



Living wall system
Tecnical data sheet



Fytotextile® system

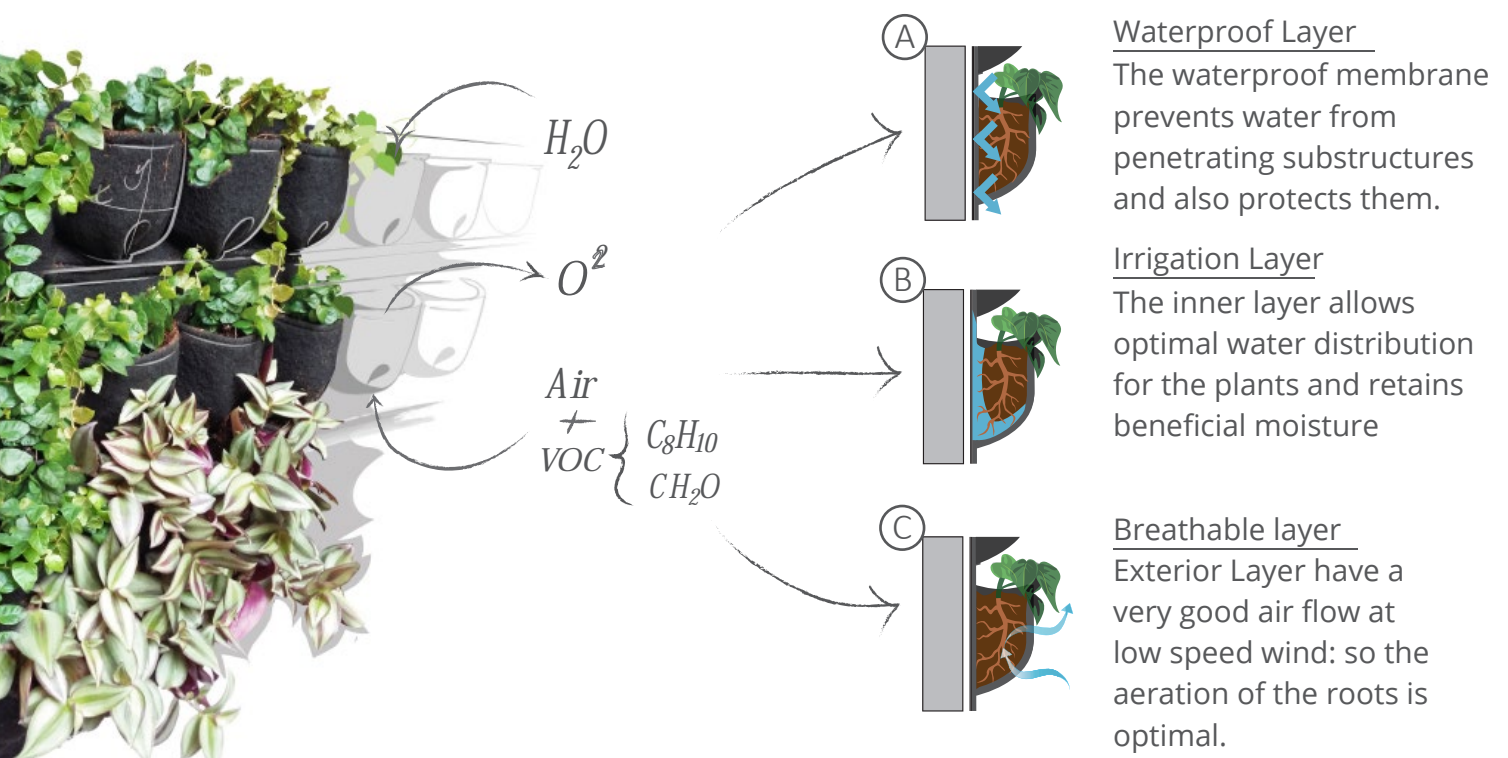
Patented modular system composed of three flexible organic and synthetic fabric layers, of reduced thickness. All sides are interconnectable and can have a maximum capacity of 36 (6x6) or 49 plants (7x7). All modules include a top flange for assembling and checking the drip irrigation system.

Due to its advanced technological development and to the years of R+D+i results, carried out by the **Urban Greening & Biosistem Engineering - Research Group AGR 268** from the University of Seville, Fytotextile system presents key competitive advantages that differentiate it from the rest of systems.



