

FLAT ROOFING SYSTEMS PRO'S AND CON'S

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Built up Roofing (BUR) Three-layer roofing systems, often referred to as a "built-up roofing" (BUR) system, are a traditional and time-tested method for flat and low-slope roofs. These systems typically consist of multiple layers of bitumen and reinforcement materials, with gravel or a mineral cap sheet on top for protection. Here are the pros and cons of three-layer roofing systems:

Pros:

Durability: BUR systems are known for their durability and long lifespan. When properly installed and maintained, they can last for several decades.

Weather Resistance: BUR roofs are highly resistant to adverse weather conditions, including rain, snow, and wind. The multiple layers provide an effective barrier against water infiltration.

Fire Resistance: BUR systems are inherently fire-resistant, especially when using asphalt and fiberglass or other fire-resistant materials in the construction.

Thermal Performance: These roofs offer good insulation and thermal performance due to their multiple layers. They can help regulate indoor temperatures and reduce energy costs.

Low Maintenance: BUR roofs require relatively low maintenance, and minor repairs can be easily conducted by adding additional layers of bitumen.

UV Resistance: The top layer of gravel or a mineral cap sheet provides UV protection and helps extend the roof's lifespan.

Cons:

Weight: BUR systems are heavy, and the weight can be a concern for some structures. Adequate structural support is necessary to accommodate the weight of the roof.

Complex Installation: The installation of a BUR system can be labour-intensive and complex, often requiring skilled and experienced roofing contractors.

Vulnerability to Poor Installation: If not properly installed, BUR systems can be prone to problems like leaks, blistering, or unevenness. Quality installation is crucial for their performance.

Odor and Fumes: The installation process involves heating bitumen, which can produce odours and fumes that some people find unpleasant. Adequate ventilation during installation is important.

Limited Design Flexibility: BUR systems are not as versatile in terms of design and appearance compared to modern single-ply membranes or other roofing materials.

Environmental Concerns: The use of asphalt in BUR systems raises environmental concerns due to its petroleum-based origin. However, some environmentally friendly alternatives, like cold-applied BUR systems, have been developed.

Summary:

Three-layer roofing systems have a strong track record for durability and weather resistance but come with installation challenges and are relatively less flexible in terms of design. They are a viable choice for certain applications but may not be the best option for every roofing project. It's essential to consider the specific needs of your building and consult with a roofing professional to determine if a BUR system is the right choice.

Single-ply membrane roofing systems are popular for flat and low-slope roofs in both commercial and residential applications. These systems are known for their ease of installation and flexibility. Here are the pros and cons of single-ply membrane roofing systems, which include TPO (Thermoplastic Olefin), PVC (Polyvinyl Chloride), and EPDM (Ethylene Propylene Diene Monomer):

Pros:

Ease of Installation: Single-ply membranes are lightweight and come in large rolls, making them relatively easy to install. This can lead to cost savings on labour and installation time.

Energy Efficiency: TPO and PVC membranes are available in reflective and cool roof options, which can reduce energy consumption by reflecting sunlight and heat away from the building.

UV Resistance: TPO and PVC membranes offer excellent UV resistance, reducing the risk of sun-related deterioration and extending the roof's lifespan.

Chemical Resistance: PVC membranes are highly resistant to chemicals, making them a suitable choice for roofs that may be exposed to industrial pollutants or chemical discharges.

Flexibility: Single-ply membranes are flexible and can expand and contract with temperature fluctuations, reducing the risk of cracks and leaks.

Seam Strength: These membranes are typically heat-welded at the seams, creating a strong and watertight connection that minimizes the risk of leaks.

Low Maintenance: Single-ply roofing systems generally require minimal maintenance over their lifespan, making them cost-effective.

Durability: When properly installed and maintained, single-ply membranes can have a long lifespan, often exceeding 20 years.

Versatility: Single-ply membranes can be used in various applications, including roofs, green roofs, and as part of a hybrid system with other roofing materials.

