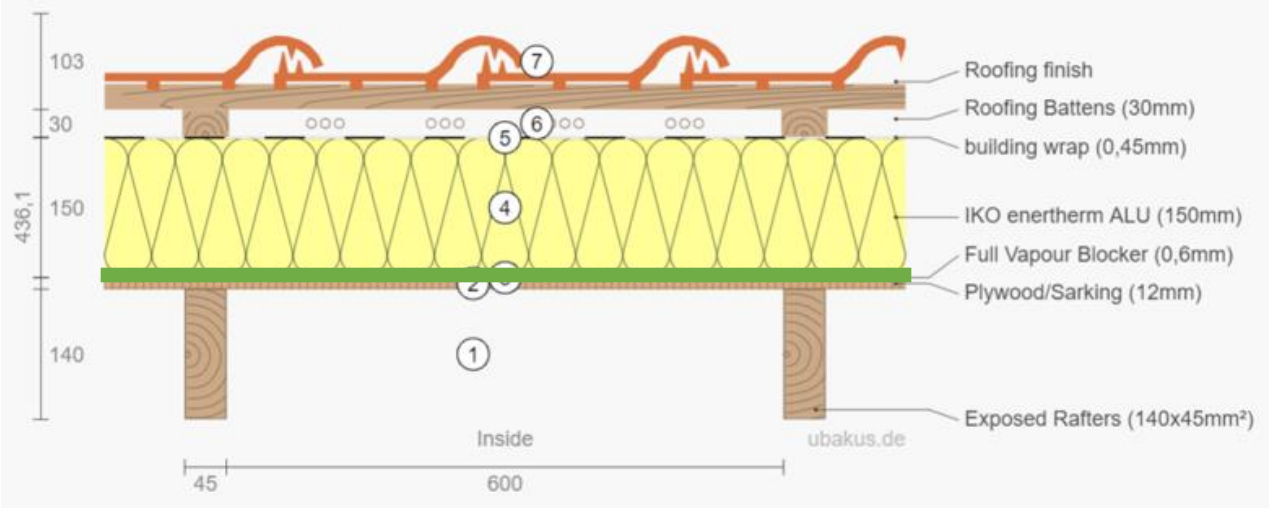
- Insulation thickness = 270mm.
- The entire roof is very deep.
- Requires good airflow to ensure performance.



Skillion Roofs – Warm Roof approach



GERARD
Roofing Designed to Endure



- Insulation thickness = 150mm.
- Roof system 120mm thinner than traditional approach.
- WRAP layer is compatible with high performance walls.

