

Specifying a cold liquid-applied roofing system for a flat roof refurbishment project



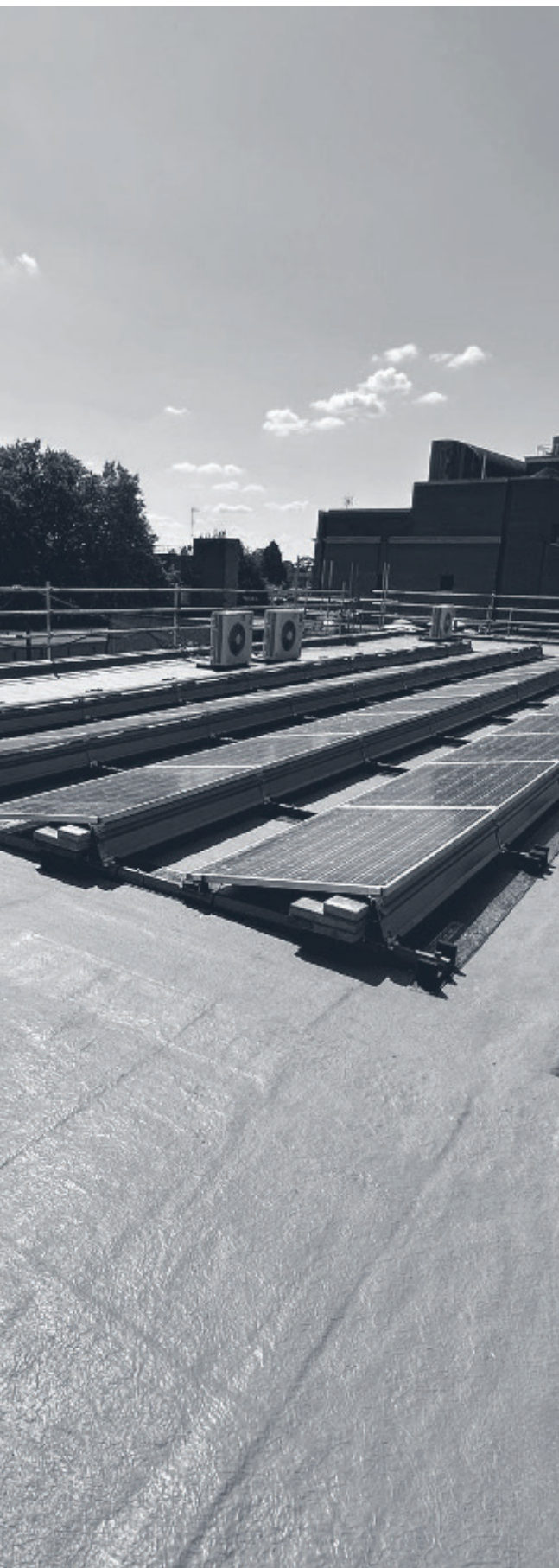


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The primary aim of a flat roof refurbishment is usually to restore or maintain watertightness, while improving thermal performance where necessary. Enhancing the appearance of the roof may be an important objective too.

The most appropriate waterproofing membrane to use for the refurbishment depends on the scope, complexity and context of the project. Cold liquid-applied membranes, however, have a clear advantage in that they are

totally seamless, joint free and involve no hot works, without having to compromise on performance.

Many cold liquid-applied roofing systems are available, with a variety of formulations to suit different applications and contexts. So how do you ensure you are specifying the best solution for a particular roof refurbishment?

There are myriad factors to consider – including aesthetic, regulatory, financial, project

management and ongoing building maintenance requirements. It would take a substantial manual to cover them all in detail, but here we explore some key points to think about.

For further design and regulatory guidance, refer to BS 6229:2025 for current practice relating to flat, curved or continuously supported flexible waterproofing. The LRWA's Design Guide for Specifiers provides specific guidance for liquid-applied membranes.