Cons:

Puncture Vulnerability: Some single-ply membranes, especially EPDM, can be more susceptible to punctures from sharp objects or foot traffic. Proper care and maintenance are required to minimize this risk.

Cost: While the installation can be cost-effective, the initial material cost of high-quality single-ply membranes can be relatively higher than some other roofing options.

Limited Aesthetic Options: Single-ply membranes may have limited aesthetic choices compared to some other roofing materials. They are typically available in white, grey, or black.

Lifespan Variability: The lifespan of single-ply membranes can vary depending on factors like climate, maintenance, and installation quality. Some may have a shorter lifespan in harsher conditions.

Environmental Impact: The production of PVC membranes can raise environmental concerns due to the use of chlorine. However, some manufacturers offer more environmentally friendly alternatives.

Summary:

Single-ply membrane roofing systems offer many advantages, including ease of installation, energy efficiency, and durability. However, they may be more vulnerable to punctures and have a higher initial material cost. Choosing the right single-ply membrane and ensuring proper installation and maintenance are crucial for maximizing the benefits of this roofing system.

EPDM (Ethylene Propylene Diene Monomer) rubber roofing systems are a popular choice for flat and low-slope roofs. They offer several advantages but also come with some limitations. Here are the pros and cons of EPDM rubber roofing systems:

Pros:

Durability: EPDM roofing is known for its durability and long lifespan. When properly installed and maintained, it can last for 25-30 years or more.

Weather Resistance: EPDM is highly resistant to extreme weather conditions, including UV radiation, rain, and temperature fluctuations. It remains flexible in cold weather and resists cracking.

Low Maintenance: EPDM roofs require minimal maintenance. Regular inspections and cleaning are usually sufficient to keep the roof in good condition.

Energy Efficiency: EPDM roofing can be reflective, helping to reduce heat absorption and lower cooling costs during hot weather.

Easy Installation: EPDM roofing is relatively easy to install. It comes in large sheets, and seams can be sealed with adhesives, tape, or heat welding, resulting in fewer seams and potential leak points.

Cost-Effective: EPDM roofing materials are competitively priced, making them a cost-effective choice for many roofing projects.

Recyclable: EPDM is a recyclable material, and some manufacturers offer recycled or environmentally friendly EPDM options.

Cons:

Puncture Vulnerability: EPDM roofs are more vulnerable to punctures compared to some other roofing materials, such as single-ply membranes like TPO or PVC. Care must be taken during installation and maintenance to avoid damage.

Limited Aesthetic Options: EPDM roofing typically comes in black, making it less versatile in terms of aesthetic choices compared to other roofing materials.

Membrane Seams: While EPDM roofs have fewer seams compared to some roofing systems, seams can still be potential weak points if not properly installed and sealed.

Environmental Concerns: The production of EPDM involves some environmental concerns due to the use of ethylene, although some environmentally friendly options are available.

Installation Quality: The performance of an EPDM roof heavily depends on the quality of installation. Proper techniques and experienced installers are crucial to ensure a watertight and durable roof.

Shrinkage Over Time: Over time, EPDM roofing may experience some degree of shrinkage, which can affect the roof's overall integrity. Proper maintenance and inspections can address this issue.

Summary:

EPDM rubber roofing systems are a durable and cost-effective choice for flat roofs. They excel in weather resistance and ease of installation but require careful maintenance to avoid punctures and issues related to shrinkage. When considering EPDM for your roofing project, it's essential to prioritize quality installation and regular inspections to maximize the benefits of this roofing system.

Fibreglass (GRP - Glass Reinforced Plastic) roofing systems are widely used for flat and low-slope roofs have several advantages and disadvantages. Here are the pros and cons of fibreglass roofing systems:

Pros:

Durability: GRP roofing systems are known for their durability and can last for several decades when properly installed and maintained. They are resistant to weathering and corrosion.

Waterproof: GRP roofs are seamless and have no joints or seams that can deteriorate over time. This makes them highly resistant to water infiltration and leaks.

Lightweight: GRP is a lightweight material, which can reduce the load on the building's structure and make installation easier.

