

# Green grow the rooftops



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Green roofs may have come a long way since the Hanging Gardens of Babylon, but specification of the right system is essential to its success. Steve Greaves of Flag UK outlines the differences.

THE USE OF PLANTS ON ROOFS APPEARED AS early as 550BC in the Hanging Gardens of Babylon. Today green roofs are being installed for both aesthetic and environmental reasons with the green roof replacing the green footprint lost through the erection of the building.

Green roofs provide partial solutions to several environmental problems, which are common in urban locations including: reduction of pollution, improved air quality, reduction of 'Urban Heat Island Effect', decreased noise pollution, and quality habitats for insects and birds due to less available green space on the ground. The significant contribution of green roofs to sustainable drainage systems is increasingly being recognised and can play an important role in storm water management.

For business and domestic customers, green roofs can reduce costs on energy and roof upkeep. Green roofs insulate and protect buildings from weather conditions and the sun's UV radiation, which reduces energy consumption and increases the durability of the roof.

The type of green roof is determined by the load that the building can support so these calculations need to be included in the structural design of a new building, or thoroughly checked in a refurbished project. It is important to check load bearing capacity and deflection of the deck and ensure that calculations take into account the wet load per surface of greenery, soil and live load, such as snow and wind. If the roof is on a pitch then the retention battens must provide

sufficient resistance to the thrust of the build up.

There are three main types of green roofs; Extensive, Intensive and Biodiverse. The weight of each roof type ranges from as little as 50 kg/m<sup>2</sup> to 570 kg/m<sup>2</sup>. The weight applied depends on the purpose for which the roof will be used.

Extensive roofs consist of a lightweight layer of growing mediums, typically between 70mm and 150mm containing natural vegetation to give an extensive roof cover which requires minimal irrigation and maintenance. In this instance, the existing roof environment needs little modification so it is ideal for new or refurbishment projects. The typical build up for an Extensive roof will consist of a structural deck, vapour control layer, thermal insulation, root resistance waterproofing membrane, growing medium and planting consisting of either vegetation blankets, hydro-seeding or plug plants.

Intensive green roofing systems will support a wide variety of flowering plants, shrubs and trees and are often designed as recreational areas. Optigreen's Garden Roof can house recreational lawns, ponds and seating areas. Intensive roofs require irrigation and regular maintenance so specification of a system with an automatic irrigation function is recommended. With Intensive systems, anything is possible as the garden at ground level is simply transferred to the roof to create additional living space.

The typical build up for an Intensive roof such as the Garden Roof will consist of a structural

deck, protection mat (waterproofing systems), root protection layer, drainage layer, bulk material, filter mat and growing substrate.

Biodiverse green roofing is typically Extensive but an Intensive roof could be built with natural vegetation if required. The finished surface tends to be sculpted in order to provide a habitat for the specific flora and fauna it is designed to accommodate. Optigreen's Nature Roof provides a habitat for bees and butterflies with a long lasting blooming effect.

The care and maintenance of a green roof should be carried out by suitably trained contractors and this element should be taken into consideration during the planning and tendering phase. Optigreen's partner, Flag UK, operates an approved contractor network throughout the UK, all of whom have been trained by Optigreen in Germany to install all elements of the green roof build up. Contractors repeat their training every year so as to keep up to date with new systems.

Finally, compliance with laws, standards, guidelines and warranties is imperative. Optigreen systems are designed in line with the FLL guidelines which are adapted to European conditions and have proved to be of value and use for over 30 years. ■

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