(A)**Is this a simple replacement of the membrane or a renovation of the complete roof build up?**

Cold liquid-applied waterproofing membranes are suitable for both refurbishment and new-build applications. They can be installed as overlay systems to existing roof substrates, or incorporated into new roof build-ups, including warm and inverted roof designs.

From a regulatory perspective, this flexibility has important implications for thermal compliance.

Under Part L of the Building Regulations for England, the replacement of the waterproof membrane on a flat roof is classified as a renovation of a thermal element. If 50% or more of the surface is replaced, then the whole roof needs to achieve the U-values set out in the Part L approved document. Regulations in Scotland, Wales and Northern Ireland have similar stipulations.

However, an exemption may be possible in some circumstances.

When it is not necessary to replace more than 50% of the whole roof build up, simply overlaying the existing membrane will mean a faster and cheaper renovation, with less waste going to landfill. However, the soundness of the underlying build up needs to be established first through invasive testing.

If the entire roof is saturated, then the existing build up will need to be removed and replaced including thermal insulation to the relevant code. But if the moisture is confined to localised areas, then – following careful investigation – it may be possible to locally strip and replace these areas on a like-for-like basis.

(B)**What is the existing substrate?**

A flat roof waterproof membrane repair or renovation involves overlaying an existing substrate – which might be a bituminous, single-ply, asphalt or liquid-applied membrane. It's important to remember that not every type of membrane can bond directly to every substrate.

Polyroof's Protec and Protec Evolve Systems comprise our MPeC (modified polyester composites) technology, unique modified polyester resin formulations combined with CSM reinforcement. These advanced systems are highly versatile and can overlay almost any correctly prepared substrate. This is important when the membrane needs to encapsulate details made from a variety of materials.

(C)

How large and how complex is the roof?

In the UK, a roof with a pitch of 10 degrees or less is defined as flat. Flat roofs typically have a continuous waterproof layer or membrane. The roof plane may be simple or complex and may include detailing such as pipes, stanchions and rooflights as well as roof-mounted plant.

Waterproofing a simple flat roof is a fairly straightforward job. But complex roofs are more difficult to refurbish. New waterproofing systems for roofs featuring rooflights, pipes, outlets, stanchions and other upstands, therefore, need careful detailing and meticulous installation. The devil is in the detail.

While sheet-based membranes – bituminous and single-ply – may be an option for simple roofs, liquid-applied systems work better on complex roofs. This is due to the application method. As long as you can get a brush or a roller to a detail, it can be fully encapsulated by a liquid-applied membrane. Even the most complex of details, therefore, can be completely sealed in without any laps, welds or weak points.

(D)

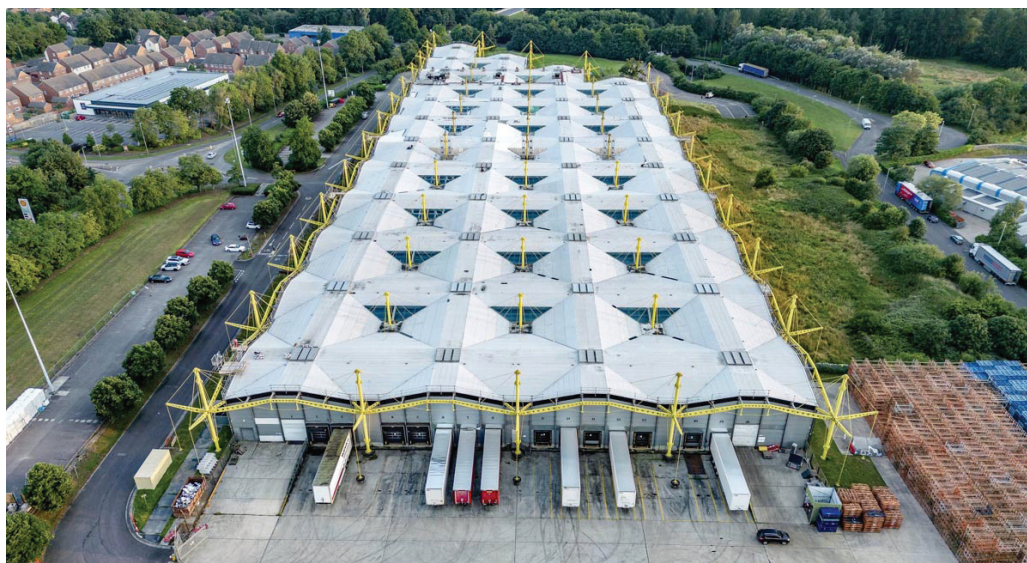
What sort of building is it and will it be occupied during the works?

