

# What is the Ancon Teplo-L-Tie?

The innovative Ancon Teplo-L-Tie is an ultra-low thermal conductivity wall tie manufactured from basalt fibres set in a resin matrix.

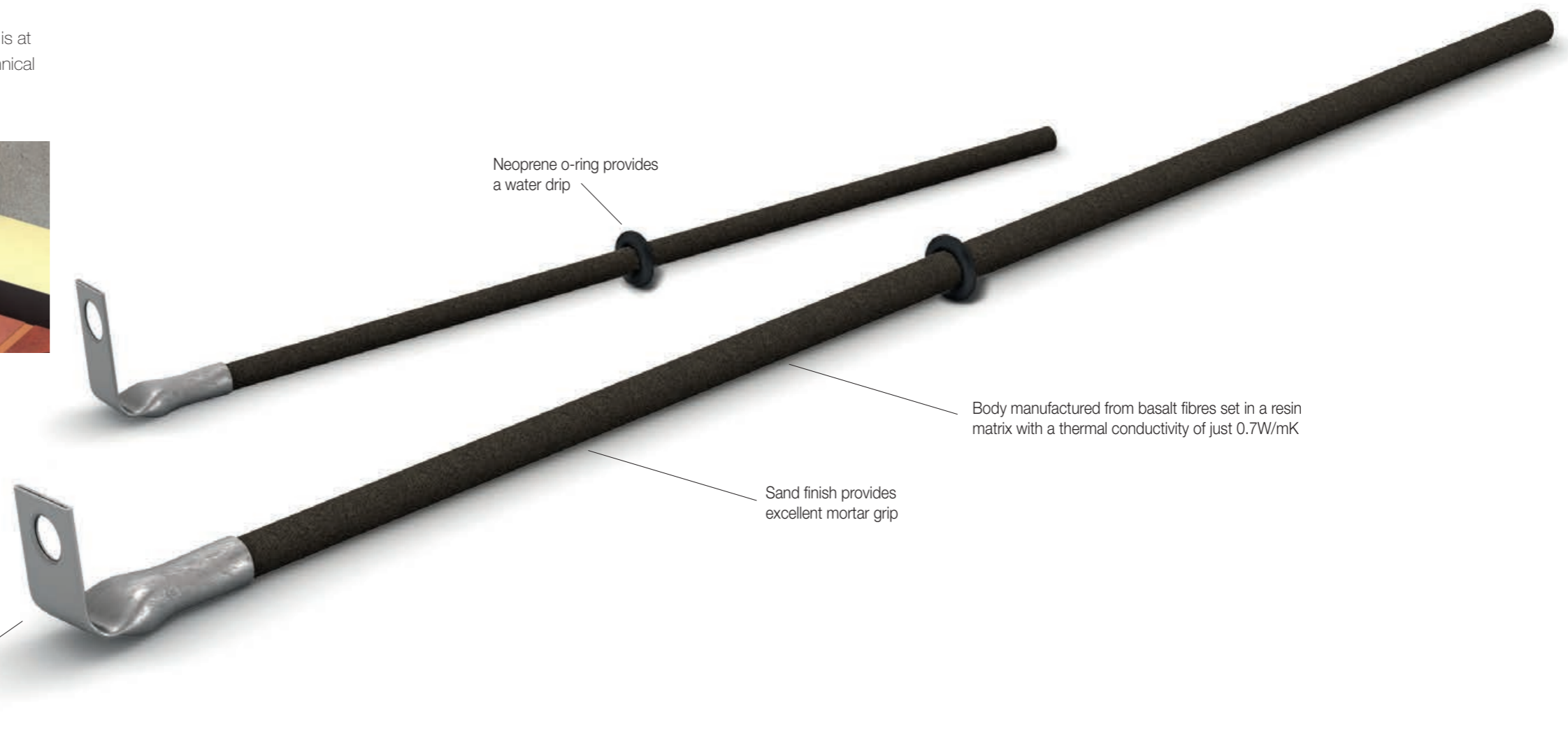
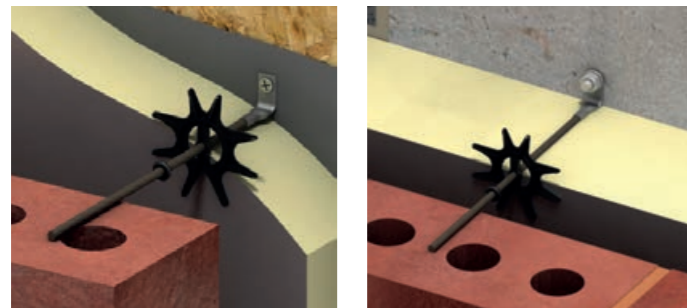
It minimises heat loss across an insulated cavity, improving the energy efficiency of a masonry cavity wall.

