



GREEN ROOFS



PERMEABLE CAR PARKS



EQUESTRIAN FLOORING

TECHNICAL
MANUAL

Green systems for roofs and terraces



OUR MISSION:

To grow new gardens on roofs, terraces and car parks, so that the city may breathe.

Pierre Georget
 Pierre Georget
 CEO

OUTLINE

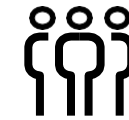
ECOVEGETAL: THE PROFESSIONAL NATURAL SOLUTION	4
HOW TO BUILD A SUCCESSFUL GREEN ROOF	6
I. SINGLE EXTENSIVE VEGETATION (0 TO 20%)	
1. SUCCULIS system	8
2. Turnkey solution: ECOSEDUM PACK	10
3. For dry climates: SUCCULIS MERIDIO	12
II. MIXED EXTENSIVE VEGETATION (0 TO 20%)	
1. SAXATILIS system	14
2. For dry climates: SAXATILIS MERIDIO	16
4. FLOWERING MEADOW system	18
III. SEMI-INTENSIVE VEGETATION	
1. LAVANDULIS	20
2. ECOVEGETAL GREEN	22
3. URBAN VEGETABLE GARDEN	24
IV. BIODIVERSE VEGETATION	
1. Endemic plants	26
2. Extensive roofing and biodiversity	28
3. Bio-solar roof: HELIOVERT	30
V. SYSTEMS FOR STEEP SLOPES	
1. 20 to 45%: ECORASTER	32
2. 45 to 200%: ECOGREEN	34
VI. ACCESSIBLE TERRACES	
1. Garden terrace	36
2. Patio	38
3. Fire lanes	40
VII. IRRIGATION	
1. General	42
2. Sprinklers	44
3. Drip	45
4. Aquatec	46
5. Aquanat	47
VIII. TEMPORARY RAINWATER RETENTION	48
IX. SYSTEM COMPARISON TABLE	50



OUR STRENGTHS



ECOVEGETAL is a company committed to protecting the environment and enhancing living spaces.



ECOVEGETAL is a French, European and responsible company.



ECOVEGETAL is a top company for water management at the plot level.

Our managers and founders are farmers, landscapers and manufacturers. Francis Pelletier, Pierre Georgel, Jürgen Manzei.



FOR MORE THAN 20 YEARS, ECOVEGETAL has been the natural solution for green roofs, car parks and soil stabilisation.

Our job is to assemble and grow plants on roofs, car parks and terraces, creating green spaces or stable and permeable soils. Through hard work, here at ECOVEGETAL, we have become a top choice company for plot-level water management for cities and professionals in just a few years.

ECOVEGETAL provides all necessary expertise and tools. Our company, headquartered in Broué in the French countryside, markets its products throughout Europe, either directly or through subsidiaries or partnerships. We also have a sales office in Morocco. Our mission is to spread our expertise and products everywhere.

A RESPONSIBLE PROFESSIONAL TO PROTECT AND ENHANCE

Our values are deeply rooted in the history of our company and are shared by the people who work for us each day:

- Respect for nature. Ecology is our foundation and the focus of everything we do.
- Respect for each other. Honesty, openness, transparency, fairness and equality are the five values that unite us.
- Respect for others. Welcoming new members of the community, sharing rights and obligations, the desire to work together and enjoy ourselves at the same time.

Here at ECOVEGETAL, we have been committed to sustainable development and the High Quality Environmental standard (HQE) since our founding. Our products and production methods conserve water, recycle materials, limit waste production and help buildings fit in with their environment.



Soil sealing has devastating effects on the environment. It is now vital to increase the size of green spaces, allowing water to infiltrate and evaporate in the urban environment.

ECOVEGETAL CLOSE TO YOU

At the cutting edge of innovation

In order to offer ever more innovative solutions, ECOVEGETAL invests in research on rainwater management (e.g. ROULEPUR). We anticipate the requirements of new regulations on sustainable development (ALUR law, BIODIVERSITY, PLU, etc.).

ECOVEGETAL green roof systems are certified by TECHNICAL REVIEW and ETN. Our materials are also regularly tested and certified (A2FL-S1, BROOF T3, wind, etc.)

Location of production sites

At ECOVEGETAL, we produce our own substrates and pre-grown mats at our production sites: Broué (28), Séraucourt (02), Poussignac (47) and Le Thor (84), France.



To reduce our environmental footprint, our production facilities and teams are located close to the market and your construction projects.

1. CHOOSING THE RIGHT SYSTEM



Several parameters determine which green system you should choose.

The base material and slope of the roof: the base can be made of concrete, wood or steel and the roof can be flat or sloping. The load-bearing capacity of the roof will determine the weight of the system at maximum water capacity (MWC).

Accessibility of the roof: the roof may be inaccessible or accessible to pedestrians, vehicles or the fire department.

The geographical area and the sun exposure of the building must also be taken into account.

2. CHOOSING YOUR DRAINAGE SYSTEM



The drainage system is essential for storing rainwater on the roof.

An inert polyethylene/polystyrene drain is well adapted for water retention on concrete roofs with no slope.

An absorbent mat is recommended to increase the water retention of the plant system on sloping roofs. The drains and mats used by ECOVEGETAL are made from recycled and recyclable materials.

3. CHOOSING YOUR SUBSTRATE AND SUBSTRATE HEIGHT



The substrate is one of the most important parts of a green roof. The success and durability of the roof depend on its composition. ECOVEGETAL uses natural or recycled materials for substrate mixtures. Our substrates are all measured at MWC (Maximum Water Capacity) in order to determine an accurate weight for our systems and structural calculations for your building. It is also important to respect the height of the substrate so that the plants can grow (watch out for substrate settling).

4. CHOOSING YOUR PLANTS



Several parameters determine which plants you should choose:

The desired immediate appearance: for plant cover of > 80% at installation, choose pre-grown plants (mats or planters).

Compliance with certifications (BREEAM, etc.): ECOVEGETAL offers a selection of native plants adapted to each project to avoid installing an irrigation system.

At ECOVEGETAL, we grow our own plants for our roofing projects. We have selected them after studying roofs over several years.

5. IRRIGATION EXPERTISE



Most inaccessible green roofs do not require additional water. The system is designed to be self-sufficient. Nevertheless, some configurations require limited irrigation to guarantee long-lasting success of the plants.

ECOVEGETAL relies on leading brands to provide the right solution for your project. 4 solutions are available to best meet your needs: sprinkler irrigation, drip irrigation, capillary irrigation (AQUAFLEECE and AQUATEC).

6. COMPLIANCE WITH INSTALLATION GUIDELINES



In order to make your green roof a success, follow these installation guidelines:

Choose product packaging based on access to the site (big bag, silo, bag); Maintain the substrate thickness during installation; Maintain planting density of the selected plants; Water the system appropriately after installation. In order to guarantee the best service and long-lasting quality of your roof, ECOVEGETAL offers an installation service. Our teams expertly manage each stage of installation (sterile areas, pathways, flat or sloping roofs) and operate throughout France, Belgium and Luxembourg.

7. SYSTEM MAINTENANCE



How well you maintain your green roof or terrace will determine the success of your project over time. This is why we have a team dedicated solely to project maintenance.

Services vary according to the time of year and type of project: cleaning, weeding, gentle and limited fertilisation, cutting, pruning, mowing of dead inflorescences and waste removal.

Maintenance frequency depends on the type of roof or terrace and the service ordered.

8. CERTIFIED SYSTEMS



The plant system must comply with our Professional Regulations, the Unified Technical Documents or have been approved by a certifying body (ETN or Technical Review).

Why is it important to have a certified system?

A Technical Review guarantees the quality of innovative products and processes. It complies with laws and regulations. ECOVEGETAL green roof systems are certified by Technical Review n°5.2/19- 2655_V1 published on 10/28/2019.



FEATURES AND BENEFITS



technical Review
n°5.2/19-2655_V1



self-sufficient for water



low maintenance
1 to 2 times per year



fire classification
A2_{FL}-S1

OUR SINGLE VEGETATION SOLUTION

SUCCULIS is an extensive and hardy vegetation system for concrete, wood or steel structures. SUCCULIS is used for its light weight and low maintenance.

The vegetation of the SUCCULIS system is made of various sedums whose foliage colour changes with the seasons. The colour can vary from green to red and the flowers are usually yellow, white, red and pink.

This eco-friendly protection replaces the gravel layer.

BENEFITS OF THE SYSTEM

- LIGHT AND COST-EFFECTIVE
- LOW MAINTENANCE AFTER PLANT INSTALLATION
- A SPECIES MIX THAT GUARANTEES FLOWERING FROM MAY TO OCTOBER
- A SINGLE PLANT SELECTION PROVEN OVER MILLIONS OF SQUARE METRES IN EUROPE



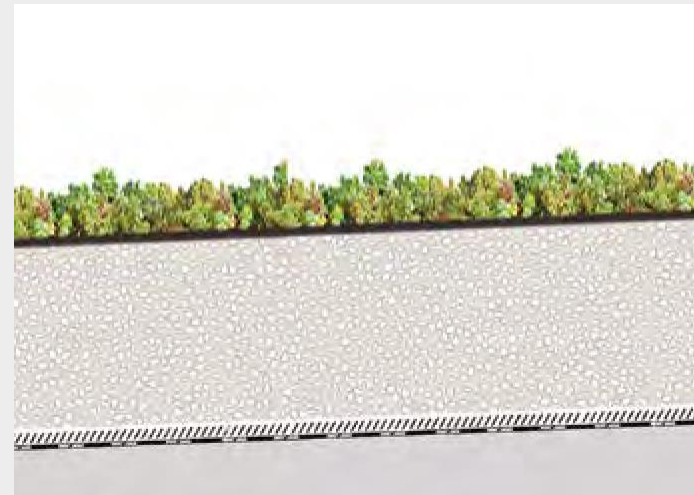
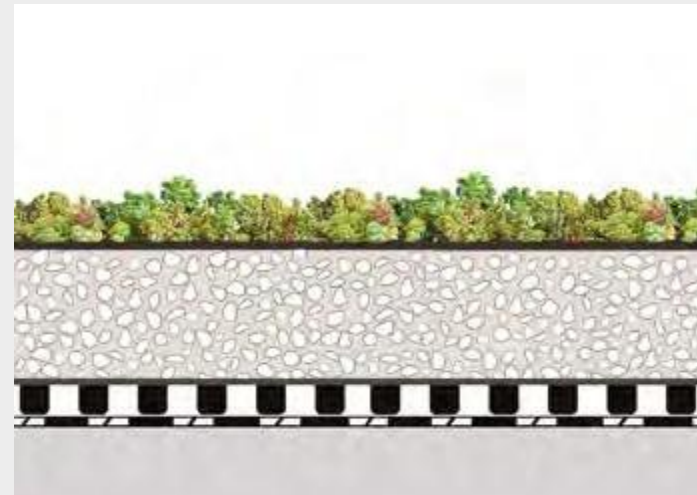
TYPICAL CROSS-SECTIONS

SUCCULIS WITH DRAIN (0-3%)

Height of the settled system:
Weight at maximum water capacity:
Water retention capacity:
Runoff coefficient:

SINGLE LAYER SUCCULIS (3-20%)

8 cm Height of the settled system:
115 kg/m² Weight at maximum water capacity:
40 l/m² Water retention capacity:
0.46 Runoff coefficient:



PRE-GROWN MAT
SUCCULIS



PLANTED POTS
OR CUTTINGS



SAXALIS 1.1 SUBSTRATE



DK20 DRAIN



MAT AP32

Pre-grown biodegradable mat with sedum varieties suitable for immediate green roofs. Mixture of 5 sedum species: Sedum acre, Sedum album, Sedum spurium, Sedum floriferum, Sedum sexangulare.

Sedum planted in pots or cuttings. Planting density: 15 pots/m² or 5 pots/m²+ 80 g/m² of cuttings.
List of sedums: Sedum album, Sedum spurium, Sedum reflexum, Sedum acre, Sedum floriferum, Sedum kamtschaticum, Sedum sexangulare, Sedum lydium, etc. (non-exhaustive list, for information purposes only).

Mineral substrate made from mineral aggregates enriched with organic material. Specifically designed for extensive vegetation. Packaging: 20 l bag, big bag, bulk by dump truck and blowing by silo truck. The fire reaction of the SAXALIS 1.1 substrate is classified A2FL-S1: Euroclass according to EN 13501-1 as per classification report no. 19716C.

DK20 water retention drain made of high-density polyethylene with 20 mm high geotextile. Water retention: 7 l/m². Compressive strength of 50 kN/m² according to EN 25619-2 standard.

Mat made of rot-proof synthetic polyester fibres.
Thickness: 4.56 mm; Weight: 356 g/m²; Colour: grey;
Water retention capacity: 4 l/m².


SINGLE EXTENSIVE VEGETATION ECOSSEDUM PACK



FEATURES AND BENEFITS



certified for wind



fast installation
300 m²/day/
4 people



technical Review
n°5.2/19-2655_V1



low maintenance

OUR TURNKEY VEGETATION SOLUTION (0-100%)

The ECOSSEDUM PACK is an all-in-one system, pre-grown mainly with sedums. This planter is designed to ensure efficient drainage, a large water reserve and good plant growth. Fine particle retention is provided by the patented ECOSSEDUM PACK design.