Chemical Resistance: GRP is highly resistant to chemical exposure, making it a suitable choice for roofs in industrial or corrosive environments.

UV Resistance: GRP roofing materials can be formulated with UV inhibitors to resist the damaging effects of the sun's ultraviolet rays.

Customizable: GRP roofs can be customized in terms of colour, finish, and design, allowing for more aesthetic flexibility compared to some other roofing systems.

Low Maintenance: GRP roofs generally require minimal maintenance, reducing long-term operating costs.

Versatile: GRP roofing systems can be used in various applications, including flat roofs, balconies, gutters, and even as a lining for ponds or water features.

Cons:

Installation Expertise: Proper installation of GRP roofing systems requires a high level of expertise and skill. It is important to hire experienced contractors to ensure the roof's performance.

Fragile When Uncured: The GRP material is relatively fragile during the curing process, which can make it susceptible to damage if not handled carefully.

Environmental Concerns: The production of GRP materials can have environmental concerns, especially in the use of resins and solvents. Some manufacturers offer more eco-friendly options.

Initial Cost: The initial material and labour costs for GRP roofing can be relatively higher compared to some other roofing systems. However, this cost may be offset by its long-term durability and low maintenance.

Maintenance Complexity: While GRP roofs are generally low maintenance, repairing or resurfacing damaged areas can be complex and may require professional help.

Limited Insulation: GRP roofing systems on their own may not provide as much insulation as some other roofing materials. Additional insulation may be necessary for energy efficiency.

Summary:

GRP roofing systems are known for their durability, water resistance, and chemical resistance. They offer customization options and low maintenance requirements, but they require expert installation and careful handling during the curing process. Consider your specific needs and consult with experienced professionals to determine if a GRP roofing system is the right choice for your project.

Green roofing systems have gained popularity for their environmental benefits and aesthetic appeal. They involve planting vegetation on rooftops. Here are some of the pros and cons of green roofs:

Pros:

Reduced Urban Heat Island Effect: Green roofs absorb heat, reducing the overall temperature of urban areas.

Improved Air Quality: Plants filter pollutants and carbon dioxide from the air.

Stormwater Management: They absorb rainwater, reducing runoff and easing pressure on drainage systems.

Thermal Insulation: Green roofs provide natural insulation, reducing heating and cooling needs in buildings.

Extended Roof Life: They protect roofing materials from UV rays and weather, potentially extending their lifespan.

Enhanced Aesthetics: Greenery adds beauty to urban landscapes.

Space Utilization: Rooftops can be utilized for gardens, recreational spaces, or even urban farming.

Habitat for Wildlife: Green roofs offer a habitat for birds, insects, and even small animals, contributing to urban biodiversity.

Cons:

Initial Investment: Installation costs can be high due to specialized materials and structural requirements.

Regular Maintenance: Green roofs need consistent care, including watering, weeding, and potential replanting.

Structural Load: The weight of soil, plants, and water can strain the building structure, requiring reinforcement.

Engineering Challenges: Buildings may need modifications to support the added weight and ensure proper drainage.

Potential Leaks: Improper installation or damage to the roof membrane can cause leaks, leading to water damage inside the building.

Root Penetration: Plant roots may penetrate roofing materials, causing structural issues if not managed properly.

Plant Selection: Certain plants thrive better on green roofs; choices might be limited by local climate and maintenance capabilities.

Climate Sensitivity: Extreme weather conditions or lack of proper irrigation can stress or kill rooftop vegetation.

Summary:

Green roofing systems offer a plethora of environmental and economic benefits but come with considerations that must be addressed before installation. Assessing factors like building structure, maintenance capacity, and climate is crucial in determining the feasibility and long-term success of implementing green roofs.

The choice of flat roofing system in the UK depends on factors like climate, budget, building structure, and specific requirements. Regular maintenance is essential for all flat roofing systems to ensure their longevity and performance.

Benjamin James Roofing are experienced and trained in the full range of flat roofing systems, which means we are able to offer the most appropriate and cost-effective solution for your needs.

If you have any other questions, please feel free to contact us.