It is suitable for surface fixing to in-situ masonry and structural timber, steel or concrete frames.

Available in lengths to suit cavities up to 300mm, it is ideal for today's super-insulated building envelopes, whether new-build or retrofit.

The Teplo-L-Tie has been thermally modelled by an independent Industry expert. Chi values (W/K) for each available length are available to aid U-Value calculations.

Third party certification from the British Board of Agrément is at an advanced stage, with the independent testing and technical assessment now complete.



# How did the Ancon Teplo-L-Tie evolve?

## Background to the development

Wall Ties are typically manufactured from stainless steel which has a thermal conductivity of 17W/mK.

Wall Ties are an essential element in the strength and stability of a cavity wall, but by crossing the insulated cavity they act as a thermal bridge, providing a path for heat to escape from a building.

In U-value calculations to EN ISO 6946, a correction factor is applied for repetitive thermal bridges like wall ties. This typically results in an increase in insulation depth and wall footprint, to compensate for the heat being lost through the wall ties.

As the construction industry looks for more energy efficient ways to build, the challenge for the Wall Tie industry was to reduce the thermal conductivity of its products whilst continuing to meet structural performance requirements.

## Phase 1 – The Original TeploTie

Ancon met this challenge in 2009 with the launch of the original TeploTie, the first cavity wall tie to be manufactured from basalt fibres. With a thermal conductivity of just 0.7W/mK this tie is excluded from U-value calculations to EN ISO 6946, minimising insulation depth and wall footprint in new-build applications.

Winner of two product innovation awards the Ancon TeploTie is now well established and has been used on many exemplary low energy developments, including the first UK Passiv-Haus built with traditional cavity walls.

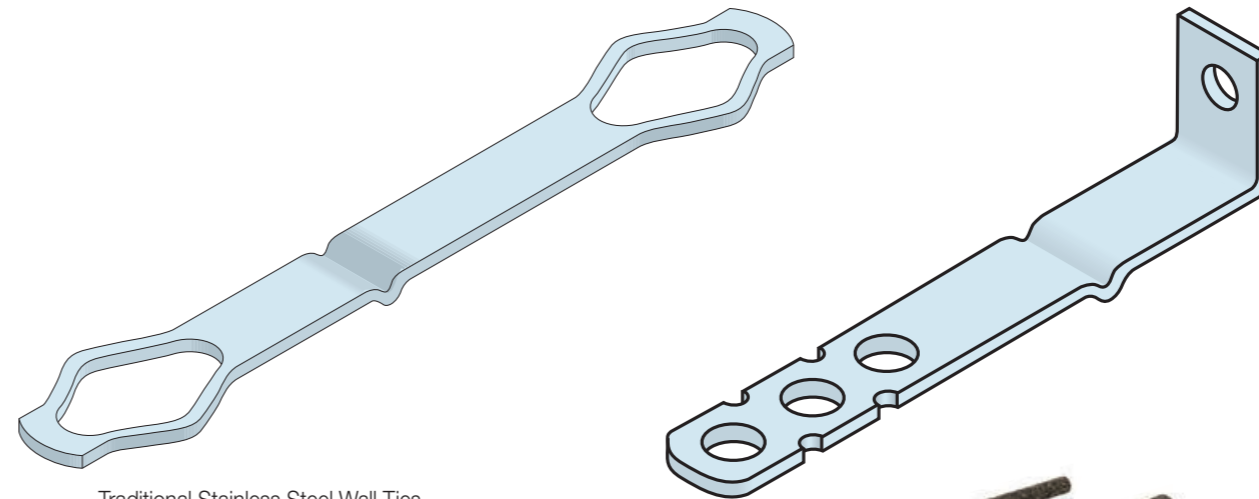


## Phase 2 – The new Teplo-L-Tie

In 2014, Ancon continues to lead the market in low thermal conductivity wall ties, with an innovative extension to the award-winning TeploTie range.