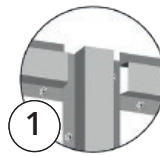
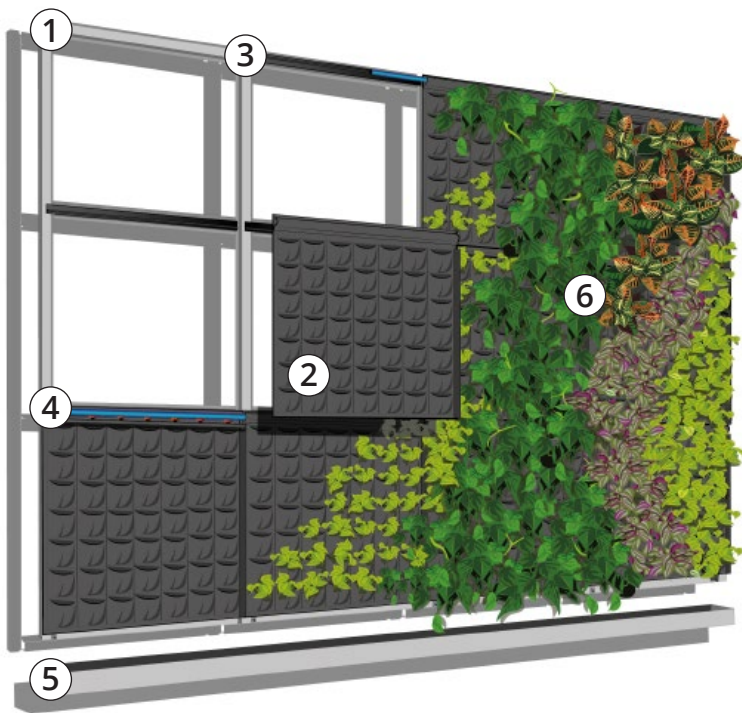
Fytotextile® Multilayer modules

It improves the plants health, due to its high transpiration capacity in the exterior layer, and establishes an **optimal balance** between water, air and substrate in the buried part of the plant



Fytotextile® system for green facades is composed of flexible multilayer modules, that are industrially produced. The modules connect with each other using a metallic framework which is attached to an existing resistant wall. This living wall system has been developed and patented by Terapia Urbana at the University of Sevilla.

Fytotextile® is the best solution for medium and large sizes living walls. The installation of the system is easy, fast and specially designed for professionals. It has been successfully installed in more than 21.000m² of living walls all around the world.



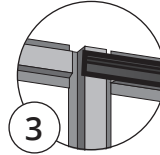
Metallic Framework:

Formed by galvanized Steel profiles, forming the structure to assemble the Fytotextile® modules. Designed and calculated for every installation.



Fytotextile® modules:

Multilayer fabric system, made of a modular matrix of pockets designed for semi-hydroponic crops (Planting density up to 36 or 49 units/m²).



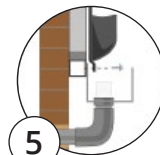
Carril profile FYTVOL:

Horizontal carril profile to fix modules to the metallic framework.



Automation and irrigation system:

An automation and irrigation system is included and designed according to the size and requeriments of each case.



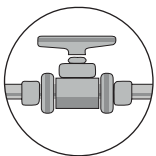
Water harvesting gutter:

Galvanised steel or aluminium gutter 150x100 mm with a steel grid at the bottom, connected to drainage.



Plant selection:

Natural plants are specifically selected according to the climate conditions, sun exposure and landscape design requirements for each project. Placed in the pockets using their own substrate.



Auxiliary engineering:

Irrigation and control system, composed by solenoid valves by sectors, filters and cutting valves.

Technical requirements for a living wall



Water supply

A fresh water point for the irrigation is required, with 1,5 atm of pressure available.



Electric connection

An electrical supply placed in the technical room is required of 220v 16 A.



Drainage point

A drainage point placed at the bottom of the system (according to the irrigation scheme).



Technical cabinet

To place the irrigation and automation system.