BENEFITS OF THE SYSTEM

- MAXIMUM COVERAGE RATE
- REMOVABLE SYSTEM IDEAL FOR STERILE AREAS
- EFFICIENT DRAINAGE, OPTIMAL WATER RETENTION
- MODULAR AND QUICK TO INSTALL
- ANTI-PUNCTURE FLAT BOTTOM
- SUITABLE FOR WINDY AREAS
- SLOPING ROOFS UP TO 100%
- LIMITS GROWTH OF WEEDS
- OPTIONAL BORDER ALONG THE ECOSSEDUM PACK



TYPICAL CROSS-SECTIONS

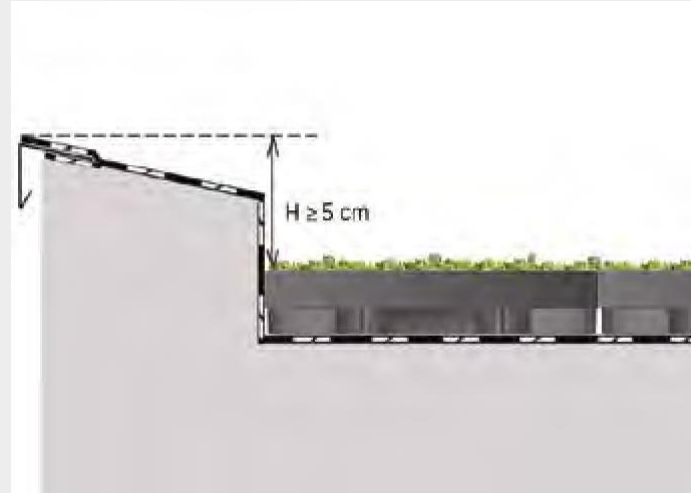
ECOSSEDUM PACK LIGHT

Material: 100% recycled PE/PP
Base: wood or steel planter
Slope: up to 100%
Retention: edges and hooks



ECOSSEDUM PACK

Material: 100% recycled PE/PP
Base: concrete base
Slope: 0-3%
Acroterion: waterproof



ECOSSEDUM PACK LIGHT - 60 KG/M²

Green roofs with strict weight limitations
Empty planter dimensions: 60 x 40 x 6.5 cm
Weight at MWC: 60 kg/m²
Water retention capacity: 25 l/m²
Runoff coefficient: 0.47
Plants: sedums

ECOSSEDUM PACK - 80 kg/m²

Easy to install on any surface
Empty planter dimensions: 60 x 40 x 6.5 cm
Weight at MWC: 80 kg/m²
Water retention capacity: 36 l/m²
Runoff coefficient: 0.41
Plants: sedums

ECOSSEDUM PACK BIODIVERSITY - 80 KG/M²

Diversified vegetation on roofs
Empty planter dimensions: 60 x 40 x 6.5 cm
Weight at MWC: 80 kg/m²
Water retention capacity: 36 l/m²
Runoff coefficient: 0.38
Plants: Various species of sedums and perennials such as allium, festuca, geranium, muscari, veronica, crassula, forget-me-not, centranthus, etc. Not for sterile areas. Irrigation is highly recommended or mandatory in zone 3.

SINGLE EXTENSIVE VEGETATION SUCCULIS MERIDIO



FEATURES AND BENEFITS



fire classification
A2_{nl}-S1 and
BROOF T3



appropriate
species



system
approved by
Broof T3



technical
Review
n°5.2/19-2655_V1

OUR VEGETATION SOLUTION FOR DRY CLIMATES (0-3%)

SUCCULIS MERIDIO is extensive and hardy vegetation. This system is specifically designed for the dry climates of southern France with high water storage capacity and appropriate plants.

SUCCULIS MERIDIO is used for its light weight and low maintenance costs. Hardy sedum species in combination with the right system guarantee sustainable vegetation.

The plant diversity of the SUCCULIS MERIDIO system provides a variety of colours throughout the year.

BENEFITS OF THE SYSTEM

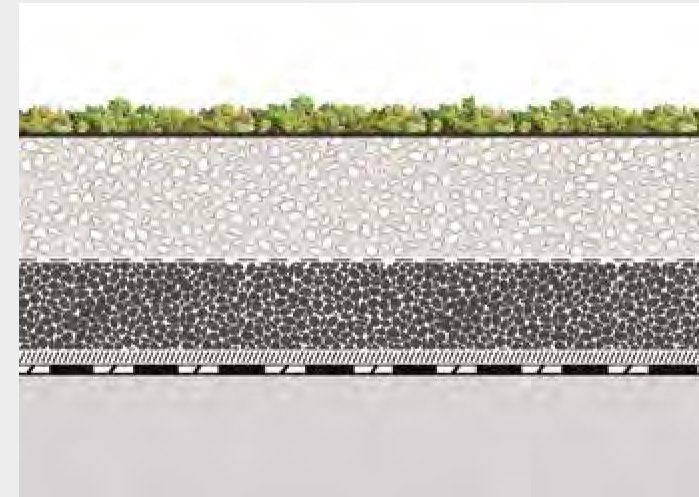
- A SINGLE AND PROVEN PLANT SELECTION FOR DRY CLIMATES
- LOW MAINTENANCE AFTER PLANT INSTALLATION
- A SPECIES MIX THAT GUARANTEES FLOWERING FROM MAY TO OCTOBER



TYPICAL CROSS-SECTIONS

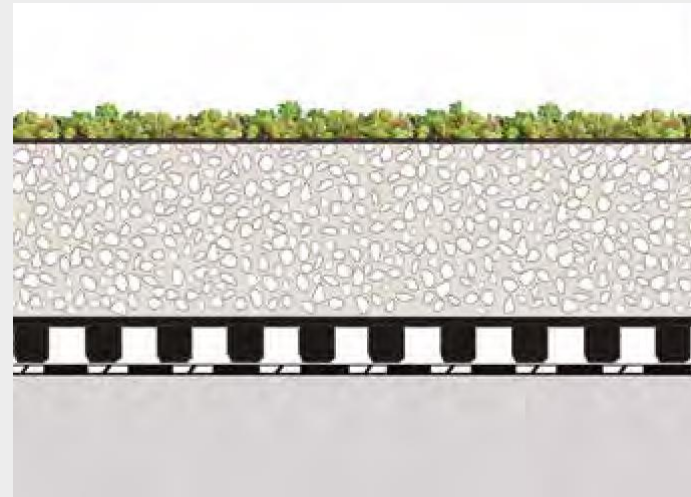
SUCCULIS WITH ECOLIT PZ DRAIN

Height of the settled system: 10 cm
Weight at maximum water capacity: 130 kg/m²
Water retention capacity: 45 l/ m²
Runoff coefficient: 0.54



SUCCULIS WITH DK 20 DRAIN

Height of the settled system: 10 cm
Weight at maximum water capacity: 110 kg/m²
Water retention capacity: 50 l/m²
Runoff coefficient: 0.42



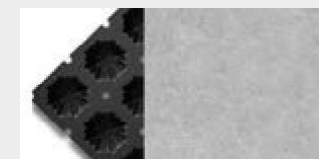
SEDUMS

We offer several installation options: pre-grown mat, pots and/or cuttings.
The SUCCULIS list (for pots): Sedum acre, Sedum album, Sedum sexangulare, Sedum floriferum, Sedum kamtschaticum, Sedum reflexum, Sedum spurium, Sedum lydium, Delosperma in pots (non-exhaustive list).



SAXALIS 1.1 SUBSTRATE

Mineral substrate made from mineral aggregates enriched with organic material. Specifically designed for extensive vegetation. Packaging: 20 l bag, big bag, bulk by dump truck and blowing by silo truck. The fire reaction of the SAXALIS 1.1 substrate is classified A2FL-S1: Euroclass according to EN 13501-1 as per classification report no. 19716C.



DK20 DRAIN

DK20 water retention drain made of high-density polyethylene with 20 mm high geotextile. Water retention: 7 l/m². Compressive strength of 50 kN/m² according to EN 25619-2 standard.



ECOLIT DRAIN

Drainage through clay or pozzolan. Rot-proof, stable and durable material with good wind resistance. ECOLIT is air permeable and has a high water storage and drainage capacity. The ECOLIT layer is covered with a STEX filter.



PROTECTION MAT
AP32

Mat made of rot-proof synthetic polyester fibres.
Thickness: 4.56 mm; Weight: 356 g/m²; Colour: grey;
Water retention capacity: 4 l/m².



FEATURES AND BENEFITS



technical Review
n°5.2/19-2655_V1



self-sufficient for water



fire classification
A2_{FL}-S1



abundant flowering

AN EASY AND DURABLE VEGETATION SOLUTION

SAXATILIS is an extensive vegetation system that can be used for a variety of applications on concrete, wood and steel structures.

The SAXATILIS system improves the appearance of light roofs. Long-lasting flowering is achieved with a rich variety of species. Ground cover plants (Sedum and Delosperma) and perennials initially close the soil.

The SAXATILIS effect is achieved by planting alpine perennials in bunches that can reach up to 40 cm when in bloom.

BENEFITS OF THE SYSTEM

- MIXED PLANT SELECTION OF SEDUMS AND ALPINE PERENNIALS
- EXTENSIVE FLOWERING AND EVERGREEN
- MODERATE MAINTENANCE AFTER PLANT INSTALLATION
- LIGHT SYSTEM WITH RICH PLANT VARIETY



TYPICAL CROSS-SECTIONS

SAXATILIS WITH DRAIN (0-3%)

Height of the settled system: 15 cm
Weight at maximum water capacity: 160 kg/m²
Water retention capacity: 60 l/m²
Runoff coefficient: 0.33



SINGLE LAYER SAXATILIS (3-20%)

Height of the settled system: 12 cm
Weight at maximum water capacity: 150 kg/m²
Water retention capacity: 60 l/m²
Runoff coefficient: 0.34



PRE-GROWN MAT
SAXATILIS

Pre-grown biodegradable mat with perennial and sedum species for instant green roofs. Mixture of 65-75% sedums and 25-35% perennials: Thymus serpyllum, Cerastium tomentosum, Alyssum montanum, etc.



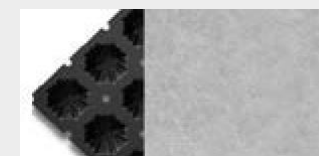
SAXATILIS PLANTS
IN POTS

Colourful flowering over 5-8 months; Planting density: 15 units/m². Alternating bunches of plants and ground cover: Cerastium tomentosum, Satureja montana, Dianthus sp., Lychnis flos cuculi, Thymus serpyllum, Campanula sp., Bellis perennis, etc. (non-exhaustive list for information purposes only).



SAXALIS 1.1
SUBSTRATE

Mineral substrate made from mineral aggregates enriched with organic material. Specifically designed for extensive vegetation. Packaging: 20 l bag, big bag, bulk by dump truck and blowing by silo truck. The fire reaction of the SAXALIS 1.1 substrate is classified A2FL-S1: Euroclass according to EN 13501-1 as per classification report no. 19716C.



DK20 DRAIN

DK20 water retention drain made of high-density polyethylene with 20 mm high geotextile. Water retention: 7 l/m². Compressive strength of 50 kN/m² according to EN 25619-2 standard.






ABSORBENT
PROTECTION MAT

Mat made of rot-proof synthetic polyester fibres. Thickness: 4.56 mm; Weight: 356 g/m²; Colour: grey; Water retention capacity: 4 l/m².



FEATURES AND BENEFITS

-  technical Review n°5.2/19-2655_V1
-  long flowering season
-  limited watering
-  fire classification A2_{FL}-S1

OUR MIXED VEGETATION SOLUTION FOR DRY CLIMATES (0-3%)

SAXATILIS MERIDIO, a vegetation system for dry climates (rainfall zones 2 and 3) in the south of France. Their high water storage capacity means that SAXATILIS and FLOWERING MEADOW systems can be used in areas with long dry periods. The combination of different perennials, grasses and sedums provides volume and a richly coloured flowering season of 5 to 8 months.

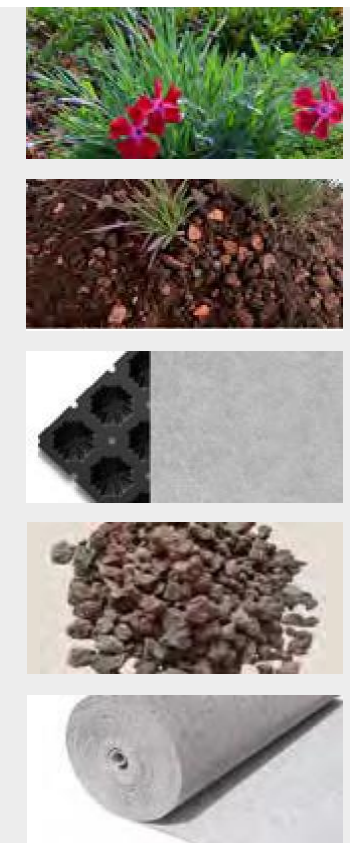
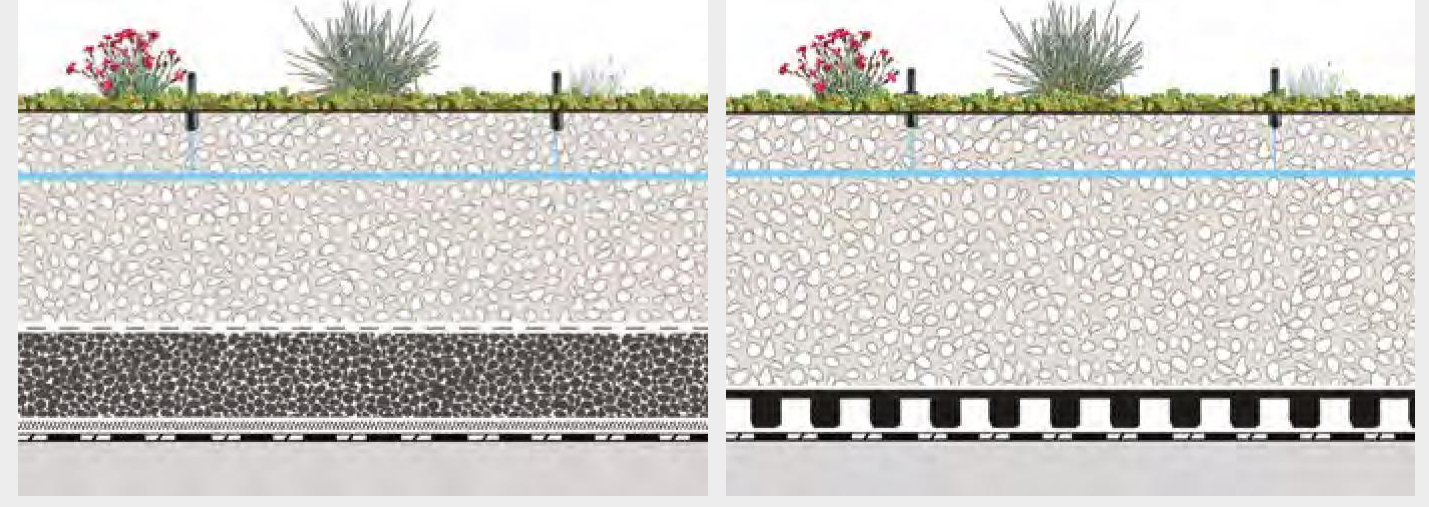
BENEFITS OF THE SYSTEM