The new product retains the original pultruded basalt fibre body of the TeploTie, however, unique to the Teplo-L-Tie is an 'L' shaped stainless steel upstand, mechanically and chemically bonded to one end, with a 7mm diameter hole.

This upstand allows it to be securely tied to in-situ steel, timber, concrete or masonry using a range of standard fixings, making Teplo-L-Tie suitable for both new-build and retrofit applications.



Traditional Stainless Steel Wall Ties



The original Ancon TeploTie

The new Ancon Teplo-L-Tie, suitable for new-build and retrofit applications



# Where can the Ancon Teplo-L-Tie be used?

The Teplo-L-Tie is ideal where a low thermal conductivity restraint fixing is required between a masonry outer leaf and an in-situ structure. It is suitable for fixing to timber, steel, concrete and any type of masonry.

It is available in standard lengths to suit cavities up to 300mm.

Perfect for new-build or retrofit applications.

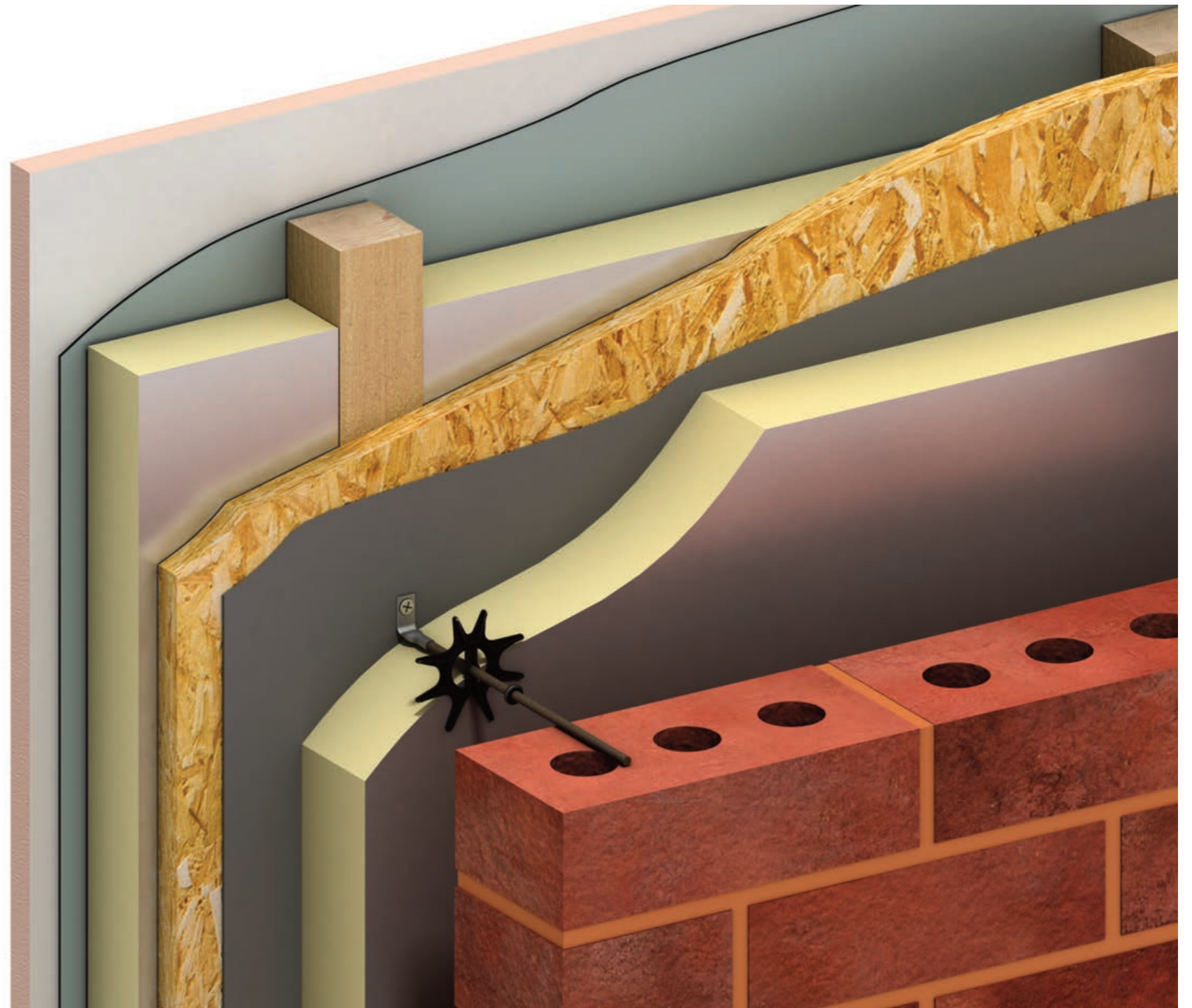
## Suitable Fixings

**Masonry:** Plug and Screw

**Concrete:** Plug and Screw, Expansion Bolt

**Steel:** Set Screw, Self-drilling Screw

**Timber:** Countersunk Wood Screw



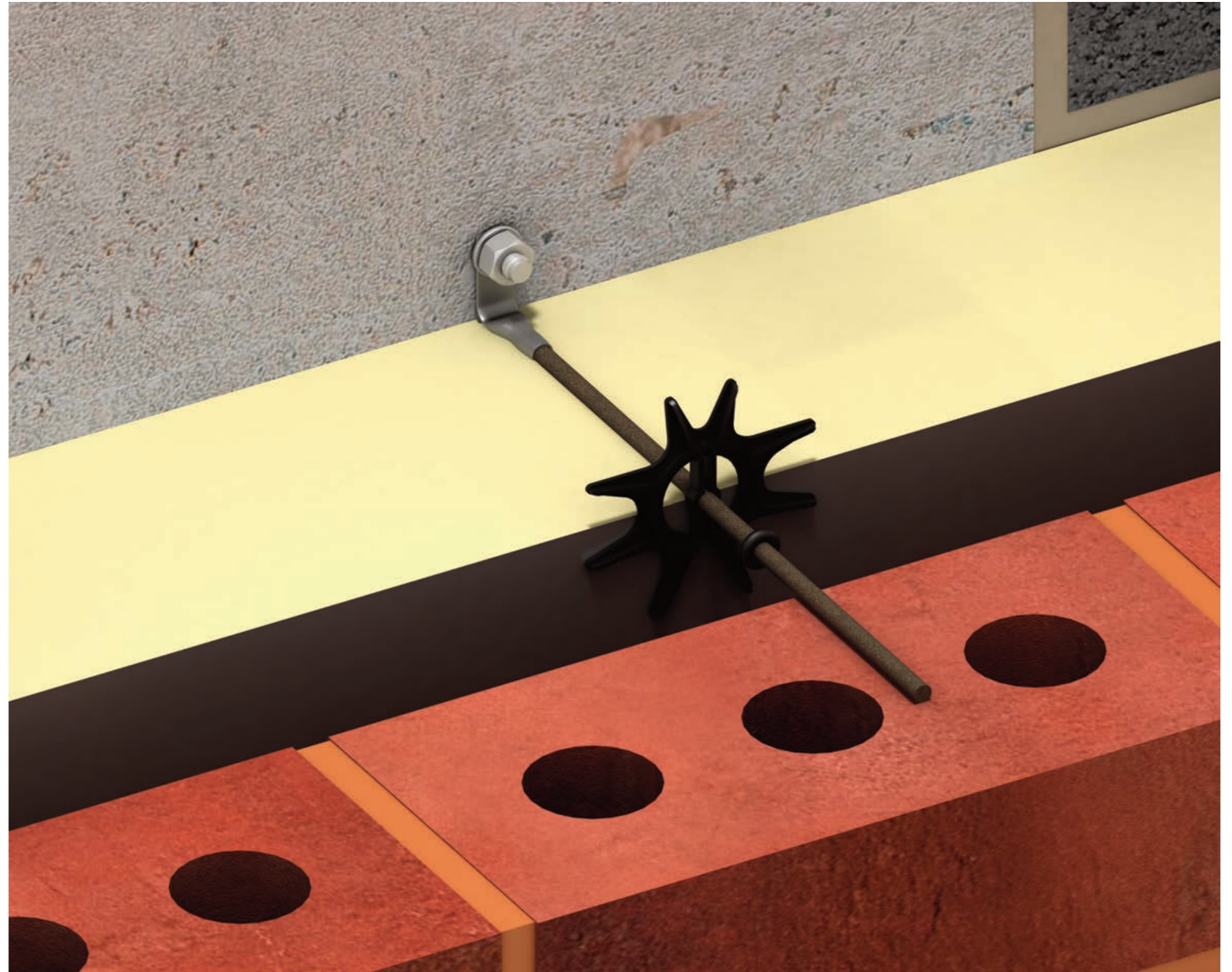


# How does the Ancon Teplo-L-Tie reduce on-site construction times?

The Teplo-L-Tie is simply surface fixed in position, where and when required.

