

# INNOVATIVE SYSTEMS FOR GREENING CITIES

The 21st century brought major changes in urbanization; agglomeration and the negative effects that come with shrinking natural habitats can inevitably be felt, but we can help mitigate these effects by building sustainable cities.

We are all responsible for protecting the environment and taking steps to reduce the negative effects of urbanization and climate change.

**Ecostratos has a challenging mission: to transform the urban environment into a vibrant and greener place by providing innovative solutions for roofs, hanging gardens, green walls and facades that improve the quality of life in cities and promote a sustainable approach to urban development.**

That's why Ecostratos offers you a practical and aesthetic solution through green roof systems. They not only improve the aesthetic appearance of buildings, but also provide benefits for the environment and our health. **By installing a green roof, we help reduce air and water pollution, combat global warming and improve the quality of life in congested cities.** Green roofs, also known as vegetative roofs, are an innovative and sustainable building solution with multiple and important environmental and energy saving benefits.

## THE BIOSOLAR GREEN ROOF SYSTEM

A biosolar green roof system combines the benefits of a green roof with solar PV systems to maximize energy efficiency and enhance positive environmental impact. In a biosolar green roof system photovoltaic panels are installed above the substrate and vegetation layer of the green roof, being higher than conventional solar systems. Green roof plants help to cool the environment of the



photovoltaic panels through the shading and cooling effect they have on the roof, thus reducing the temperature of the solar panels, increasing their efficiency. Due to the raised panels, roof maintenance is facilitated and specific microclimates are created with variable temperatures and humidity in the areas shaded by the panels, which favor a diverse range of plant and insect species.

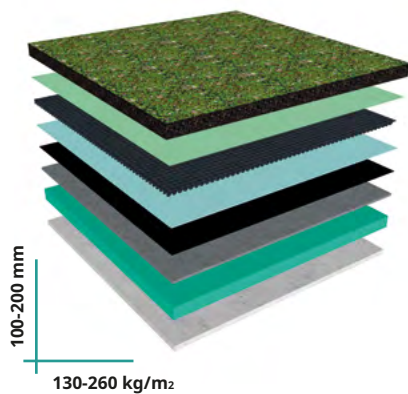
**Green roof biosolar systems are designed to provide multiple benefits: generating renewable energy, reducing carbon dioxide emissions, and improving air quality and biodiversity in urban areas.**

- The elevated modules allow light to penetrate and provide the vegetation with a hydrated layer.
- It does not damage the waterproofing, it is installed without piercing it, with the ballast of the substrate and vegetation.



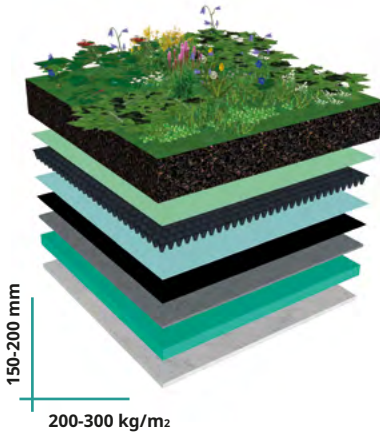
## MAIN TYPES OF GREEN ROOFS

Depending on the specific structure, features and benefits, there are several types of green roof systems. In general, the factors that determine the choice of the type of system that works best for a building are the architecture of the building, climatic factors and technical-economic objectives.



### EXTENSIVE

This type of green roof is the easiest and most affordable. Generally consists of thin substrate and hardy plants such as grasses and mosses. It requires less maintenance and can be installed on most buildings.



### SEMI-INTENSIVE

Can include a wider variety of plants; it is more versatile than the extensive green roof as it offers a wide range of design options, with a wider variety of plants and better water retention capacity, but requires more maintenance.



### INTENSIVE

Represents the most complex system being composed of larger plants such as shrubs and trees as well as grasses and flowers. It requires a strong support structure and greater substrate thickness, reaching even 1.5 m thickness.



With over 30 years of management experience in this field and with our passionate team, we meet any landscape challenge by offering high quality products and systems. We are ready to build a cleaner, healthier and more sustainable future together with our partners. We provide a full range of products and services to transform building roofs, terraces and walls into sustainable and functional green spaces; we are committed to support our partners with our eco-friendly and superior quality products. We offer a wide variety of plants of the **Sedum** plants, perennials, shrubs and trees, as well as all the necessary elements (including planting substrates, drainage, protection, filtration), to create a spectacular green roof.





## SEDUM MATS

The **Sedum** mats offer a wide variety of colors and shapes because they contain plants with leaves of various sizes.