- HIGH WATER RETENTION AND STORAGE
- THERMAL AND ACOUSTIC INSULATION OF THE BUILDING
- WATER STRESS RESISTANT
- HIGH PLANT VOLUME AND LONG FLOWERING SEASON



TYPICAL CROSS-SECTIONS

SAXATILIS WITH ECOLIT PZ DRAIN	SAXATILIS WITH DK 20 DRAIN
Height of the settled system: 15 cm	Height of the settled system: 15 cm
Weight at maximum water capacity: 185 kg/m ²	Weight at maximum water capacity: 165 kg/m ²
Water retention capacity: 65 l/m ²	Water retention capacity: 70 l/m ²
Runoff coefficient: 0.34	Runoff coefficient: 0.33







PLANTED SLAB	Variation of the SAXATILIS and FLOWERING MEADOW systems, specially adapted to dry climates; The brightly coloured flowering season takes place over 5 to 8 months; Exposure: full sun to part shade; Flowering from spring to autumn.
SAXALIS 1.1 SUBSTRATE	Mineral substrate made from mineral aggregates enriched with organic material. Specifically designed for extensive vegetation. Packaging: 20 l bag, big bag, bulk by dump truck and blowing by silo truck. The fire reaction of the SAXALIS 1.1 substrate is classified A2FL-S1: Euroclass according to EN 13501-1 as per classification report no. 19716C.
DK20 DRAIN	DK20 water retention drain made of high-density polyethylene with 20 mm high geotextile. Water retention: 7 l/m ² . Compressive strength of 50 kN/m ² according to EN 25619-2 standard.
ECOLIT DRAIN	Drainage through clay or pozzolan. Rot-proof, stable and durable material with good wind resistance. ECOLIT is air permeable and has a high water storage and drainage capacity. The ECOLIT layer is covered with a STEX filter.
ABSORBENT PROTECTION MAT	Mat made of rot-proof synthetic polyester fibres. Thickness: 4.56 mm; Weight: 356 g/m ² ; Colour: grey; Water retention capacity: 4 l/m ² .

II MIXED EXTENSIVE VEGETATION
FLOWERING MEADOW



FEATURES AND BENEFITS

-  technical Review
n°5.2/19-2655_V1
-  fire classification
A2_{FL}-S1
-  natural appearance
-  abundant flowering

OUR NATURAL VEGETATION SOLUTION

FLOWERING MEADOW is an extensive, natural-looking system with a plant volume that can reach 80 cm in height. This system has a variety of species including flowering herbs and drought tolerant grasses.

The system comes in **FLOWERS** (flowering herbaceous plants) or **DRY PRAIRIE** (small and large grasses).

FLOWERING MEADOW is strongly recommended for improving biodiversity in urban areas and integration of buildings in rural areas.

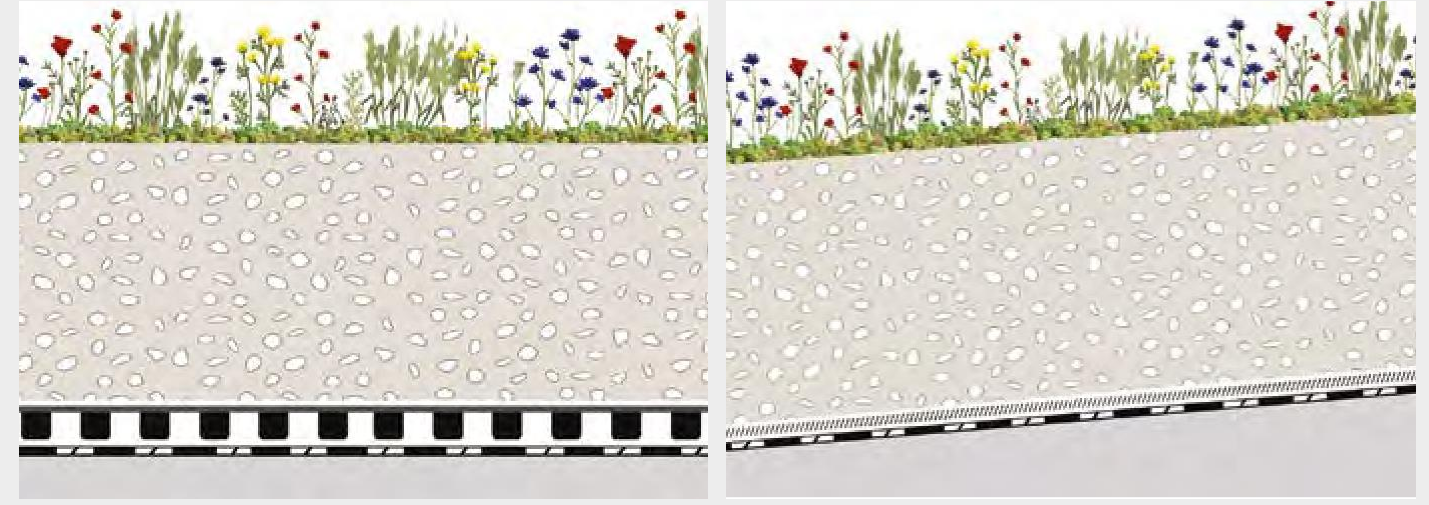
BENEFITS OF THE SYSTEM

- THERMAL AND ACOUSTIC INSULATION
- SELECTION OF HONEY PLANTS
- NATURAL LOOK
- LONG FLOWERING SEASON



TYPICAL CROSS-SECTIONS

FLOWERING MEADOW WITH DRAIN	SINGLE-LAYER FLOWERING MEADOW (3-20%)
Height of the settled system: 17 cm	Height of the settled system: 17 cm
Weight at maximum water capacity: 185 kg/m ²	Weight at maximum water capacity: 205 kg/m ²
Water retention capacity: 75 l/m ²	Water retention capacity: 80 l/m ²
Runoff coefficient: 0.32	Runoff coefficient: 0.31



FLOWERING MEADOW SPECIES

Isolated bunches: Achillea millefolium, heiranthus cherii, Chrysanthemum leucanthemum, Dianthus deltoides, Gypsophilla repens, Hyssopus officinalis, Silene vulgaris, Thymus officinalis.

Ground cover: Origanum vulgare, Sedum acre, Sedum album, Sedum sexangulare, Thymus serpyllum.

Grasses: Bromus erectus, Bromus secalinus, Festuca ovina, Koeleria pyramidata, Melica ciliata, Poa alpina, Poa compressa



SAXALIS 1.1 SUBSTRATE

Mineral substrate made from mineral aggregates enriched with organic material. Specifically designed for extensive vegetation. Packaging: 20 l bag, big bag, bulk by dump truck and blowing by silo truck. The fire reaction of the SAXALIS 1.1 substrate is classified A2FL-S1: Euroclass according to EN 13501-1 as per classification report no. 19716C.



STEX FILTER

Needle-punched non-woven polypropylene filter. Separation that ensures substrate fine particle retention. Water can flow freely through the filter. Area density: 100 g/m²; thickness under 2 kPa (EN ISO 9863): 0.6 mm



DK20 DRAIN

DK20 water retention drain made of high-density polyethylene with 20 mm high geotextile. Water retention: 7 l/m². Compressive strength of 50 kN/m² according to EN 25619-2 standard.







ABSORBENT PROTECTION MAT

Mat made of rot-proof synthetic polyester fibres. Thickness: 4.56 mm; Weight: 356 g/m²; Colour: grey; Water retention capacity: 4 l/m².



FEATURES AND BENEFITS

-  technical Review n°5.2/19-2655_V1
-  high temporary rainwater retention
-  thermal and acoustic insulation of the building
-  natural appearance

AN ALTERNATIVE TO GARDEN TERRACES
LAVANDULIS is the perfect combination of herbs and flowering perennials in a limited substrate thickness (between 15 and 30 cm).

The LAVANDULIS plant mixture provides effective ground cover with flowers through fragrant shrubs like thyme, valerian and lavender which can reach 80 cm in height.

LAVANDULIS offers a wide range of design possibilities in combination with accessible grounds and terraces.

BENEFITS OF THE SYSTEM

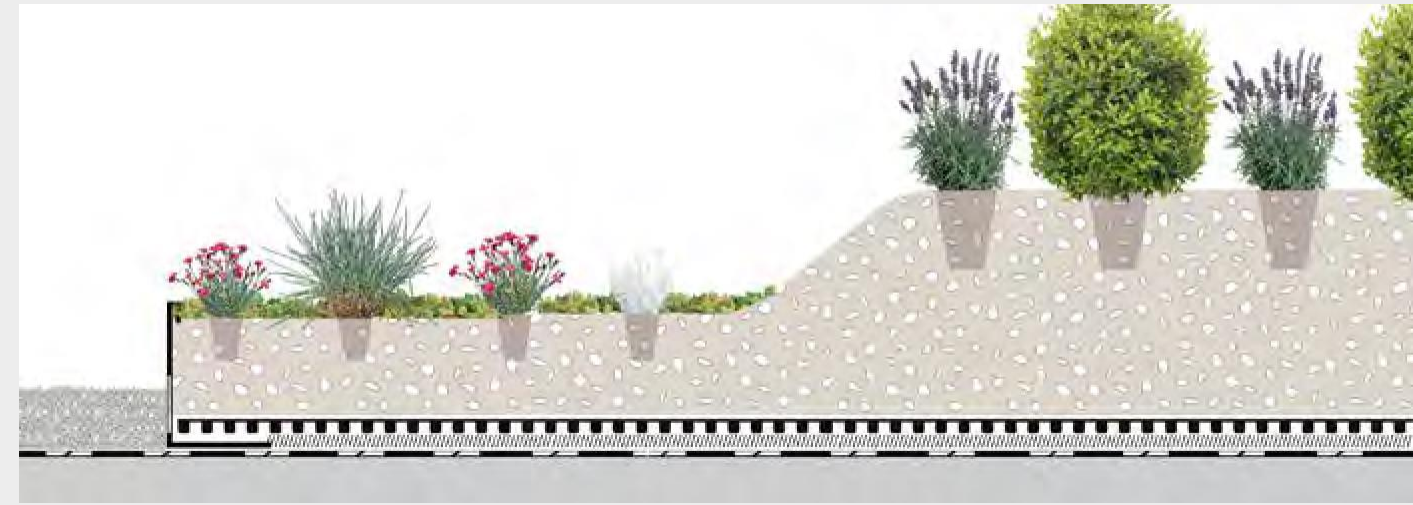
- AN ALTERNATIVE TO GARDEN TERRACES
- SPECIES OF HONEY PLANTS
- SYSTEM APPROVED BY TECHNICAL SPECIFICATIONS
- HIGHLIGHTS THE 5TH FAÇADE



TYPICAL CROSS-SECTION

LAVANDULIS WITH DRAIN (0-3%)

Height of the settled system:	27 cm
Weight at maximum water capacity:	305 kg/m ²
Water retention capacity:	135 l/m ²
Runoff coefficient:	0.28



LAVANDULIS PLANTS

Bunch: *Centranthus ruber*, *Crassula sarcocaulis*, *Festuca amethystina*, *Helichrysum italicum*, *Hyssopus officinalis*, *Lavandula angustifolia*, *Nepeta mussinii*, *Oenothera fruticosa*, *Origanum vulgare*, *Santolina chamaecyparissus*, *Stipa tenuifolia*, *Thymus officinalis*
Ground cover: *Anacyclus depressus*, *Armeria maritima*, *Frankenia laevis*, *Matricaria caucasic*, *Phuopsis crucianella*, *Scabiosa alpina* 'Ritz Blue'.



SAXALIS 1.1 SUBSTRATE

Mineral substrate made from mineral aggregates enriched with organic material. Specifically designed for extensive vegetation. Packaging: 20 l bag, big bag, bulk by dump truck and blowing by silo truck. The fire reaction of the SAXALIS 1.1 substrate is classified A2FL-S1: Euroclass according to EN 13501-1 as per classification report no. 19716C.