The Teplo-L-Tie replaces the expensive and time-consuming practice of resin-fixing the original bar-shaped TeploTie into pre-drilled holes in an in-situ structure. This was commonplace in retrofit applications, where a new insulated cavity is added either inside or outside an existing structure.

In new-build applications, the launch of the Teplo-L-Tie allows the inner leaf to be constructed ahead of the outer leaf, accelerating the speed of construction and providing a watertight structure earlier.





# How has Ancon eliminated the risk of using the Teplo-L-Tie?

The use of Teplo-L-Tie does not involve any changes to traditional design and construction techniques.

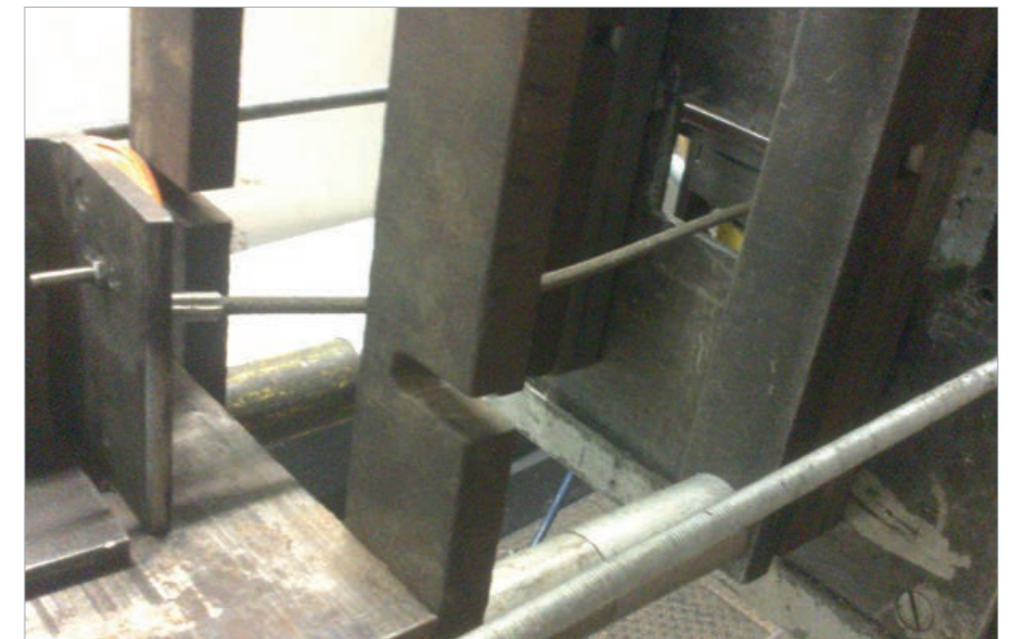
Teplo-L-Tie is used in traditional masonry construction, with which all architects and contractors are familiar, so is easy to install without the need for special training.

Teplo-L-Tie has been independently tested by Lucideon, UK. A BBA certificate is at an advanced stage, with the technical assessment fully completed, and will confirm a minimum service life of 60 years.

#### Summary of tests undertaken to date:

- Durability testing of material in masonry environment
- Durability testing of bond in masonry environment
- Tension and compression testing to BS EN 846-6:2012 in accordance with BS EN 845-1:2013.
- Tension and compression testing with lime mortar after 28, 56 and 90 days of curing
- Fire testing to give a 1 hour fire rating in a cavity wall
- Testing of the stainless steel "L" end with a range of fixings and substrates
- Thermal modelling to give "Chi" values for all ties in the range

The manufacturing process is audited by the BBA and is ISO 9001 compliant.



