Timber frame construction can provide sustainable solutions for highly insulated, airtight homes that will meet the most onerous energy performance requirements.

Actis has developed solutions for ‘Hybrid’ timber structures which uses a combination of insulation between and across timber studs, which together enhance the many advantages of this traditional way of construction in terms of thermal performance, speed, cost and quality.

This information sheet covers solutions with the following products:

### HCONTROL HYBRID

A multifoil blanket insulation with built-in vapour control function, 45mm thick.
- Vapour control layer according to EN 13984
- Airtight according to EN 12114
- Thermal performance measured according to EN 16012:
  - Core R-value: R=1.90m²K/W Emissivity: ε=0.06
  - Real life testing according to ISO 8969
- Fully certified
- LABC and LABSS Registered Detail (RD461)
- NHBC accepted when used in accordance with the certification.

### HYBRIS

A new reflective insulation product, providing an excellent thermal performance, further enhanced by low emissivity outer films. Available in thicknesses from 50-205mm.
- European Technical Approval No.13/0121
- Vapour resistance: Z=450MNs/g
- Airtight according to EN 12114
- Thermal performance measured according to EN 16012:
  - Thermal conductivity: λ=0.033 W/mK
  - Emissivity (inner/outer): ε=0.06 / 0.10
- Vapour Resistance: Z=450MNs/g
- Real life testing according to ISO 8969
- Fully certified
- LABC and LABSS Registered Detail (RD462)
- NHBC accepted when used in accordance with the certification.

The following cross sectional drawing shows the main elements of this wall solution. These are:

- HYBRIS insulation installed between timber studs
- HControl Hybrid installed internally across the face of timber studs

Service battens to provide an integrated low-e service void, service void to assist follow up trades.

PF56: HCONTROL HYBRID + 105mm HYBRIS

**U-VALUE REACHED:** 0.16 W/m²K
Hybrid products combine airtightness and vapour control properties with insulation and therefore offer a complete solution against heat loss through the building fabric: low U-values, excellent thermal bridging and airtightness.

**CONTRIBUTION TO THERMAL EFFICIENCY**
The thermal efficiency of the building fabric is usually composed of:

- **45%** THERMAL TRANSMITTANCE (U-VALUE)
- **30%** AIRTIGHTNESS
- **25%** THERMAL BRIDGING

**AIRTIGHTNESS**
Through good design and execution, buildings with HCONTROL HYBRID can achieve an air permeability below 1m³/(h.m²) at 50Pa.

**THERMAL BRIDGING**
The type of thermal bridging that occurs at junctions is defined as linear thermal bridging (psi-value (Ψ)). All Ψ-values of the building envelope make up the overall thermal bridging heat loss – the Y-value.

Using thermal blankets, such as HCONTROL HYBRID helps to counteract thermal bridging and Y-values below 0.022 W/m²K can be achieved. This can unlock drastic improvements in SAP calculations:
- Cost savings
- Maximise site potential
- Flexibility in specification

**SOLUTION MATRIX**

**CONTRIBUTION TO THERMAL EFFICIENCY**
The thermal efficiency of the building fabric is usually composed of:

- **45%** THERMAL TRANSMITTANCE (U-VALUE)
- **30%** AIRTIGHTNESS
- **25%** THERMAL BRIDGING

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<th>45mm HControl Hybrid + Hybris (mm)</th>
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<th>Reflective Breather M</th>
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**Airtightness:** < 1m³/h.m² at 50Pa is achievable

**Thermal Bridging:** Y-value < 0.22 is achievable (due to excellent psi-values)

- does not meet limiting U-value
- does meet limiting U-value for England and Scotland
- does meet limiting U-value for England, Scotland and Wales