STEX FILTER

Needle-punched non-woven polypropylene filter. Separation that ensures substrate fine particle retention. Water can flow freely through the filter. Area density: 100 g/m²; thickness under 2 kPa (EN ISO 9863): 0.6 mm



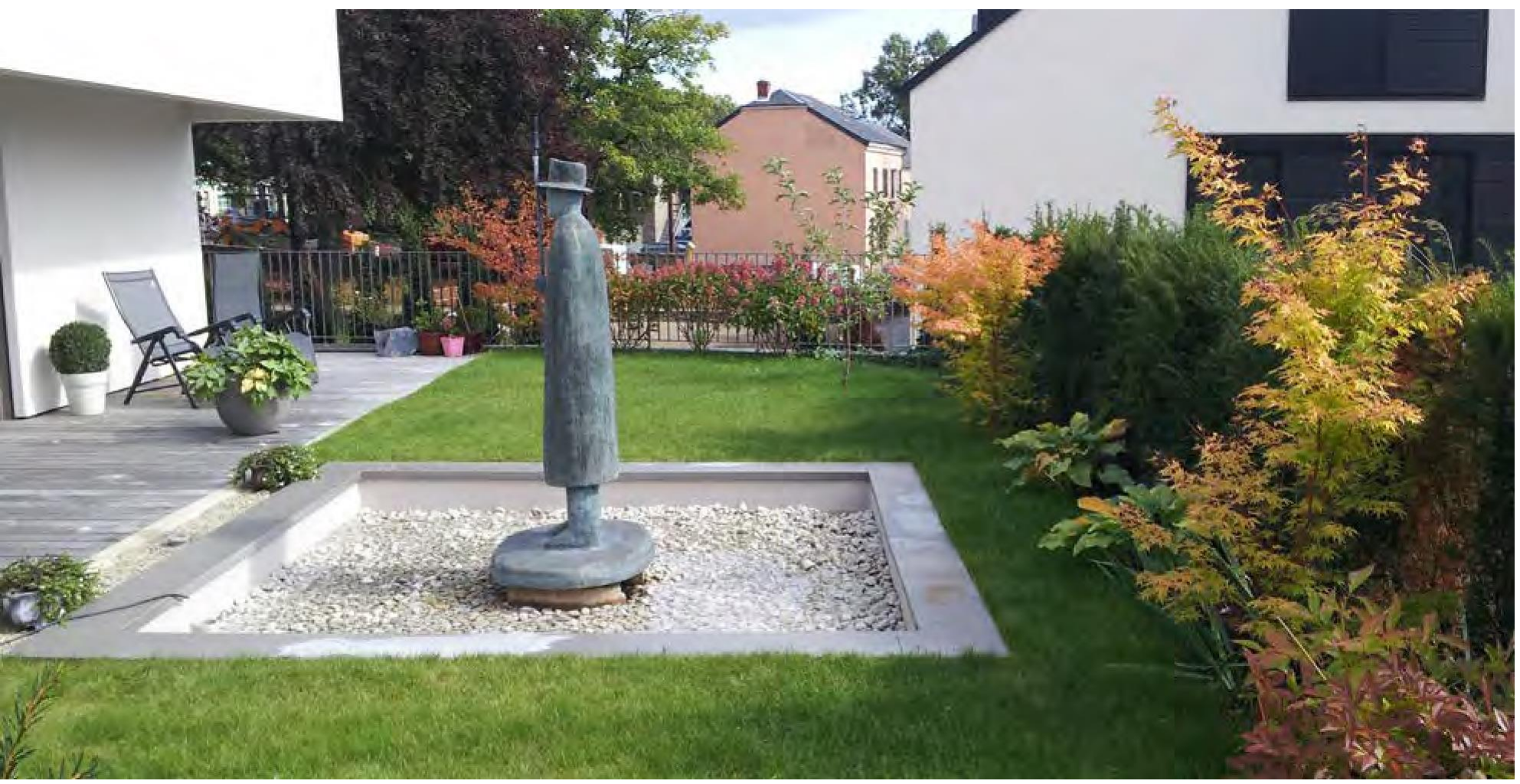
DK40 DRAIN

Drainage for water retention of 19.5 l/m², made of HIPS. Ventilation and diffusion openings; Excess water drainage on the underside; Height 40 mm; Weight: 1.96 kg/m²; Dimensions: approx 1 x 2 m.







ABSORBENT PROTECTION MAT

Synthetic fibre mat with high water retention (9 l/m²) used as a protective absorbent layer under vegetation and for physical waterproofing; Thickness: 8.87 mm; Weight 752 g/m².



FEATURES AND BENEFITS

-  high temporary rainwater retention
-  highlights the 5th façade
-  thermal and acoustic insulation of the building
-  creates a living space

THE SOLUTION FOR EXPANDING YOUR LIVING SPACE

ECOVEGETAL GREEN offers you the opportunity to create a living and leisure space. This eco-friendly protective layer significantly increases the thermal and acoustic insulation of the building. ECOVEGETAL GREEN can be combined with other facilities, such as accessible flooring, terraces, road surfaces and playgrounds.

BENEFITS OF THE SYSTEM

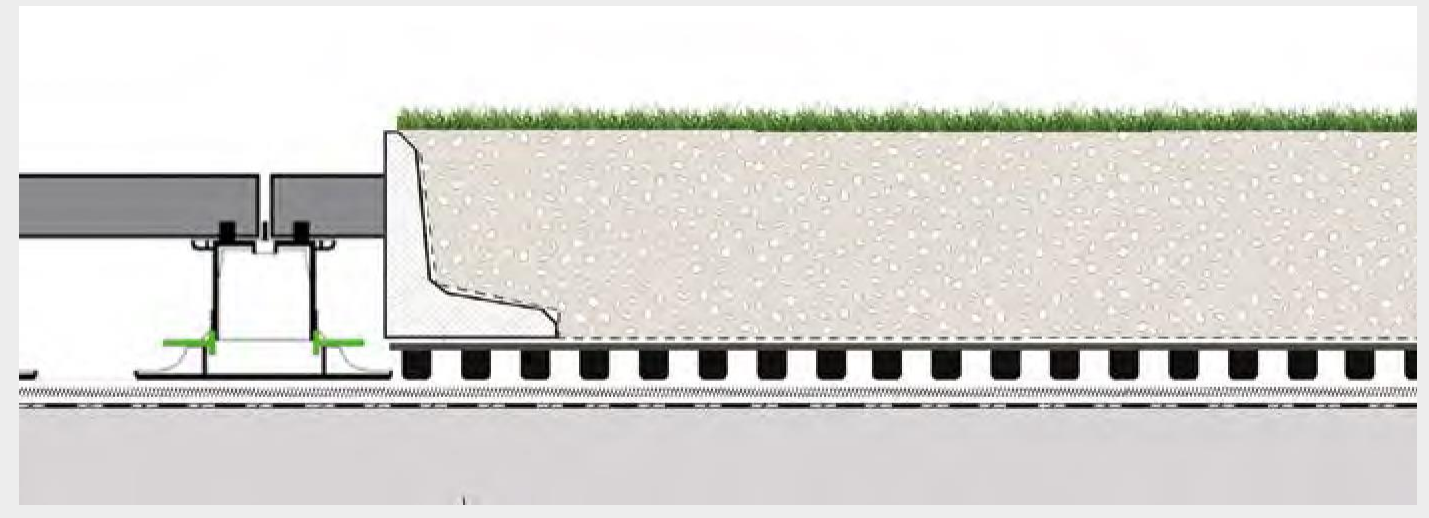
- LOW OVERALL THICKNESS
- UNIFORM VEGETATION
- MULTI-PURPOSE
- CREATES A NEW SPACE



TYPICAL CROSS-SECTION

GREEN WITH DK40 DRAIN

Height of the settled system:	34 cm
Weight at maximum water capacity:	530 kg/m ²
Water retention capacity:	210 l/m ²
Runoff coefficient:	0.21



PRE-GROWN TURF ROLLS

Pre-grown grass rolls for instant green roofs. Turf characteristics: 30% English ryegrass varieties, 50% tall fescue and 20% creeping red fescue. Resistant to heat and trampling, low maintenance and quick recovery from drought. Option to plant seeds.



JARDILIGHT SUBSTRATE

Lightweight substrate made from topsoil, compost, terracotta, ground horn and pozzolan for increased water retention. Especially well suited for intensive vegetation systems with small trees and shrubs.



STEX 180 FILTER

Heat stabilised polypropylene/polyethylene filter. Separation that prevents fine substrate particles from moving into the drain. Water can flow freely through the filter. Area density: 170 g/m²; Thickness under 2 kPa: 1.00 mm; Dimensions: 2.25 m x 100 m and 1.12 m x 100 m.



DK40 DRAIN

Drainage for water retention of 19.5 l/m², made of HIPS. Ventilation and diffusion openings; Excess water drainage on the underside; Height 40 mm; Weight: 1.96 kg/m²; Dimensions: approx. 1 x 2 m.








PROTECTION MAT AP50

High quality polyester/polypropylene mat with a needle-punched strip and a black coal underside. Thickness: 6 mm; Area density: 850 kg/m²; Water retention capacity: 4 l/m² Load class: 5; Dimensions: 2 m x 25 m.



FEATURES AND BENEFITS

-  thermal and acoustic insulation of the building
-  biodiversity
-  highlights the 5th façade
-  locally produced
-  creates a living space

CREATE A VEGETABLE GARDEN ON YOUR ROOF

Using your roof as growing space just makes sense! ECOVEGETAL URBAN VEGETABLE GARDEN uses available natural resources (rainwater, solar energy), compensates for heat loss from buildings and improves the urban climate. This approach is both eco-friendly and cost-effective. It brings production closer to the urban consumer, creating a new community.

BENEFITS OF THE SYSTEM

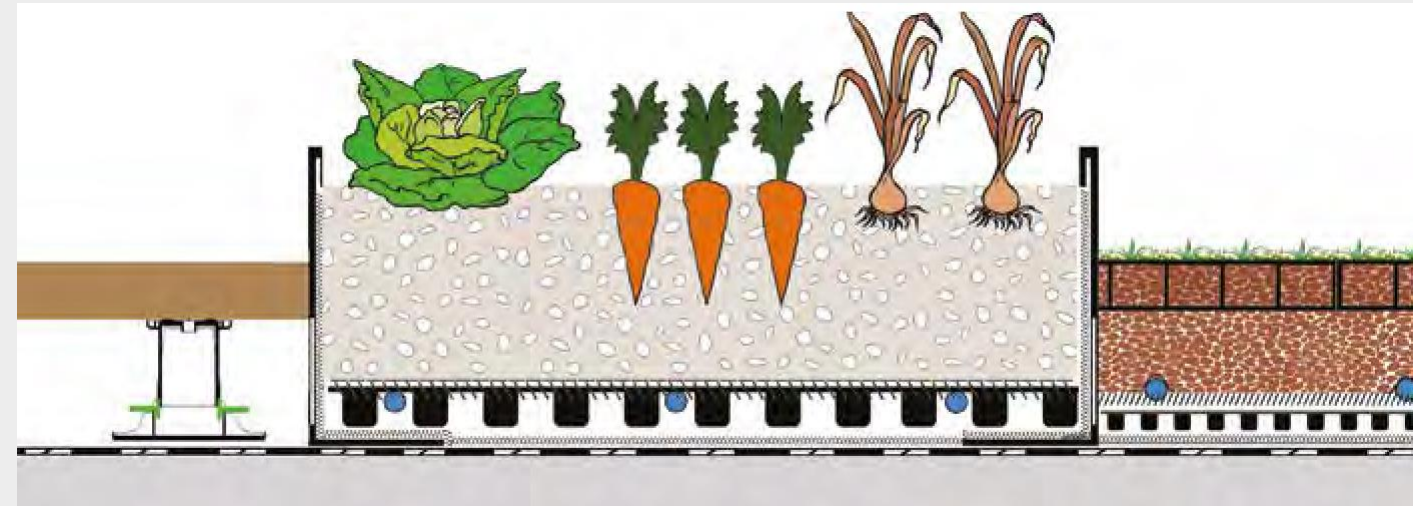
- CREATES A NEW LIVING SPACE ON THE ROOF
- LOCAL PRODUCTION AND CONSUMPTION
- KEEPS THE BUILDING COOL IN SUMMER AND FROST-FREE IN WINTER
- IMPROVES THE URBAN CLIMATE



TYPICAL CROSS-SECTION

URBAN VEGETABLE GARDEN WITH DK40 DRAIN

Height of the settled system:	> 25 cm
Weight at maximum water capacity:	> 270 kg/m ²
Water retention capacity:	> 130 l/m ²
Runoff coefficient:	≤ 0.27



GARDEN VEGETABLES

Lettuce, onions, courgette, aubergine, pumpkins, cabbage, melons, strawberries and herbs for a minimum substrate thickness of 20 cm. For fruit such as raspberries, blackberries, redcurrants, etc., a substrate thickness of 28 to 40 cm is recommended.



JARDILIGHT SUBSTRATE

Lightweight substrate made from terracotta, compost, crushed expanded clay and pozzolan for increased water retention. Specially designed for roof vegetable gardens. The vegetable garden must be watered regularly. We recommend placing mulch (miscanthus) around the plants to keep the substrate moist and prevent growth of weeds. Delivery in big bag, bag or bulk.



WICKING MAT

Polyester mat with integrated capillary fibres, specially designed for optimal irrigation. This allows the water stored in the drain to be redistributed evenly. Weight: 600 g/m²; Length of capillary fibres: 40 mm



DK40 DRAIN

Drainage for water retention of 19.5 l/m², made of HIPS. Ventilation and diffusion openings; Excess water drainage on the underside; Height 40 mm; Weight: 1.96 kg/m²; Dimensions: approx. 1 x 2 m.





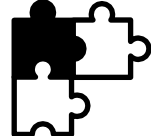


PROTECTION MAT AP50

High quality polyester/polypropylene mat with a needle-punched strip and a black coal underside. Thickness: 6 mm; Area density: 850 kg/m²; Water retention capacity: 4 l/m² Load class: 5; Dimensions: 2 m x 25 m.



FEATURES AND BENEFITS

-  biodiversity
-  selection of native plants
-  rainwater retention
-  sustainable system
-  integrates into the environment

ENDEMIC VEGETATION

The green roof is the last available surface in the city where we can promote frugality that encourages biodiversity. ECOVEGETAL has developed a whole range of systems and accessories using biomimicry to create microclimates and biotopes that will favour biodiversity. "A species is endemic to a given region or ecosystem if its presence in that area is the result of natural processes only, without human intervention."

BENEFITS OF THE SYSTEM

- SUPPORTS REGIONAL FLORA
- PRESERVES ENDANGERED PLANT SPECIES
- REDUCES ROOF MAINTENANCE
- REDUCES THE USE OF FERTILISER
- HELPS MAINTAIN FLORAL DIVERSITY
- RESTORES THE QUALITY OF NATURAL HABITATS AND GREEN SPACES



LOCALLY PRODUCED



With our 65+ hectares of production sites in France, we are able to cover all the horticultural needs of our customers.



ECOVEGETAL has several planting methods: cuttings, planted pots and mat production.

ENDEMIC PLANT SLABS

RESEARCH & DEVELOPMENT

The ECOVEGETAL Research & Development department has lists of endemic plants adapted to living conditions on green roofs. Thus, for each project in mainland France, we can offer a selection of endemic plants adapted to those specific conditions, including exposure and substrate thickness.

LAWS & CERTIFICATIONS






Laws, certifications and labels have been created to respond to today's major environmental challenges using official guidelines shared by market players.



