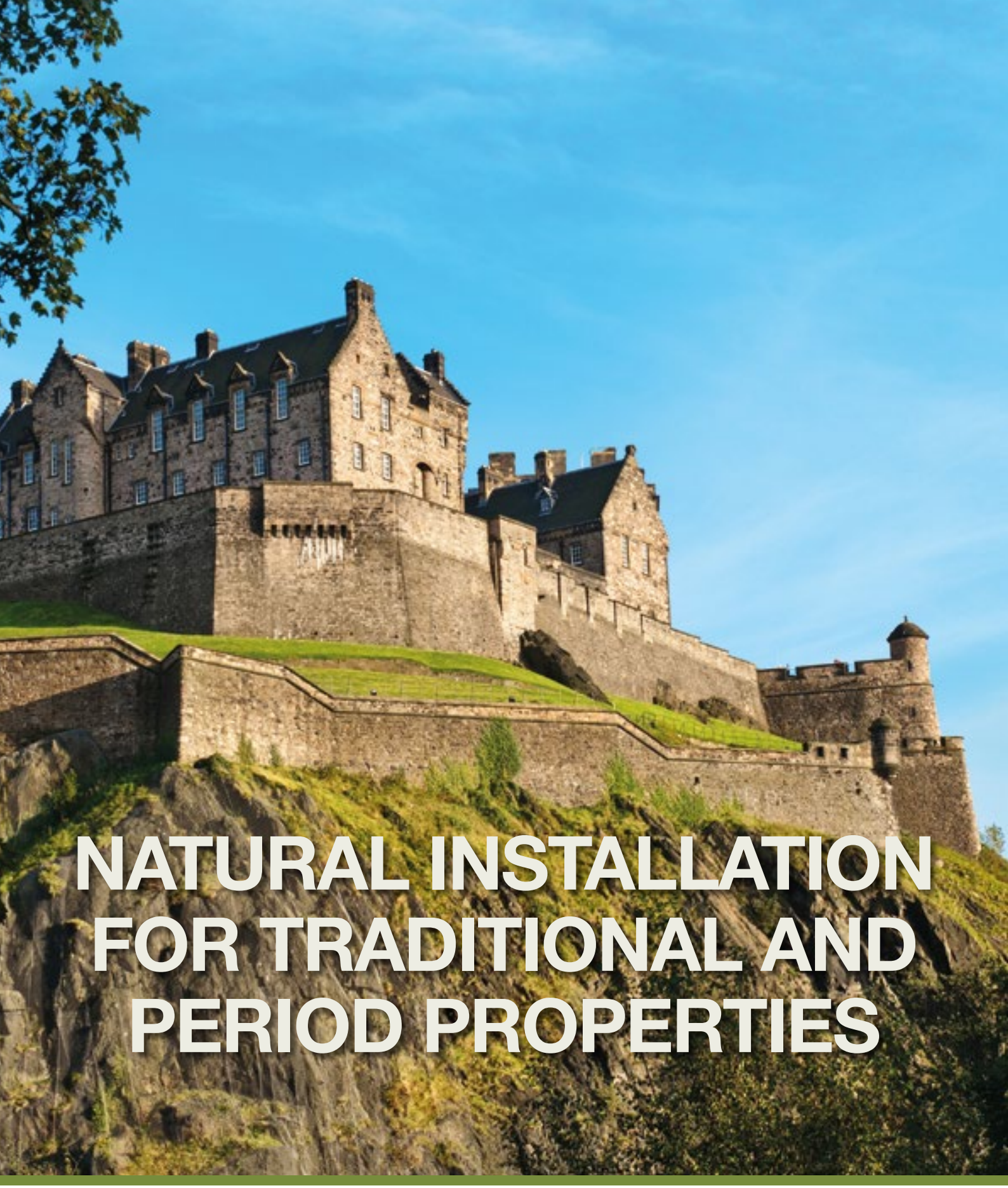

NATURAL INSTALLATION FOR TRADITIONAL AND PERIOD PROPERTIES

Black Mountain
NATURAL INSULATION

Insulating Period Properties

Traditional and older properties require a delicate approach when balancing the need to preserve the fabric of the building and the conservation of fuel resources.

The cost of energy has risen dramatically in recent years and is set to increase further. Solid walls, high ceilings and large open spaces are all catalysts for draughts and energy loss.