To have the guarantee of an impressive and vibrant green roof, we use **Sedum** mats grown in our own plantations in Arad, which provides a compact vegetation cover immediately after installation, with colorful leaves throughout the year, a high water retention capacity and drought resistance.

The carpet obtained from **Sedum** is easy to install and maintain; requires minimal maintenance, 1-2 times a year; it's the perfect choice for any extensive green roof.



## GREEN TRAM LINES WITH SEDUM MATS

The use of **Sedum** in the greening of tram lines brings important benefits to the community. First, it improves air quality by capturing dust particles and airborne pollutants. Also, **Sedum** helps reduce noise levels, providing a quieter and more pleasant environment for inhabitants.

In addition, it helps to improve the urban appearance by bringing an element of nature to the city. The green appearance of tram lines creates a more pleasant and aesthetic environment for people. This has a positive impact on the well-being of residents and can contribute to improve the quality of life in the city.

**Sedum absorbs CO2 and other particles, storing an average of 1.23 kg of CO2/m2/year.** This means that 813 m<sup>2</sup> of green railway or tram line with **Sedum** absorbs a ton of CO2/year. A ton of CO2 is equivalent to the pollution caused by driving a petrol car for a distance of almost 10,000 km.



Arad is the first city in the country where a significant green space has been created thanks to the greening of the tram lines, the installation being carried out in the summer and autumn of 2023. The successful project is considered a pioneer in Romania and it is expected that other cities will join the initiative in the near future. The development was carried out without irrigation systems, on Revoluției Boulevard and Calea Aurel Vlaicu, over a length of 5.5 km, achieving the greening of the area and the corridor formed by the existing tram lines, on an area of 3 ha. The greening of the tram lines was achieved by arranging them with **Sedum mats** between the tram tracks and outside them, along the entire length of the site. Green tram routes positively influence the visual perception of the urban landscape, the green space created by greening the lines creates a connection between the built environment, man and nature, provides a healthier climate and contributes to the well-being of the inhabitants.

**The trend of greening tram lines with Sedum is a smart, sustainable and aesthetic solution that can bring significant benefits to the urban environment and the local community.**



## BIOTURF MATS

**A green roof with Bioturf mats provides a pleasant and natural aesthetic appearance, bringing beauty to the urban landscape.**

A simple way to achieve a spectacular lawn is to plant bioturf mats, which form an instant compact green surface. By quickly installing a well-developed lawn, a compact surface is obtained very quickly, eliminating the waiting time and maintenance costs for 5-7 months (like in the case of seeding).



Bioturf is grown and maintained using environmentally friendly practices; only drought-resistant lawn seeds are used for plant growth and no chemical pesticides and herbicides are used; weeds are eliminated by repeated pruning and manual extraction operations. It is characterized by resistance to high temperatures and dry periods, has a high rooting power and requires less maintenance.

The result is a brightly colored lawn, healthy and resistant in all climatic conditions.

## GREEN WALLS AND FACADES

Green facades and walls represent an impressive architectural innovation that brings fresh air and natural green to the urban environment. They are created by planting or installing vegetation with different species of perennial plants on the vertical surfaces of buildings. Vegetation is planted in a growing medium consisting of soil or special substrate. They can be placed on commercial, industrial, residential or public buildings.

There are many different vertical greening solutions and countless plant species that can be used depending on the specific objectives of the projects, considering shading, aesthetics, temperature or humidity. When choosing the right system, should be taken into account the specifications of the place where they are installed.

The green walls and facades systems can be made in different ways: with climbing plants (with or without supporting support), with the help of pre-cultivated panels or by building individual walls with special substrate for rooting and growth.



## PANEL SYSTEM FOR VERTICAL GARDENS

**The "Flower&Wall" modular panel system is the latest generation in building greening, an innovative, sustainable method which can easily transform any gray surface into a green oasis.**

The plants are placed in a substrate specially designed for vertical growth; due to the professional irrigation system and growing environment, the plants receive all the nutrients and hydration necessary for healthy development, so the vegetation has a vibrant and multi-colored appearance.

The system is characterized by a low weight; offers a versatile solution for greening, with multiple possibilities of use for almost all types of walls. It can be mounted both on existing, renovated and new buildings; can be installed in any desired shapes and sizes, even on surfaces with curved, wavy lines.

***Dear architects, constructors, landscapers and public authorities, we can form a strong team, which lays the foundations for smarter, greener and healthier living.***



### ECOSTRATOS SRL

Arad, Clopotului str., no. 128

e-mail: office@ecostratos.ro

Web: www.ecostratos.ro

**TOGETHER WE CAN MAKE A SIGNIFICANT CHANGE  
IN THE URBAN ENVIRONMENT AND IN THE WORLD WE LIVE IN!**