Product Testing at Lucideon, UK



# How does the Ancon Teplo-L-Tie contribute to sustainable construction?

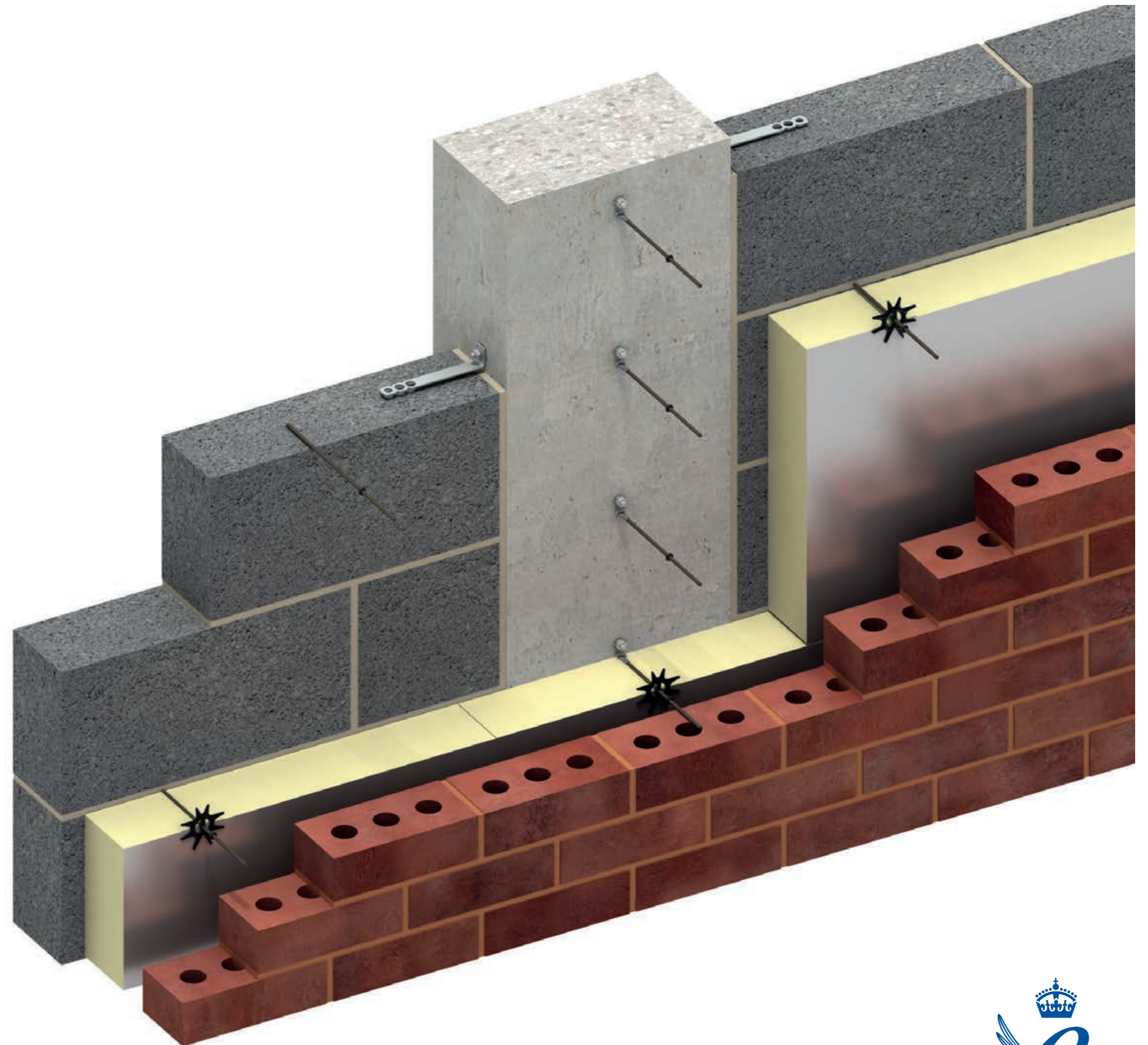
This new composite wall tie has been thermally modelled to provide accurate Chi values (W/K) for each product length; ideal for use in the 'PassivHaus Planning Package' and other 'low energy' design tools.

The exceptional thermal efficiency of the Teplo-L-Tie is such that it is unlikely ever to be taken into account as a thermal bridge in U-value calculations and is routinely excluded, minimising insulation depth and wall footprint, allowing designers to meet their low energy aspirations with no change to traditional construction details.

Available to suit cavity widths up to 300mm, it is ideal for today's super-insulated building envelopes.