EXTENSIVE ROOFING & BIODIVERSITY



FEATURES AND BENEFITS

-  biodiversity
-  selection of native plants
-  low maintenance
-  sustainable system
-  integrates into the environment

THE LIGHT VEGETATION SOLUTION FOR BIODIVERSITY

Green roofs are quiet spaces that encourage development of biodiversity. There are simple ways to restore real ecosystems even on extensive green roofs.

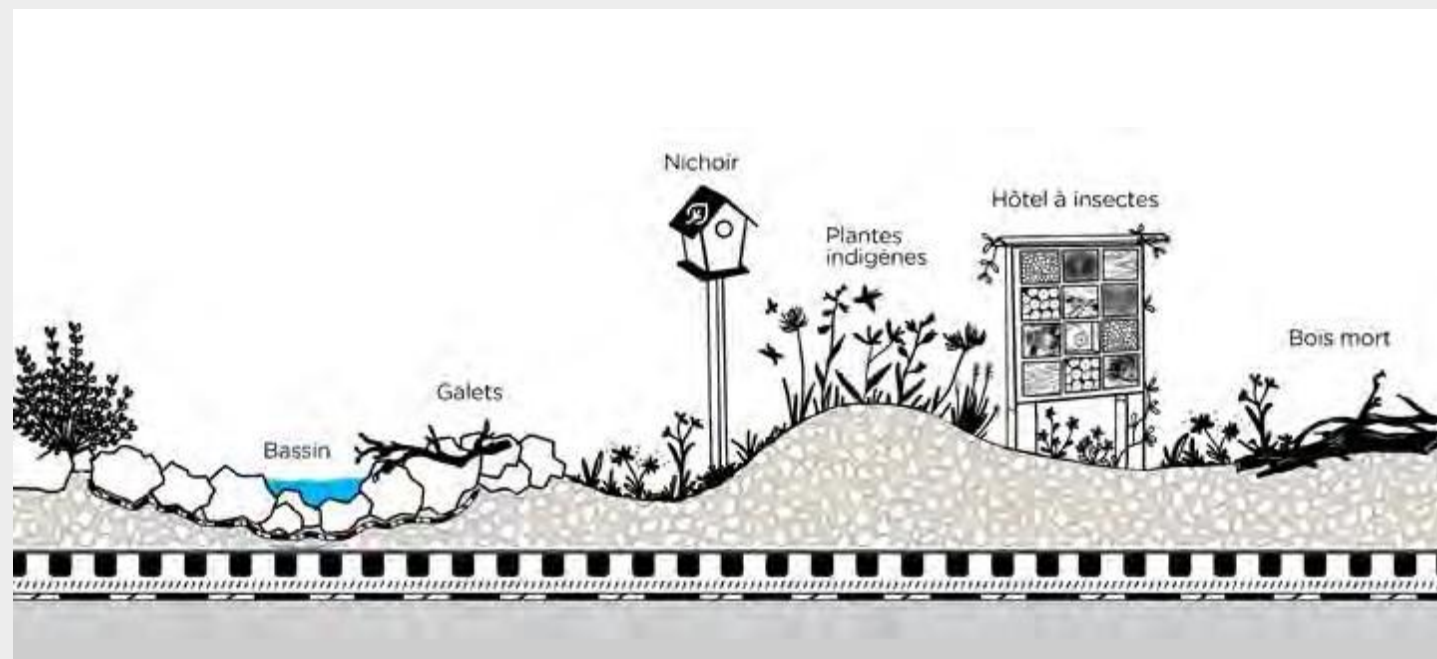
These include installing birdhouses, insect hotels, beehives, ponds, integrating native plants in small plots, and creating sand and/or gravel areas. On a conventional extensive green roof, only 20% of the total surface area of the roof needs to be adapted in order to enhance biodiversity.

BENEFITS OF THE SYSTEM

- IMPROVES BIODIVERSITY ON THE LONG TERM
- USES PLANTS ADAPTED TO THE LOCAL CLIMATE
- REINTRODUCES LOCAL SPECIES
- INTRODUCES SUITABLE HABITATS FOR WILDLIFE



TYPICAL CROSS-SECTION



INDIGENOUS PLANT PLOTS

Jardilight 1.1 light substrate to encourage growth of native plants: flat pots and on-site seeding after approval of the list of local plants.



BIRDHOUSES, INSECT HOTELS AND BEEHIVES

Many options exist to encourage biodiversity and attract fauna to the roof, including insect hotels and bird and bat houses. It is best to seek advisement when making your choice and installing the equipment.



TEMPORARY BODIES OF WATER

Ponds are an exceptionally rich ecological resource. These small basins store rainwater directly. Composed of an EPDM type membrane and surrounded by stones.







WOOD, SAND AND GRAVEL

Adding old, dead wood to the roof attracts insects. The wooden baskets provide shelter for many species. Insects can also nest there.



FEATURES AND BENEFITS

-  thermal insulation
-  panel ballasting
-  energy production
-  fire classification A2_{FL}-S1

TAKE ADVANTAGE OF SYNERGY

Green roofs fulfil a number of important functions. HELIOVERT ECOVEGETAL vegetation systems provide additional benefits by adding solar power to green roofs. The environmental performance of green roofs as a balance zone is guaranteed by HELIOVERT. Green roofs can lower ambient temperature, which bare roofs cannot do. Solar panels therefore achieve a higher yield when installed on a green roof.

BENEFITS OF THE SYSTEM

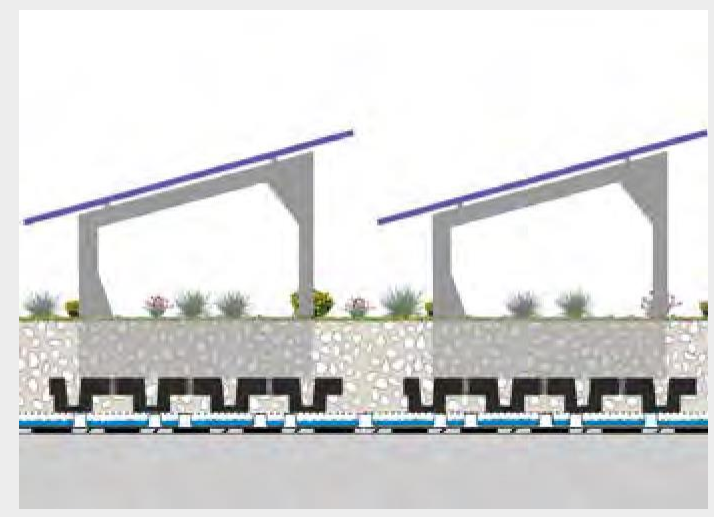
- COOLS PANELS
- INCREASES PANEL EFFICIENCY
- BEAUTIFIES THE ROOF
- INCREASES BIODIVERSITY



TYPICAL CROSS-SECTIONS

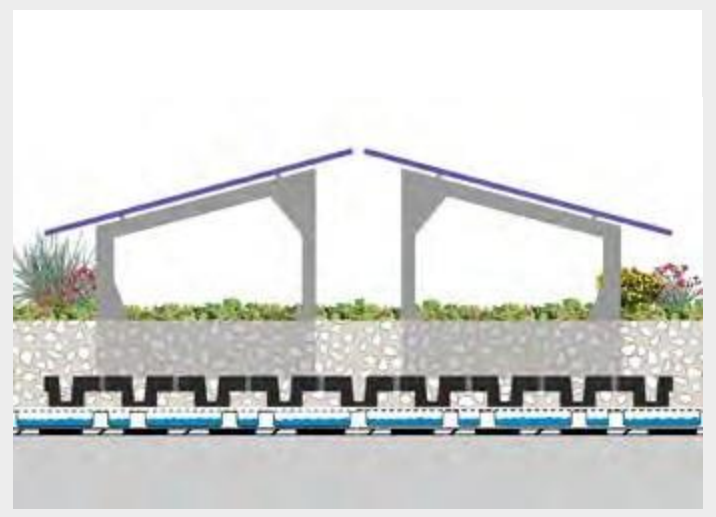
HELIOVERT SOUTH FACING

The "south" mounting system is made of solar frames that all face south. This installation is optimal for better panel yield.



HELIOVERT EAST/WEST FACING

The "east/west" mounting system combines two solar frames on the same SB 200 solar base with upper rear ends that meet in the middle.



SOLAR FRAME HELIOVERT

Aluminium frame structure for fixing photovoltaic or thermal panels, to be used with a ballasted roof greening system. 15° slope. Bracing.



HELIOVERT SOLAR BASE

Solar base made of recycled plastic (ABS) for rainwater storage and drainage. Compatible with solar frames for installing photovoltaic panels on the roof. Dimensions: 1 m x 2 m. Height: 40 mm



PLANTS

It is strongly recommended that low-growth ground cover be planted between the panels and that higher growing micro-clumps be planted in line with the panels. ECOVEGETAL provides a list of plants specifically adapted to your project.



SAXALIS 1.1 SUBSTRATE

Mineral substrate made from mineral aggregates enriched with organic material. Specifically designed for extensive vegetation. Packaging: 20 l bag, big bag, bulk by dump truck and blowing by silo truck. The fire reaction of the SAXALIS 1.1 substrate is classified A2FL-S1: Euroclass according to EN 13501-1 as per classification report no. 19716C.





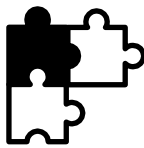


DK20 DRAIN

DK20 water retention drain made of high-density polyethylene with 20 mm high geotextile. Water retention: 7 l/m². Compressive strength of 50 kN/m² according to EN 25619-2 standard.



FEATURES AND BENEFITS

-  approved by ETN
-  low maintenance
-  heat regulation in summer
-  recycled and recyclable
-  integrates into the environment

SOLUTION FOR GREEN ROOFS WITH A SLOPE OF 20 TO 45%.

ECOVEGETAL SLOPE 20 to 45% can be used to successfully green all types of projects: single slope roofs, double slope roofs, diamond roofs, sheds, curved roofs, etc.

ECOVEGETAL SLOPE 20 to 45% can be used for single (100% sedum) or mixed (perennials, grasses, etc.) extensive green roofs, either with pre-grown mats or planted pots.

BENEFITS OF THE SYSTEM

- BUILDING BLENDS INTO THE LANDSCAPE
- LOW MAINTENANCE AFTER PLANT INSTALLATION
- A SINGLE PLANT SELECTION PROVEN OVER THOUSANDS OF M²
- HEAT REGULATION IN SUMMER



TYPICAL CROSS-SECTIONS

SLOPING ROOF 20-45%

Height of the settled system:
Weight at maximum water capacity:
Water retention capacity:

VEGETATED DITCH FOR WATER FLOW >2% SLOPE

8 cm Height of the settled system:
120 kg/m² Weight at maximum water capacity:
70 l/m² Water retention capacity:

12 cm
120 kg/m²
67 l/m²



SAXALIS 1.1 FP SUBSTRATE

Enriched mineral substrate, made of mineral aggregates (terracotta and crushed clay), enriched with organic matter for increased water retention. Delivery in bag or big bag.



ECORASTER SLAB

A 100% recycled low-density polyethylene slab used for substrate stabilisation and retention in sloped roofs. Dimensions 100 x 133 x 5 cm SEPARATE (pre-assembled set of 12 slabs); Weight: 7 kg/m²



MAT AP64

Synthetic fibre mat with high water retention (9 l/m²) used as a protective absorbent layer under vegetation and for physical waterproofing; Thickness: 8.87 mm; Weight 752 g/m².



TSH 90 HOOK

Hook made of solid stainless steel, sandblasted with a matte finish. Mainly used in combination with edge profiles for retention of sloped vegetation systems. Arm length: 40 cm; Width: 5 cm; Head height: 9 cm; Mounting: 4 x 8 mm screws; Load-bearing capacity: max 300 kg/hook. Install according to the calculation note.





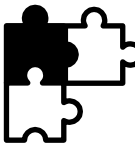


DPM

Openwork edge profile made of magnelis, designed to retain extensive vegetation on steep slopes in the absence of an acrotierion. Anti-gravity protection. Thickness: 1.5 m; Length: 1.96 m; Height: 100, 150, 200, 300 mm



FEATURES AND BENEFITS

-  approved by ETN
-  patented system
-  heat regulation in summer
-  recycled and recyclable
-  integrates into the environment

SOLUTIONS FOR GREEN ROOFS WITH SLOPES FROM 45 TO 200%

ECOVEGETAL STEEP SLOPE 45 to 200% allows for successful installation of all types of projects: single slope roofs, double slope roofs, diamond roofs, sheds, curved roofs, etc. The characteristic feature of this system is the ECOGREEN slab, which makes it possible to maintain high substrate thicknesses by forming a stable and solid structure over the entire surface and limits erosion.

Which vegetation is chosen and how it is planted will take into account the extreme conditions of a steep roof. Interesting differences will appear depending on the exposure of the north/south slopes.