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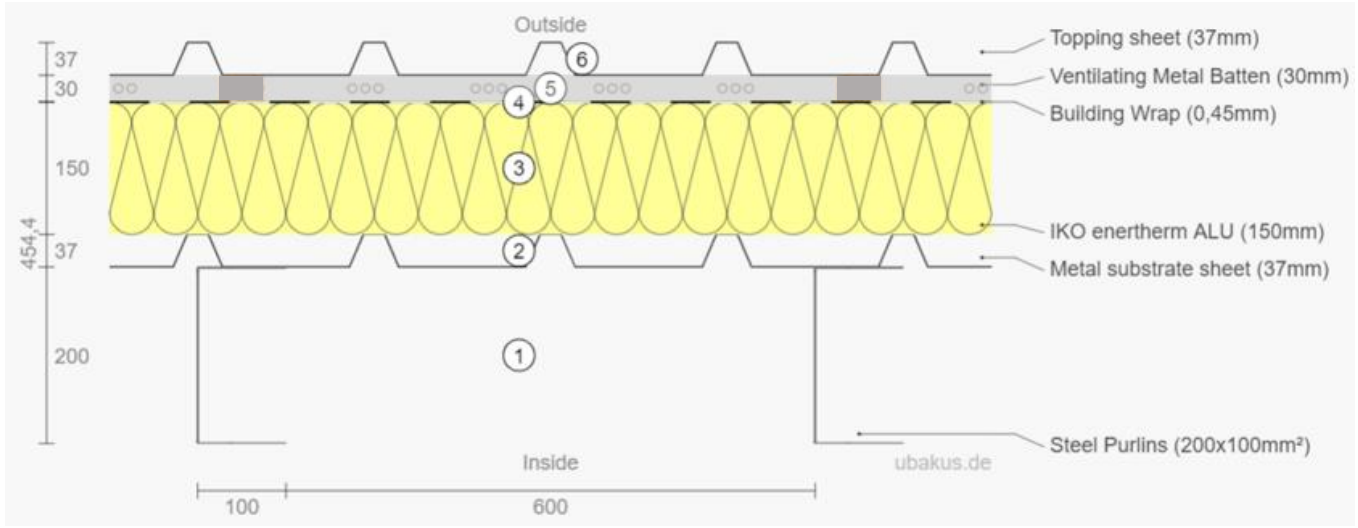
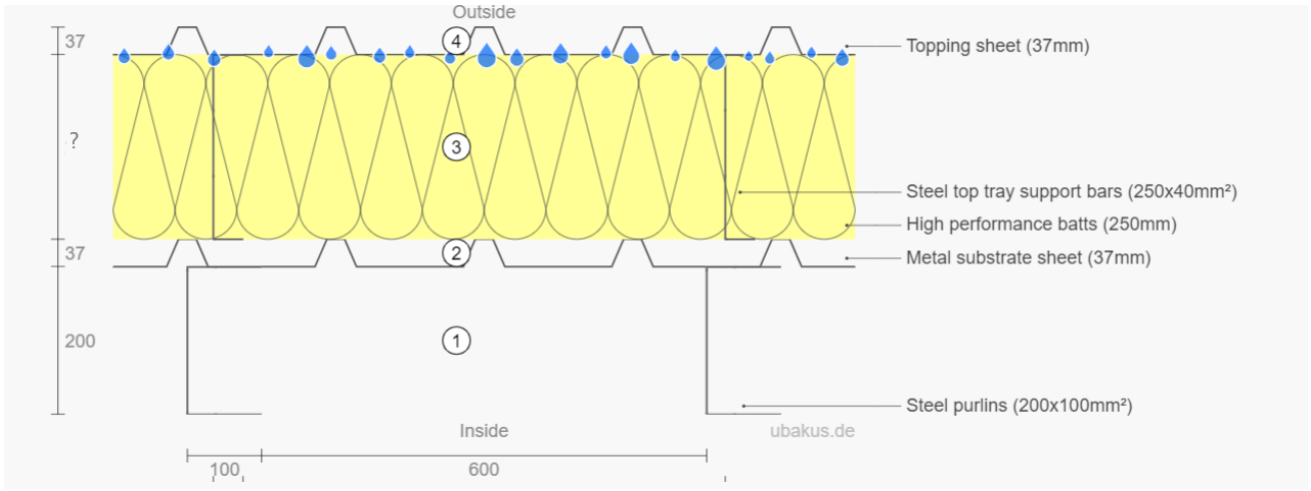
Commercial Roofs

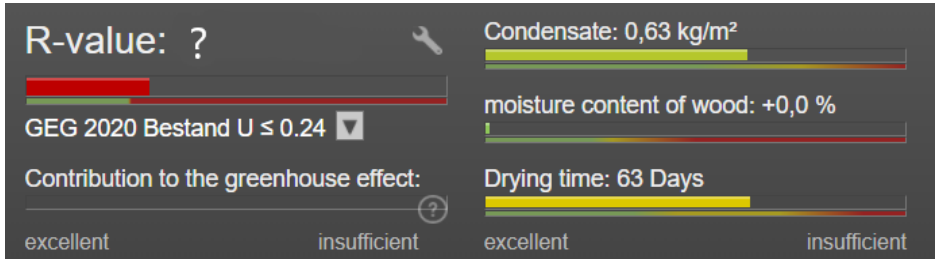
Commercial roofs – Warm Roof with air flow approach



- Insulation thickness = 150mm.
- Requires good airflow to ensure performance – failure to ventilate above the insulation may result in condensation and system stress.

Commercial roofs – Lofted insulation approach





- Lack of airflow risks condensations buildup – compromising insulation and risking premature degradation of the roofing.
- Frames have high thermal bridging cost which should be independently evaluated.

Summary

- Installing a WRAP layer improves roof performance and reduces risk.
- Airflow above the insulation layer assists with moisture dissipation.
- Consider thermal bridging – the construction R-value is the critical number.
- PIR insulation is a useful way to achieve high insulation values with minimum roof buildup.

Give thanks

- **Kids Can** - levels the playing field for children by giving them the same opportunity to learn as anyone else.
- **Women's Refuge** - New Zealand's largest nation-wide organisation that supports and helps women and children experiencing family violence.
- **Christmas Box** - a grassroots local initiative, delivering Christmas gift-wrapped food boxes to neighbouring families in need.
- **Auckland City Mission** - supporting those in need to achieve transformation in their lives.
- **Kiwi Harvest** - collects good food before it goes to waste and get it to those in need.