These buildings are very expensive to heat, often using oil based systems. Natural insulation products are the ideal choice for traditional and period properties, conditioning the fabric of the building, maintaining structure and thermal efficiency, allowing the property to breathe and providing a unique ability to buffer moisture.

Insulating should be the highest priority over other low carbon technologies such as ground source heat pumps which require good levels of installed insulation to perform to their optimum potential.

Condensation

It is often not realistic to consider installing vapour barriers in historic and older properties unless a total renovation is being undertaken. Warm moist air will circulate into lofts and other confined areas where condensation will occur as the air cools.

Sheep's wool and hemp insulation are hygroscopic and are able to buffer excess moisture to help avert condensation damage. Natural fibre insulations can absorb up to 40% of their own weight in moisture whilst remaining dry to the touch and more importantly continue to maintain thermal performance. Man-made mineral fibres are far less able to manage condensation and their thermal performance can deteriorate dramatically when exposed to minimal moisture levels.

Modern materials are designed to work effectively in modern buildings but are often inadequate at protecting traditional properties.

Unlike man-made materials, when natural fibres absorb moisture they heat up, which increases the temperature of the insulation and reduces the risk of condensation.

Sustainability

Natural insulation products have an extensive life cycle due to the resilience of natural fibre whereas man-made mineral fibres can significantly compact over time and may require topping up every 10 years.

Black Mountain owns the only UK factory dedicated to natural insulation products. The factory requires minimal energy to operate and is one of the most modern in Europe.

The natural fibre content in both our hemp and sheep's wool insulation ranges from 85-90%; providing high performance and maximum benefit to the end user.

Both sheep's wool and hemp fibres are biodegradable and therefore do not occupy landfill space unlike man-made mineral fibres. Alternatively, the product can be incinerated for additional energy at the end of the building's life.

Why choose natural over man-made?

Natural insulation provides period properties with the 'breathability' to manage condensation levels and condition the fabric of the building.

Furthermore, moisture absorption can actually improve natural insulation performance whereas it can have a detrimental effect on man-made insulation.

An ideal solution for lofts, attics, walls and floors; Black Mountain insulation is easy to install, incredibly durable and resistant to compaction through human interference.

Natural fibres are biodegradable and can be composted or incinerated for additional energy. Man-made mineral insulations cannot be recycled and have to be disposed in landfill.

Black Mountain insulation products are available in a number of standard sizes and a bespoke service for special projects is provided.

Natural Conservation

The hygroscopic nature of natural insulation products can actually draw moisture out from the timber and the other elements of the construction.

The moisture is absorbed from a comparatively localised area such as a timber frame into the natural insulation which has a much larger surface area. In this situation the vapour molecules are exposed to regular air movement which will then allow the moisture to evaporate externally.

The natural fibres will continue to condition and draw moisture away from areas where condensation might otherwise become a growing problem without compromising thermal efficiency.

Man-made mineral fibre insulations have no ability to take moisture from the different components within a building and in some cases, interstitial condensation can be drawn into timber and other materials consequently adding to structural problems.

Ventilation and Breathability

Whilst draught proofing can be worthwhile in some older dwellings, it can lead to increased internal moisture levels and cause severe problems with dampness in others, leading to mould growth, insect attack and rot damage in a building of historic merit.

Air tightness should not be pursued at the expense of allowing the building to breathe; it is a matter of balance between the two conflicting aspects.

As an example of ventilation differences, modern houses achieve 0.4 air changes per hour, whereas Victorian properties achieve 1.6 air changes per hour.

Older properties need to allow moisture to move in and out of the fabric to keep dampness below the levels at which decay can set in. This means that impervious materials, waterproof paints and cement renders should never come into contact with permeable fabric such as roof timbers, lime ceilings or exterior walls.

Foil backed insulation and plastic foams applied to the underside of lofts can cause catastrophic timber failure.

The most appropriate products and obvious ‘breathable’ choices are sheep’s wool and hemp insulation. These resilient, natural fibre products are able to maximise thermal performance and maintain efficiency whilst allowing the building to breathe.

Longevity and Durability

Sheep’s wool and hemp fibres are very durable and naturally resilient materials, ensuring that Black Mountain insulation products will maintain their excellent performance and thickness over an extended period of time.

Tensile tests performed on natural and man-made mineral fibres show that hemp and sheep wool insulation are highly flexible and more durable than various competing man-made mineral fibre products.

To preserve the condition of period properties, regular access for wood treatment and building maintenance is necessary. This requires existing insulation to be disturbed which will damage the material and impact on its thermal efficiency and also require protective clothing.