BENEFITS OF THE SYSTEM

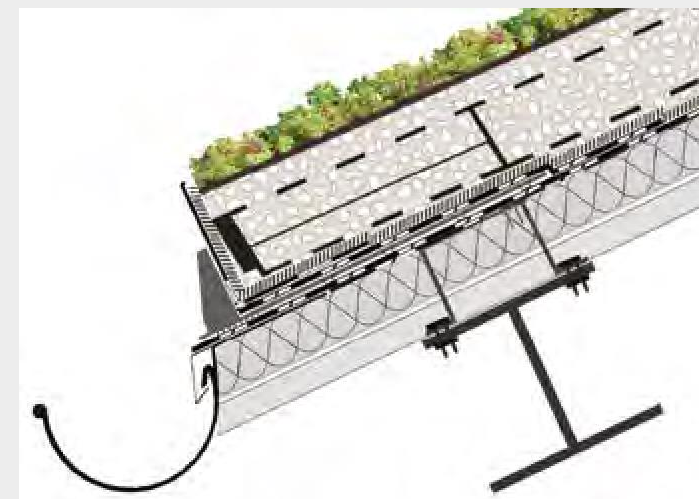
- PROVEN TECHNIQUE ON THOUSANDS OF M²
- INTEGRATES INTO THE ENVIRONMENT
- THERMAL INSULATION IN SUMMER



TYPICAL CROSS-SECTIONS

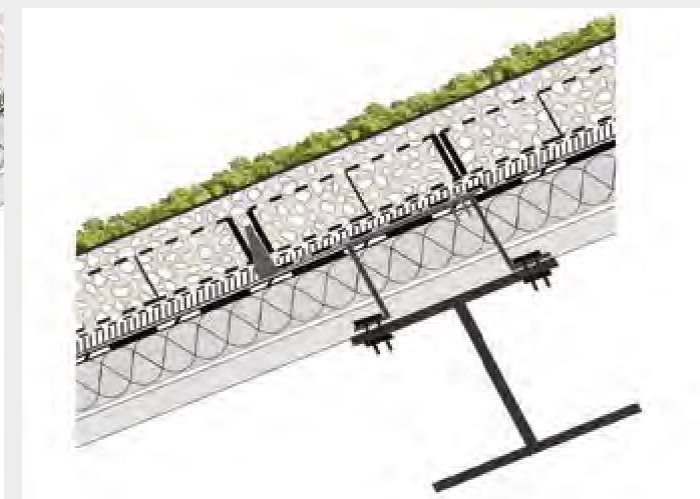
BOTTOM OF SLOPE

Downslope devices, integral with the supporting structure, must allow water to drain off and maintain the vegetation in place.



INTERMEDIATE RETENTION

Intermediate devices, integral with the supporting structure, are essential starting at 50% slopes and slopes greater than 10 ml.



**PRE-GROWN MAT
 SUCCULIS & SAXATILIS**

Pre-grown biodegradable mat with appropriate sedum and perennial species. Instantly green roof composed of ground cover and bunches of plants. Highly recommended for sloping roofs and windy areas.



SAXALIS 1.1 FP SUBSTRATE

Enriched mineral substrate, made from mineral aggregates (terracotta and crushed clay), enriched with organic matter for increased water retention. Delivery in bag or big bag.



ECOGREEN

Patented substrate stabilisation and retention elements for steep slope greening systems. Made of 80% recycled polyethylene; Dimensions 54 x 54 x 10 cm; Weight 1.8 kg per unit.



**ABSORBENT MAT
 AP64**

Synthetic fibre mat with high water retention (9 l/m²) used as a protective absorbent layer under vegetation and for physical waterproofing; Thickness: 8.87 mm; Weight 752 g/m².

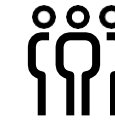


TSH 90 HOOK

Hook made of solid stainless steel, sandblasted with a matte finish. Mainly used in combination with edge profiles for retention of sloped vegetation systems. Arm length: 40 cm; Width: 5 cm; Head height: 9 cm; Mounting: 4 x 8 mm screws; Load-bearing capacity: max 300 kg/hook. Install according to the calculation note.


FEATURES AND BENEFITS


biodiversity



creates a living space



high temporary rainwater retention

highlights the 5th façade
THE SOLUTION FOR CREATING YOUR OWN HANGING GARDEN

ECOVEGETAL GARDEN TERRACE is a multifunctional complex suitable for all types of plant creations.

This system allows you to let your imagination run wild: a thicker layer of substrate allows you to plant trees and shrubs, flowerbeds, and more.

Other uses of the roof can also be implemented: playground, pool, pedestrian paths such as slab-on-cone or ECOVEGETAL PAVERS.

BENEFITS OF THE SYSTEM

- OTHER PRODUCTS
- LARGE PLANTED SLAB
- HIGH WATER RETENTION CAPACITY
- NEW LIVING SPACE


TECHNICAL INSTALLATION

The ECOVEGETAL GARDEN TERRACE system can combine different functional areas while using the same base: protective matting and drainage. The DK40 DRAIN, which is the key element of this system, allows for drainage over the entire surface and avoids complex installations for rainwater evacuation.

When designing and implementing this system, the planted and walkable areas must be carefully defined. Then, the edges can be built directly on the drainage, and pre-grown turf can be rolled out, and perennials, shrubs and even trees can be planted.

A drip or sprinkler irrigation system is necessary to make the project sustainable.



Height of the settled system: ≥ 35 cm
 Weight at maximum water capacity: ≥ 380 kg/m²
 Water retention capacity: ≥ 190 l/m²


JARDILIGHT 1.1 SUBSTRATE

Enriched substrate, made from mineral aggregates (pozzolan, terracotta, crushed clay), enriched with organic matter and fine particles for increased water retention. Will likely contain some topsoil. Especially well suited for intensive vegetation systems with small trees, shrubs and turf. Delivery in big bags or by dump truck.


STEX 180 FILTER

Heat stabilised polypropylene/polyethylene filter. Separation that prevents fine substrate particles from moving into the drain. Water can flow freely through the filter. Area density: 190 g/m²; Thickness under 2 kPa: 1.00 mm; Dimensions: 2.25 m x 100 m and 1.12 m x 100 m.


DK40 DRAIN

Drainage for water retention of 19.5 l/m², made of HIPS. Ventilation and diffusion openings; Excess water drainage on the underside; Height 40 mm; Weight: 1.96 kg/m²; Dimensions: approx. 1 x 2 m.


PROTECTION MAT AP50

High-quality polyester/polypropylene mat with a needle-punched strip and a black coal underside. Thickness: 6 mm; Area density: 850 kg/m²; Water retention capacity: 4 l/m² Load class: 5; Dimensions: 2 m x 25 m.


CONCRETE EDGE

Multi-purpose lightweight concrete edge. Heights: 25, 30, 40, 50 and 60 cm. Accessories: external and internal angles available. Weight: from 28.5 to 76 kg/piece depending on model.



FEATURES AND BENEFITS



adapted plant slab



creates a living space



high temporary rainwater retention



highlights the 5th façade

THE PLANT SOLUTION FOR SHADED AREAS

The PATIO system is designed for greening of shaded terraces. ECOVEGETAL has selected plants adapted to shady conditions for semi-intensive roofs.

An adapted light substrate allows plants to grow: diverse species (height, colour, foliage) for aesthetic spaces.

The plants must be watered regularly.

BENEFITS OF THE SYSTEM

- OTHER PRODUCTS
- LARGE PLANTED SLAB
- HIGH WATER RETENTION CAPACITY
- NEW LIVING SPACE

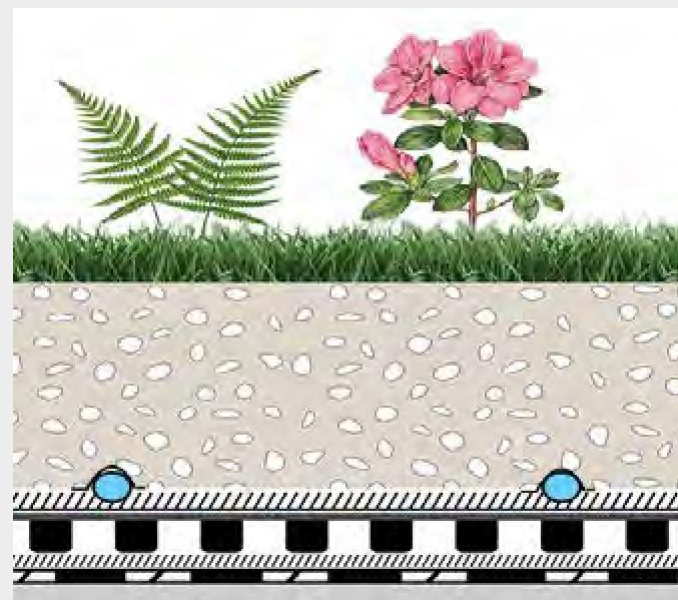


TECHNICAL INSTALLATION

The ECOVEGETAL PATIO system can combine different functional areas while using the same base: protective matting and drainage. The DK40 DRAIN, which is the key element of this system, allows for drainage over the entire surface and avoids complex installations for rainwater evacuation.

When designing and implementing this system, the planted and walkable areas must be carefully defined. Then, the edges can be built directly on the drainage, and pre-grown turf can be rolled out, and perennials, shrubs and even trees can be planted.

AQUANAT irrigation is recommended for proper growth of the plants.



Height of the settled system: ≥ 35 cm
 Weight at maximum water capacity: ≥ 400 kg/m²
 Water retention capacity: ≥ 160 l/m²



PLANTED SLAB

Planted slab composed of plants recommended for shaded/partly shaded exposure: succulents, bunch plants, ferns and small shrubs.



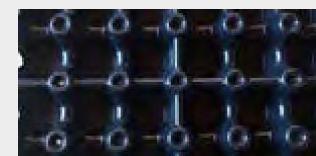
JARDILIGHT SUBSTRATE PATIO 1.2

Substrate for garden terraces. Substrate made from heather soil, enriched with topsoil and clay balls. Especially well suited for intensive vegetation systems with small trees and shrubs in acidic soils. Density at MWC: 1.2.



AQUANAT IRRIGATION

AQUANAT consists of two geotextiles with a drip system between them, pipes spaced 38 cm apart. The upper geotextile acts as a lateral water diffuser over the entire surface. In contrast, the lower mat provides water retention and storage (4 l/m²) that is then readily available to the plant roots.



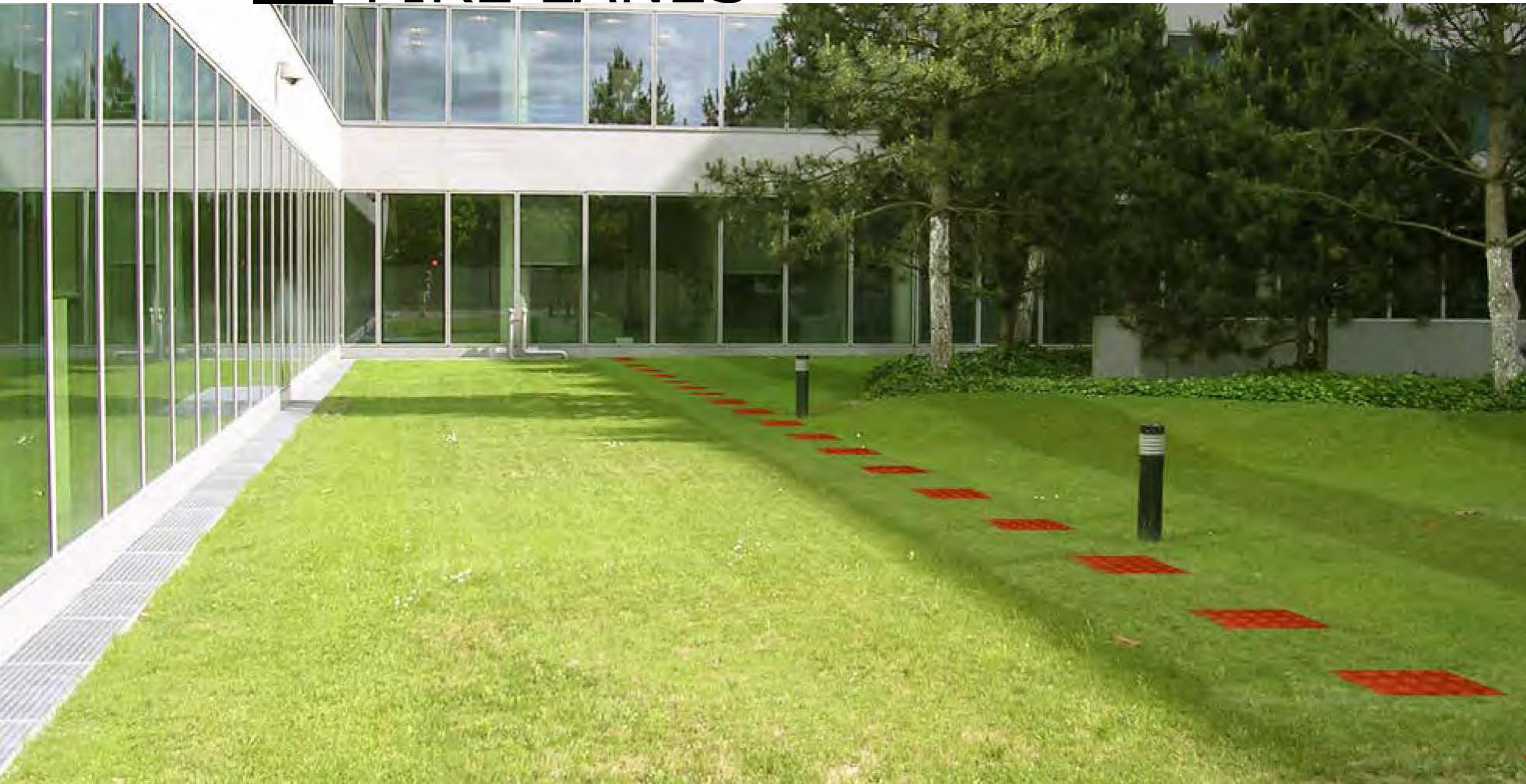
DK40 DRAIN

Drainage for water retention of 19.5 l/m², made of HIPS. Ventilation and diffusion openings; Excess water drainage on the underside; Height 40 mm; Weight: 1.96 kg/m²; Dimensions: approx. 1 x 2 m.

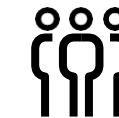


ABSORBENT PROTECTION MAT AP64

Synthetic fibre mat with high water retention (9 l/m²) used as a protective absorbent layer under vegetation and for physical waterproofing; Thickness: 8.87 mm; Weight 752 g/m².


FEATURES AND BENEFITS


high temporary rainwater retention



creates a living space



highlights the 5th façade



accessible to cars



accessible to fire engines (80 N/cm²)

THE SOLUTION FOR GREEN ROADS

A green road or car park system allows for installation of green areas accessible to cars, trucks or emergency vehicles on flat roofs.