## Teplo-L-Tie Chi Values

Product Code	Tie Length mm	PD6697 Tie Type	Chi value W/K	$\Delta U_f$ (if 2.5 ties/m <sup>2</sup> ) W/m <sup>2</sup> K
TEPLO-L-7-165	165	2	0.000515	0.00129
TEPLO-L-7-190	190	2	0.000405	0.00101
TEPLO-L-7-215	215	2	0.000340	0.00085
TEPLO-L-7-240	240	2	0.000280	0.00070
TEPLO-L-7-265	265	2	0.000245	0.00061
TEPLO-L-7-290	290	2	0.000210	0.00053
TEPLO-L-7-315	315	2	0.000190	0.00048
TEPLO-L-7-340	340	2	0.000165	0.00041
TEPLO-L-7-365	365	2	0.000150	0.00038
TEPLO-L-5-165	165	3	0.000335	0.00084
TEPLO-L-5-190	190	3	0.000260	0.00065
TEPLO-L-5-215	215	3	0.000215	0.00054
TEPLO-L-5-240	240	4	0.000175	0.00044
TEPLO-L-5-265	265	4	0.000150	0.00038





# How has the Ancon Teplo-L-Tie helped realise a design brief/performance specification?

## Retrofit Project

'The Oxford Greenhouse', UK

Homeowner, Tim Nicholson, undertook the refurbishment of his four bedroomed, 1960s, end-of-terrace house in North Oxford, UK, creating a comfortable ultra-low energy home for his family.

A range of measures to save energy and generate renewable energy were incorporated, combined with alterations to the building interior to improve room layout.

### Project involved:

- The creation of a new brick wall around the building to create a second cavity for insulation
- High levels of insulation in the walls, roof and floor
- High levels of airtightness throughout
- Use of mechanical ventilation with heat recovery (MVHR)



The new brick façade of 'The Oxford Greenhouse' is shown on the right, stepped 300mm off the façade of the neighbouring property.

Photo Credit: Tim Nicholson



# How has the Ancon Teplo-L-Tie helped realise a design brief/performance specification?

## Retrofit Project

'The Oxford Greenhouse', UK

*"We were very pleased to discover the new Teplo-L-Tie wall tie."*

*"Given our high levels of insulation we were keen to use a very low conductivity wall tie – TeploTie was the obvious choice. However, with the existing brick wall already in place it was going to be quite a challenge to drill and resin-fix all the standard TeploTies in place."*

*"The new Teplo-L-Tie offered a very user friendly and more affordable solution."*

Tim Nicholson, homeowner and project manager



Photo Credit: Tim Nicholson



# How has the Ancon Teplo-L-Tie helped realise a design brief/performance specification?

## BREEAM Excellent, New-Build Residential Development

Ash Court, Girton College, University of Cambridge, UK

Architect: Allies and Morrison

Ash Court is a new residential wing at Girton College in Cambridge, providing students with 50 en-suite bedrooms, a gym and an indoor swimming pool. The new facilities also form a hub for conference guests outside of University term time.

The College set very ambitious environmental targets and the design drew on the PassivHaus approach to yield extremely low levels of energy consumption.

The very tight limit of 16.5 kWh/m<sup>2</sup>/year for heating and ventilation was met by rigorous passive design and the incorporation of mechanical ventilation with heat recovery.

The Passivhaus Planning Package (PHPP) was used as the design tool.

Designed as a natural extension of the existing college, the new building takes a linear form and is flanked by a stone colonnade which opens to a new landscaped courtyard.



Photo Credit: Max Kettenacker, Allies and Morrison.



# How has the Ancon Teplo-L-Tie helped realise a design brief/performance specification?

## BREEAM Excellent, New-Build Residential Development

Ash Court, Girton College, University of Cambridge, UK

Architect: Allies and Morrison

To accelerate the speed of construction on this project, the internal concrete block walls were constructed ahead of the outer leaf of brickwork.

The Teplo-L-Tie was then surface-fixed to the concrete blocks as the outer leaf was constructed and built into the bed joints to tie the two leaves together.

The Teplo-L-Tie enabled the project architect to achieve the required U-value, contributing to the building's BREEAM Excellent rating.

This project was recently 'Commended' in the 2014 Brick Awards.

*"Its sustainability credentials and PassivHaus principles make this building one of the most energy efficient student accommodation buildings in the UK."*

Brick Award Judging Panel