A roof refurbishment can be disruptive for building occupants. The works may involve noise and unpleasant odours as well as presenting a fire risk. Most importantly, when stripping is required the building can be left exposed and vulnerable to the elements.

For refurbishments in education and healthcare settings as well as hospitality and retail buildings, works need to be ultra-low-odour. A few cold liquid-applied roofing membranes – such as Polyroof's Protec Evolve – are ultra-low-odour.

Additionally, being PeMA or polyester-based, the whole Protec range has lower levels of VOCs than almost every competitor product in the UK.

Fire risk is another important consideration. Installing a torch-applied bituminous, asphalt or – to a lesser extent – heat welded single-ply membranes involves hot works. Cold liquid-applied roofing systems are just that: cold.



The 25,000m² roof of the Grade II*-listed Spectrum House is complex. Polyroof's Protec membrane could be applied directly to the existing single-ply substrate, seamlessly encapsulating 236 details.

(E)

Is a green, brown or blue roof being added?

Green roofs offer a range of benefits, including improving insulation, attenuating stormwater and promoting biodiversity in urban areas. Brown roofs – which are installed without plants and left to green naturally – provide the same advantages, while blue roofs offer enhanced stormwater management, having an additional rainwater containment system.

The Green Roof Organisation's code of best practice is widely recognised as the preeminent design guide for green roofs in the UK. We recommend that any green roof specification should follow its guidance.

The roof membrane under a green, brown or blue roof installation must be durable, low maintenance and impervious to standing water. And, of course, the waterproof membrane needs to be root-resistant too.

While all the different types of roof membrane can be engineered to be root-resistant, the laps of roll-based membranes are nonetheless vulnerable to root penetrations. This means that a cold liquid-applied membrane is a better choice for a green roof than a single-ply or bituminous membrane.

Polyroof's Protec membrane has BBA certification for both root resistance and imperviousness to water – even on a roof with a zero fall.



This new build 223m² roof, with a distinctive 10-degree mono-pitch rectangular shape, integrates a comprehensive green roof system, extended overhangs and onboard gutters. The design allows for the future installation of a photovoltaic array.

(F)

What third party certification and testing is non-negotiable?

When specifying liquid-applied waterproofing systems, third-party verification is critical, as performance varies significantly between products.

Specifiers should look for BBA certification confirming fitness for purpose, including suitability for warm roof application, zero-fall and inverted roofs (including root resistance) as well as declared service life (typically 30+ years).

Defined inspection and maintenance regimes as well as independent fire performance testing (for example, BROOF(t4) – for unrestricted use in the UK) further demonstrate system reliability.

Equal weight should be given to proven performance in practice. Look for systems with a long track record, independently verifiable project history and manufacturer data showing longevity in service.

(G)

Will people walk on the roof – and how often?

Mechanical damage from foot traffic is a common cause of flat roof problems, and so it's important to consider how often and how intensely the roof will be accessed before specifying the roof system.

Single-ply membranes, in particular, are prone to punctures and should have a separate walkway system if anything other than very light foot traffic is expected. They must also be carefully protected during installation.

Not all liquid-applied membranes are created equal. While many offer flexibility, PeMA-based systems combine elasticity with exceptional toughness and impact resistance.