There are two types of vegetation:

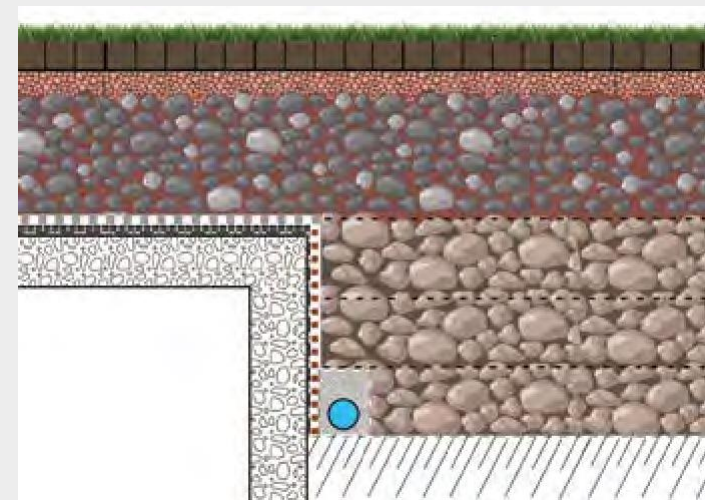
- ECOVEGETAL GREEN provides an immediately finished look but is reserved for occasional use or fire lanes (see permeable car park guide)
- ECOVEGETAL MOSS is composed of plants from arid climates (Alpine fescue, Thyme, Moss, Sedum, etc.) allowing for daily use with a natural look.

BENEFITS OF THE SYSTEM

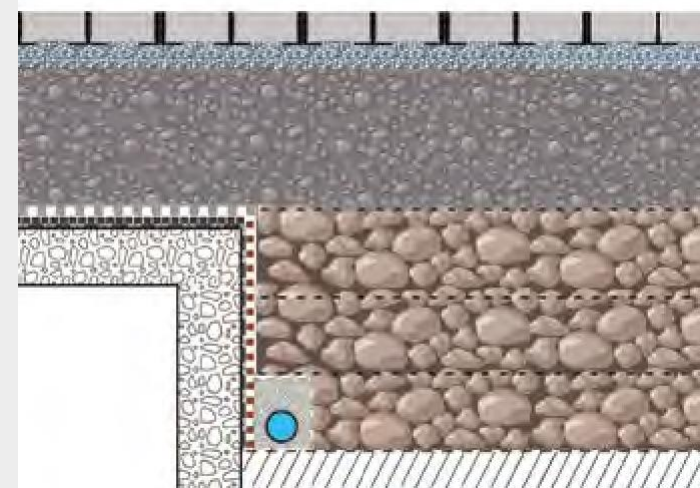
- RAINWATER INFILTRATION
- CREATES A LIVING SPACE FOR USE BY THE FIRE DEPARTMENT


TYPICAL CROSS-SECTIONS
ECOVEGETAL GREEN

Height of the settled system: 29 cm
 Weight at maximum water capacity: 350 kg/m²
 Water retention capacity: approx. 60 l/ m²


ECOVEGETAL PAVERS

Height of the settled system: 29 cm
 Weight at maximum water capacity: approx. 480 kg/m²
 Water retention capacity: 480 kg/m²
 Surface runoff coefficient: approx. 20 l/m²


ECOVEGETAL GREEN

The ECOVEGETAL GREEN system has been approved by an independent certification body for "fire lines with ladder access" in accordance with test 019988.

ECOVEGETAL PAVERS

The ECOVEGETAL PAVERS system has been approved by an independent certification body for "fire lines with ladder access" in accordance with test 019989.

DK 10 & DK 10 TP DRAINS

HDPE geocomposite drainage layer. Height of protrusions: 9 mm. With self-adhesive strip for connecting the strips. Roll dimensions: 2.4 m x 12.5 m.

Compressive strength of the DK 10 drain: 400 kPa. Compressive strength of the DK 10 drain: 650 kPa.

MS DRAIN

A 4 mm thick vertical growth mat combining a highly compression-resistant hollow core structure (> 300 kN/m²) and a filtering geotextile. Rolls of 30 m x 2 m.

SEPARATING SHEET

Double layer of high-density polyethylene sheet. Interposition layer to separate the waterproofing underneath pedestrian and vehicular surfaces. Dimensions: 8.00 x 25.00 m and 3.00 x 33.50 m; Thickness: 0.2 mm; Weight: 190 g/m²; Colour: black.

GREEN ROOFS



WHY INSTALL A ROOF IRRIGATION SYSTEM?

Most green roofs are self-sufficient in terms of water. Extensive green roofs are mainly made up of drought-resistant plants that require little water: sedums, grasses, perennials.

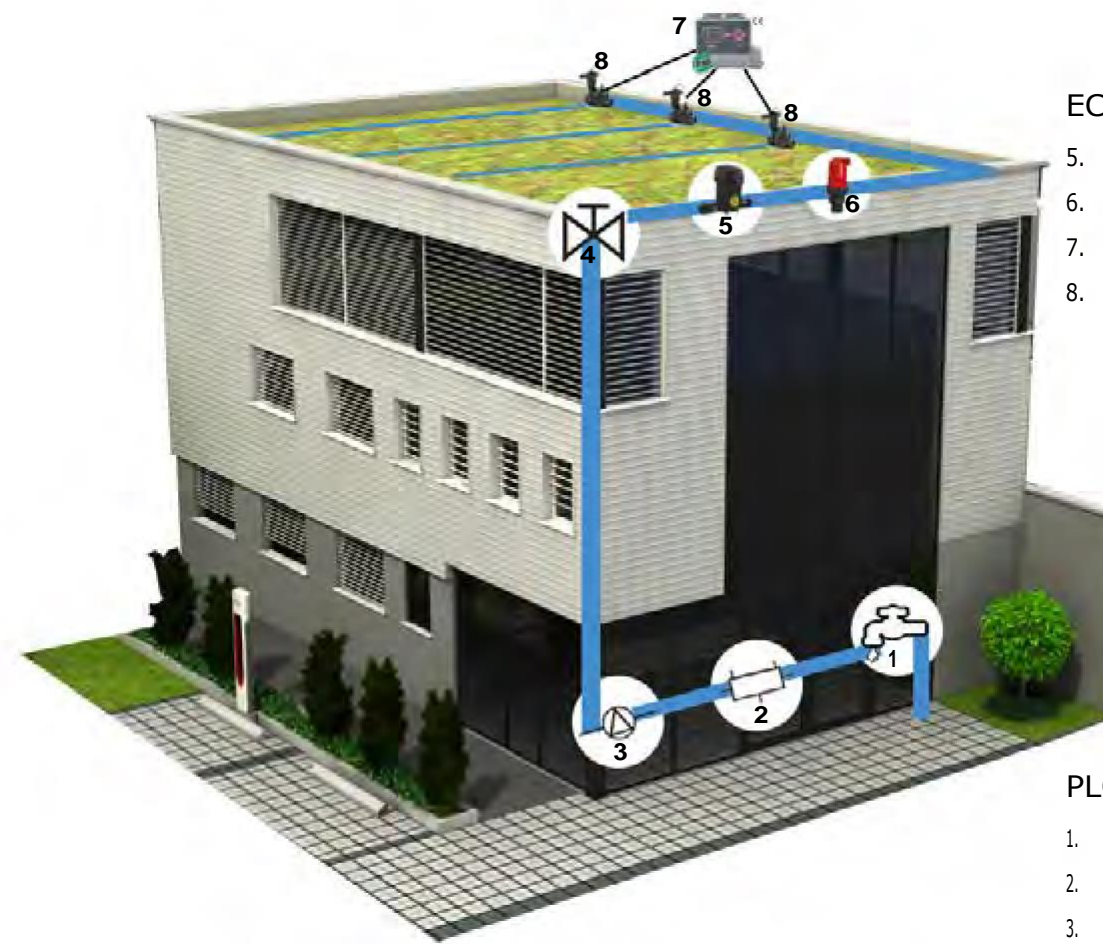
However, depending on the vegetation system and geographical area, ECOVEGETAL may recommend installing an irrigation system.

CASES WHERE IRRIGATION IS RECOMMENDED

- EXTENSIVE VEGETATION IN THE SOUTHERN ZONE, IN PERIODS OF SUMMER DROUGHT
- SLOPING ROOFS > 20%
- SEMI-INTENSIVE VEGETATION OR PLANTS WITH A HIGH WATER REQUIREMENT
- EXPOSURE OF THE ROOF THAT DOES NOT ENSURE PLANT SURVIVAL BETWEEN RAINY PERIODS (DROUGHT, ETC.)



SPRINKLER SYSTEM



ECOVEGETAL

5. Filter
6. Automatic purge
7. Programmer
8. Solenoid valves

PLOMBER

1. Water supply
2. Disconnecter
3. Purge
4. 1/4 turn valve

ANNUAL CONSUMPTION OF PLANTS BY REGION

	Succulent plants (SUCCULIS)	Perennials (SAXATILIS)	Grasses (FLOWERING PRAIRIE)	Shrubs (LAVANDULIS)	Turf (GREEN)	Vegetable plants (URBAN VEGETABLE GARDEN)
Zone 1	135 l/m ²	180 l/m ²	270-540 l/m ²	270-540 l/m ²	450-900 l/m ²	600-900 l/m ²
Zone 2	180 l/m ²	180-360 l/m ²	270-540 l/m ²	540-1080 l/m ²	900-1440 l/m ²	900-1200 l/m ²
Zone 3	315 l/m ²	315-945 l/m ²	630-1260 l/m ²	630-1890 l/m ²	1440-2100 l/m ²	1200-2000 l/m ²

Consumption varies depending on rainfall. These water quantities are valid for routine roof maintenance. Watering period from April to the end of September for zones 1 and 2 and from April to the end of October for zone 3. Water at night or at dawn. Add a rain sensor that measures rainfall in real time.

MAKING AN IRRIGATION PLAN - ELEMENTS TO BE SPECIFIED

	Overall plan of the structure and green roofs		The position of anything that may constitute an obstacle (ventilation, chimneys, etc.)
	Plan scale and dimensions		Roof flow: the volume of water flowing over time: 2 to 4 l/h
	Areas not to be watered on the roof		Roof pressure: the force of the water on the sprinklers or drippers: 2.5-3 bar/water supply access
	The position of water supplies (with valves), metres and timers		The diameter of the pipe (roof outlet): 25 mm minimum

ECOVEGETAL RECOMMENDATIONS: Beware of pressure loss - Water supply access: 1 per terrace (250 m² max) - 1 every 30 m. Turn off the water supply and purge the system for winter drainage. - Turn on the water supply to the entire system and check the entire system in summer.

SPRINKLERS



THE SIMPLE SOLUTION FOR LOW-GROWTH VEGETATION

The ECOVEGETAL sprinkler irrigation system covers the water needs of plants up to 15 cm in height in flowering and grassy areas.

The system is particularly cost-effective, simple to install and easy to maintain.

The system can optionally include a rain sensor, rain gauge and automatic purge.

- ECOVEGETAL relies on leading brands to provide the right irrigation solution for your green roof.
- If necessary, ECOVEGETAL creates an irrigation plan to determine the layout and installs the system.

FEATURES AND BENEFITS



low maintenance
2 to 3 times
per year



low installation
cost



DRIP



THE SOLUTION FOR IRRIGATING SEMI-INTENSIVE AND INTENSIVE ROOFS

The ECOVEGETAL drip irrigation system meets the water needs of plants in the LAVANDULIS and GARDEN TERRACE systems.

The system is particularly cost-effective, simple to install and easy to maintain.

ECOVEGETAL also recommends this system for irrigating sloping roofs.

The system can optionally include a rain sensor, rain gauge and automatic purge.

- ECOVEGETAL relies on leading brands to provide the right irrigation solution for your green roof.
- If necessary, ECOVEGETAL creates an irrigation plan to determine the layout and installs the system.

FEATURES AND BENEFITS



low water
consumption



limited
watering



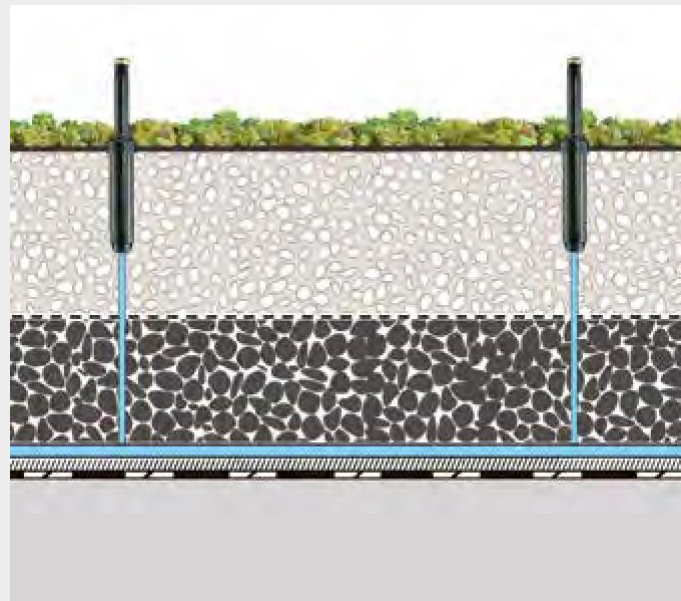
SPRINKLERS:
Rain Bird 1800 Series Nozzle Body
(30 cm lift)
Nozzle choice depends on spray
range and angle



Solenoid valve: Rain Bird DV Series
with solenoid included
Solenoid: 9V pulse for DV series
Programmer: TBOS BT (1, 2, 4 or
6 ports)
Main and secondary water supply:
the diameter is chosen based on the
irrigation plan.



Bluetooth programmer ideal for
remote watering of green roofs.
Compatible with sprinkler or drip
irrigation.



Rate: 2 l/h - Pressure: 2.5-3 bar per water supply
BENEFIT: Cost-effective irrigation system



DRIP HOSE:
Surface watering: Rain Bird XF
Dripline (1.6 l/h or 2.3 l/h - Esp.
Drippers 33, 40, 50 cm)
Underground watering: Rain Bird
XFS in-ground (2.3 l/h - Esp.
Drippers 33 cm)



Solenoid valve: Rain Bird DV Series
with solenoid included
Solenoid: 9V pulse for DV series
Programmer: TBOS BT (1, 2, 4 or
6 ports)
Main and secondary water supply:
the diameter is chosen based on the
irrigation plan.