It is not necessary to wear protective clothing when installing or handling natural insulation and the material poses no health risks for any residents or visitors to the property.

Black Mountain insulation products are easy to extract, quick to re-install, highly resilient and will not compact or reduce in performance through human interference.

These technical abilities provide Black Mountain products with a longevity that is unobtainable for many man-made mineral fibre insulations.

Widths and Dimensions

Traditional properties are unique and standard building products may not be suitable therefore the waste material to cut to size is generally high and time consuming.

Black Mountain is unique in its ability to manufacture special widths and lengths. Using a bespoke product not only minimises waste material but also saves on labour, significantly lowering overall cost and bridging the gap between bespoke natural insulation and man-made mineral insulation products.

Walls

Cavity wall construction began in 1910 and was more widely adopted from 1930; most traditional and older properties have solid walls with the consequent greater heat loss.

Where the older property is of timber frame construction with lath and plaster walls which require re-plastering, sheep’s wool and hemp insulation can be installed internally and greatly improve thermal stability.

In many cases, it is not possible to insulate the interior facing of the walls without destroying the very details that give these properties their unique character. There are some properties where a ‘stud wall’ might be considered. Further advice is available from English Heritage or other national equivalent organisations.

Floors

The heat loss through a floor can be quite substantial in older properties, accounting for approximately 15% - 20% of the energy used.

Floors are very easy to insulate if there is access from a cellar or there is a large crawl space.

Black Mountain insulation rolls and batts are easy to install with only a small section of floor needing to be removed thereby minimising disturbance to the property. Fitting a vapour barrier under the floorboards to prevent dirt or liquid ingress through the floorboards ensures the insulation will perform effectively for many decades.

Lofts and Attics

The insulation of lofts and attics requires careful attention; this is the area within a property where significant condensation can occur if the wrong insulation is specified or is not correctly installed.

The terms ‘cold lofts’ and ‘warm lofts’ are commonly used to describe how a property makes use of its loft space. Warm lofts refer to properties that use this space as an additional habitable room whereas cold lofts are generally used for storage or not at all. These alternate uses for loft space require insulation to be applied strategically in order to provide maximum benefit to the residents.

Warm Lofts

The most critical aspect of insulating a warm loft is to understand the current roof structure. Roofs have the tiles or slates fixed onto battens and roofing felt over the top of the rafters. Two types of roofing felt are present in UK properties; ‘breathable membranes’ and the older bitumen based ‘non breathable roofing felt’.

If the more modern breathable membrane is present then the insulation can be installed right up to the membrane. If it is the older bitumen based roofing felt then a 50mm ventilated gap should be retained to allow any condensation to be evaporated by the cross flow of air. The moist air is then exhausted through ridge ventilation tiles. Care should also be taken to provide air flow from the eaves of the roof.

Cold Lofts

Cold lofts are common in many traditional properties to prevent heat rising into unused loft space. In this case insulation is laid between the ceiling joists to a recommended minimum depth of 250mm.

To maximise performance and prevent cold bridging, insulation can be installed in layers, placing the material across the joists at right angles. If the loft floor is boarded, this should be lifted and insulation installed underneath to the maximum depth possible.

NatuWool and NatuHemp are able to buffer excess moisture helping to avert condensation damage

Black Mountain is insulating / protecting:

- Brasenose College - Oxford
- Caius College - Cambridge
- Castle Howard - Yorkshire
- Coleshill Village - Wiltshire
- Doddington Hall - Lincoln
- Edinburgh Castle - Edinburgh
- Hardwick Hall - Derbyshire
- Holkham Hall - Norfolk
- Holyrood Palace - Edinburgh
- Lamb House - Edinburgh
- Lancaster Town Hall - Lancaster
- Lissan House Trust - Cookstown
- Longmore House - Edinburgh
- Morden Hall Park - Cambridge
- Thatch Cottage - Essex
- Rothe House - Kilkenny
- Royal College of Music - London
- Barn Conversion - Sussex
- St Leonards Hall - Edinburgh

NATURAL INSTALLATION FOR TRADITIONAL AND PERIOD PROPERTIES

For more information please contact our sales team

Phone 01745 361911 Fax 08082 800395

Email sales@blackmountaininsulation.com

Website www.blackmountaininsulation.com

Black Mountain Insulation Limited
Bradwell Hall, Bradwell on Sea
Essex, CM0 7HX