Specifiers should scrutinise BBA certificates for evidence of point loading, impact resistance, and durability testing – as well as elongation values – to distinguish genuinely robust systems from nominally flexible alternatives.

As well as being durable, all roof access routes should have an anti-slip finish. Polyroof offers a range of heavy-duty, anti-slip finishes to use with its waterproof membranes – to protect both the roof and the people walking on it. The finishes come in a range of colours to ensure they are clearly visible.

(H)

Does the membrane need to have a very exact or unusual colour?

The replacement roof membrane may need to replicate the existing colour – especially on a listed building or in a conservation area. Even in less sensitive contexts, the colour of the roof membrane is usually chosen to harmonise with the material palette of the building.

However, in some situations, a more conspicuous colour may be required – for business branding purposes, for example.

While other roof membrane systems may offer limited colour variety, Polyroof Protec can be supplied to closely match any RAL colour.

(I)**When will the works be carried out?**

If the works are likely to be carried out during the summer or winter months, it's important to check the range of temperatures in which a cold liquid-applied membrane can be installed.

Used in conjunction with Polyroof's innovative RapidCure low temperature accelerator and summer inhibitor technologies, Protec can be installed all year round, at temperatures down to 1°C - with cure times as short as 30 to 45 minutes.

Comparatively, many liquid applied systems on the market have a minimum 5°C application limit, which can severely restrict application in the winter.

(J)**What technical support is available from the product manufacturer?**

Roof membrane failure is usually the result of defective design and/or workmanship rather than defective materials. Expert technical support from the product manufacturer reduces the risk of both. Therefore, it's important to understand how much support will be available at every stage of a roof refurbishment project.

Polyroof's technical team work collaboratively with specifiers and contractors from the outset to the completion of a project. We offer initial roof surveys as well as design and specification services – including wind uplift, thermal and condensation calculations. And we monitor and inspect the works during and on completion of the installation.

Quality workmanship depends on having properly trained installers, who fully understand the products they are working with.

All Polyroof systems are installed by one of our national network of independent, approved roofing contractors. BBA audits the training, certification and monitoring of this network as part of Polyroof's BS EN ISO 9001:2015 quality system.

(K)**What is the scope of the guarantee?**

The length of a guarantee is critical, but it's also important to understand what it covers.

Polyroof range of guarantees are transparent and clear and guarantee periods of up to 25 years are available subject to specification. Specimen guarantees available on request.

Specifiers should be aware that some manufacturer guarantees may be amortised (particularly on overlay or refurbishment installations), meaning that the value of the guarantee reduces over time. This should be checked at the specification stage.

We always recommend that building owners follow the guidance of BS 6229:2025, which states that flat roofs should be inspected twice a year by a competent person. However, as Polyroof's systems are very low maintenance (the membrane itself is maintenance-free), our guarantees are not contingent on periodic inspections having been performed.

WHY POLYROOF?

Experts in Liquid Flat
Roofing Solutions



+ Established expertise

We have been developing and manufacturing waterproofing membranes in the UK since 1984.

+ Quality consistency

We pride ourselves on the consistency and quality of our products and our technical support.

+ Trusted guarantees

This is reflected in the strength and transparency of our guarantees.

+ Universal compatibility

Our products can overlay multiple substrates.

+ Sustainable options

We offer ultra-low-odour and carbon-neutral certified options.

+ ISO certified

We are ISO 9001 and ISO 14001 certified.

+ Approved products

Product certifications include BBA and ETA.

+ Top fire-rating

Our Protec, Protec Evolve and 185 GRP systems are BBA certified and can achieve the highest possible fire rating classification – BROOF(t4) – under BS EN 13501-5: 2016.



Further Information & Independent Verification

For full technical details, certification status and supporting documentation, please visit our website:

www.polyroof.co.uk/resources/accreditations-associations



Contact us

Please contact our technical team for further information or to request a roof survey or specification support.

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