Bluetooth programmer ideal for
remote watering of green roofs.
Compatible with sprinkler or drip
irrigation.



Rate: 4 l/h - Pressure: 2.5-3 bar per water supply
BENEFIT: Easy to install and maintain



THE CAPILLARY IRRIGATION SOLUTION WITH WATER STORAGE

AQUATEC is revolutionising irrigation. This all-in-one system makes it possible to supply, distribute, store and diffuse the water that plants need. The principle, developed by ZINCO, is to supply water through pipes with drippers to a drain with a water reserve and then diffuse it through the substrate by capillary action using a wicking mat that sits in the drain. Placed between the waterproofing layer and the substrate, this system reduces substrate thickness by up to 30%. More than 60% of water is saved compared to a sprinkler irrigation system.

ECOVEGETAL recommends AQUATEC for vegetable garden and turf-based green roof systems as well as semi-intensive systems in southern climate zones.

- The system can optionally include a rain sensor, rain gauge and automatic purge.

FEATURES AND BENEFITS



limited water consumption



rainwater storage



THE CAPILLARY SOLUTION WITH IRRIGATION MAT

AQUANAT is an irrigation system developed by ECOVEGETAL in partnership with a major irrigation specialist. The principle is to combine an absorbent mat with self-regulating drippers. AQUANAT provides additional water retention capacity (4 l/m²) to the system as well as even water distribution to all plants. Placed between the drain and the substrate, AQUANAT saves up to 60% of water by preventing unnecessary evaporation.

- ECOVEGETAL recommends this system for all potted plants in climate zones requiring a complementary water supply.
- The system can optionally include a rain sensor, rain gauge and automatic purge.

FEATURES AND BENEFITS



low water consumption



limited watering



AQUATEC AT 45
Water distribution, storage and drainage. Specially developed for use with the DV 40 wicking mat. Material: ABS; Height: 45 mm; Weight: 2 kg/m²; Storage capacity: 17 l/m²; Dimensions: 1.02 x 2.02 m



WICKING MAT
Polyester mat with integrated fabric fibres on one side, allowing water to rise by capillary action. Specially developed to be used with the AQUATEC AT 45. Roll width: 2 m; Length: 10 or 25 mm.



IRRIGATION HOSE 100-L1
Robust irrigation hose with pressure regulating nozzles every 10 cm. Specially adapted to be attached to AQUATEC AT 45 tenons. Dripper flow rate: 1 l/h; 100 m roll.



USE:
GREEN - LAVANDULIS - VEGETABLE GARDEN - substrate height < 30 cm
BENEFITS:
50% water saving - Water storage (17 l/m²)



AQUANAT consists of two geotextiles with a drip system between them, pipes spaced 38 cm apart.

AQUANAT is quick and easy to install: delivered in rolls of 1.2 m wide by 25 m, AQUANAT is rolled out like a carpet.

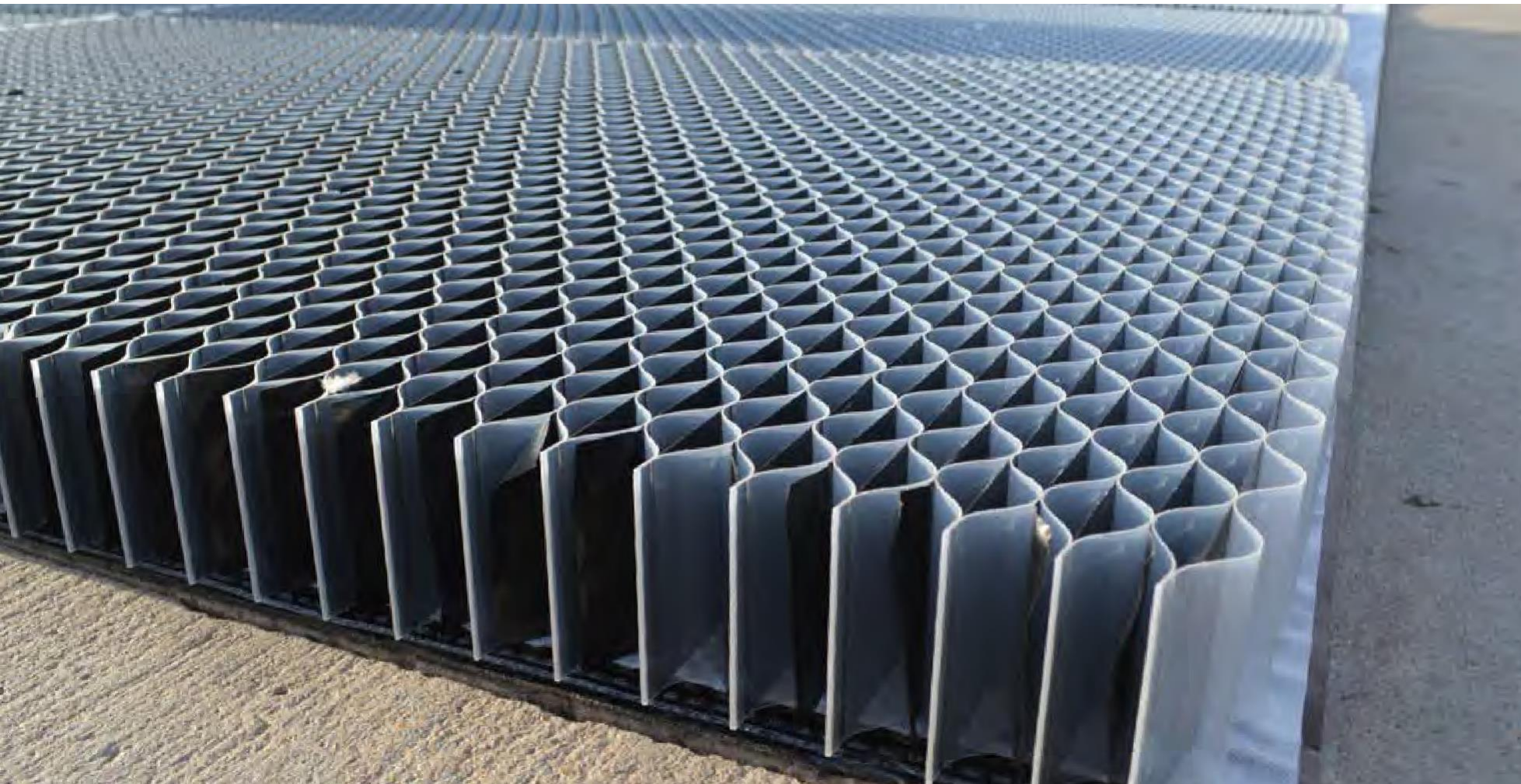
For irrigation, the drippers are spaced 40 cm apart and provide a constant flow rate of 0.6 l/h over a pressure range of 0.4 to 2.2 bar.

In addition, the mats are connected at the end of the line and connected to the water supply via a feeder coupled with a programmer, so that watering sequences can be started and stopped automatically.



USE:
SAXATILIS - substrate height < 20 cm
BENEFITS:
Prevents evaporation - Additional water retention (3-4 l/m²)

AQUASET M



FEATURES AND BENEFITS



temporary
rainwater
retention



quick
installation



eco-friendly



patented
system

THE SOLUTION FOR TEMPORARY RAINWATER RETENTION

With the AQUASET M system, ECOVEGETAL provides a solution for rainwater management at the plot level. Coupled with one or more flow regulators, the system temporarily stores rainwater on the roof while keeping the roof green. Storage capacity depends on the height of the system. There are many possibilities.

BENEFITS OF THE SYSTEM

- ALTERNATIVE TO TEMPORARY RAINWATER RETENTION PONDS
- KEEPS THE ROOF GREEN
- CAN BE USED FOR INACCESSIBLE AND ACCESSIBLE ROOFS
- DIFFERENT HEIGHTS AND POSSIBILITIES FOR TEMPORARY STORAGE

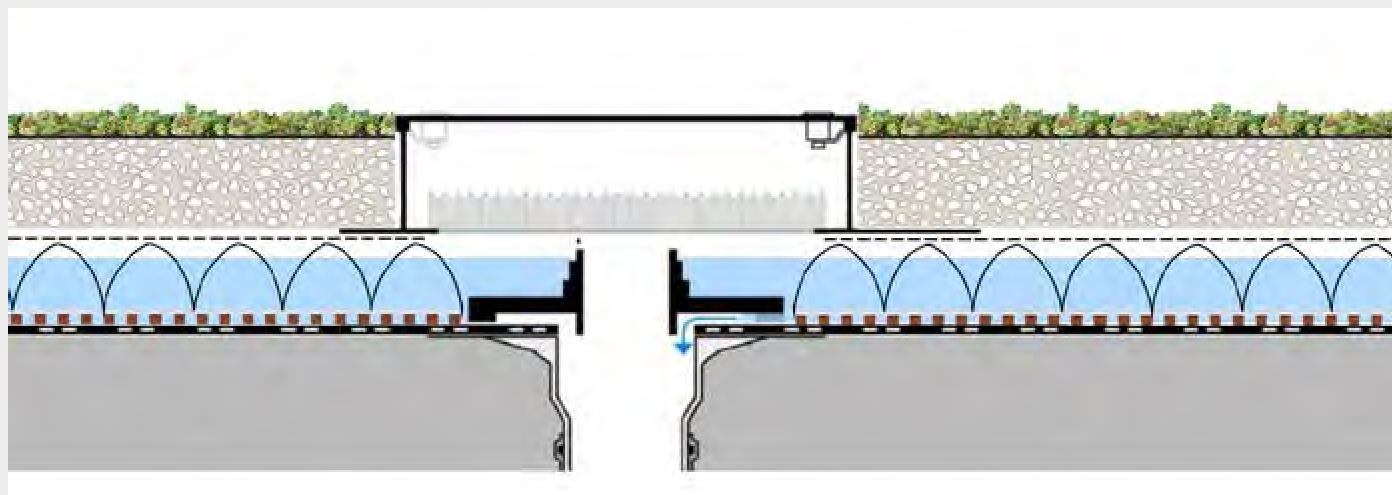
Adjustable flow control device supplied with a special manhole cover for installation above rainwater outlets on flat roofs.



TYPICAL CROSS-SECTION

LOW-FLOW AQUASET SYSTEM

Surface area: 1.44 m²
 Void ratio: ≥ 95%
 Vertical compressive strength: ≥ 40 T/m²



STEX FILTER

Needle-punched non-woven polypropylene filter. Separation that ensures substrate fine particle retention. Water can flow freely through the filter.

STEX FILTER: Area density: 100 g/m²; thickness under 2 kPa (EN ISO 9863): 0.6 mm
 STEX 180 FILTER: Area density: 180 g/m²; thickness under 2 kPa (EN ISO 9863): 1.0 mm.



AQUASET X

Ultra-lightweight hollow core structure made of polypropylene sheets welded together then expanded.

Available thicknesses: 40, 50, 60, 80, 100, 120, 140, 160, 180, 200, 240, 300, 400 and 500 mm. Plates 1200 x 1200 mm. Water storage capacity from 19 to 456 l/m².



MS DRAIN

A 4 mm thick growth mat combining a highly compression-resistant hollow core structure (> 300 kN/m²) and a filtering geotextile. Rolls of 30 m x 2 m.



MANHOLE COVERS

Manhole covers made with anodised aluminium and galvanised steel cover. External dimensions: 400 x 400 mm. Openings: 340 x 340 mm. Extensions available

OVERALL SYSTEM COMPARISON

SYSTEMS
0-20% Slope

EXTENSIVE SINGLE

EXTENSIVE MIXED

MODERATE USE

SUCCULIS

SAXATILIS

FLOWERING MEADOW








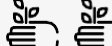
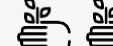

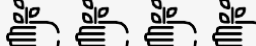
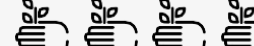













LAVANDULIS

GREEN

URBAN VEGETABLE GARDEN

-  North
-  South
-  Mediterranean



		SUCCULIS	SAXATILIS	FLOWERING MEADOW	LAVANDULIS	GREEN	URBAN VEGETABLE GARDEN
SYSTEM THICKNESS (not expanded)	North	5 to 11 cm	10 to 14 cm	11 to 15 cm	22 to 30 cm	≥ 25 cm	≥ 25 cm
	South	6 to 12 cm	12 to 16 cm	13 to 17 cm	25 to 30 cm	≥ 30 cm	≥ 25 cm
	Mediterranean	10 to 12 cm	12 to 18 cm	13 to 19 cm	25 to 30 cm	≥ 30 cm	≥ 30 cm
SYSTEM WEIGHT AT MAXIMUM WATER CAPACITY (MWC)	North	≥ 60 kg/m ²	≥ 140 kg/m ²	≥ 150 kg/m ²	≥ 325 kg/m ²	≥ 330 kg/m ²	≥ 280 kg/m ²
	South	≥ 90 kg/m ²	≥ 170 kg/m ²	≥ 180 kg/m ²	≥ 355 kg/m ²	≥ 410 kg/m ²	≥ 280 kg/m ²
	Mediterranean	≥ 140 kg/m ²	≥ 170 kg/m ²	≥ 180 kg/m ²	≥ 355 kg/m ²	≥ 410 kg/m ²	≥ 340 kg/m ²
INSTALL TIME							
ROUTINE MAINTENANCE							
WATER NEEDS							
FLOWERING SEASON	May-Sep	March-Oct	May-Oct	March-	-	- 	
PLANT DIVERSITY							
SYSTEM COST* (supply and installation / m ²)	Cuttings	€35 to 45	-	€60 to 90	-	≥ €105	-
	Planting	€45 to 50	€75 to 85	-	≥ €100	-	≥ €200
	Pre-grown	€60 to 70	€85 to 95	-	-	≥ €120	-
Find this system on page....	pages 8 to 13	pages 14 to 17	pages 18 to 19	pages 20 to 21	pages 22 to 23	pages 24 to 25	

*Price of project management (not including lifting). Cost given as an indication for a minimum surface of 300 m², excluding exceptional configurations and irrigation, consult us for each project.