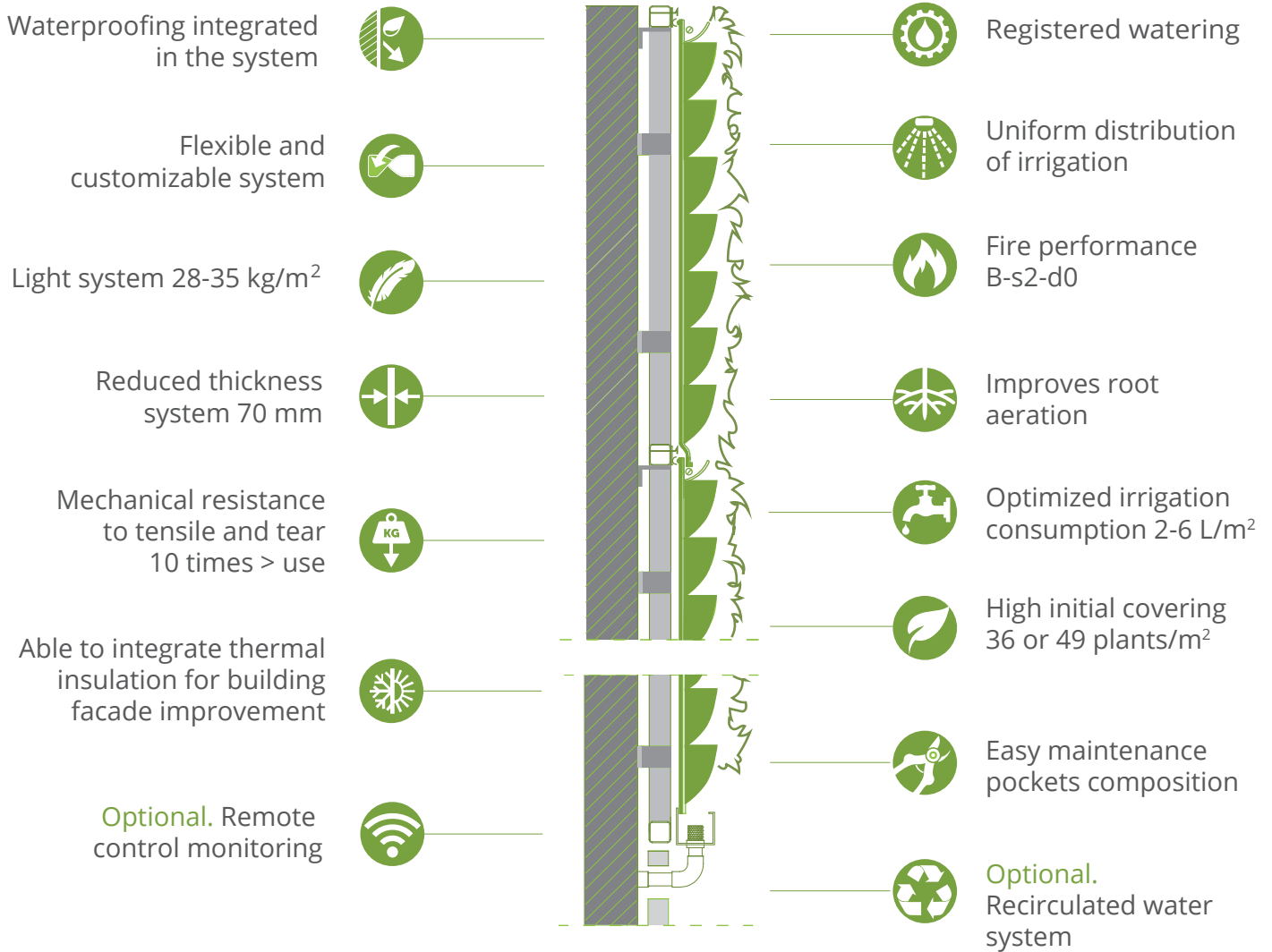
- Lost solution irrigation system: minimum technical cabinet of 90 x 90 x 30 cm
- Close circuit irrigation system: Dimensions according to the Surface (5-10 m²)



Auxiliary lighting

Special LED lamps used for indoor living wall installations, helping to make up for the lack of natural light.

The Fytotextile® modules are composed of three layers of synthetic and flexible material assembled together with a total thickness of 20 mm and matrix by pockets, for modular system of semi-hydropic culture on vertical facades have the following technical characteristics



- ✓ FYT-RCF waterproofing back layer.
- ✓ FYT-DRA inner layer with high matrix potential and 2-4 l/m² of vertical water retention.
- ✓ FYT-AIR outer layer with resistance to the passage of air from 4 to 30 Pa, for optimal evapotranspiration of the root system.

| | | | |
|--|----------------------------|---|-------------------------|
| Module thickness | 2 cm | Module weight without plants | 2,1 kg |
| System thickness | 13 cm | Saturated and fully planted module weight | 28-35 kg/m ² |
| Maximum planting capacity | 36/49 units/m ² | Natural plants for diameter pots | Ø11-13 cm |
| Maximum traction workload of the module under load | 530 kg/m ² | Tear strenght or resistance of the module under load | 7 kg/pocket |
| Traction test in outer material without protection | 10 times max. load | Fire performance as a reference for classification in European standard | B-s2-d0 |

Tested technical characteristics of the Fytotextile® system



Fytotextile® Fire performance

The Fytotextile® system has been tested by Applus according to UNE-EN ISO 11925-2: 2011 and UNE-EN 13823: 2012 + A1: 2016, in order to obtain its reaction against fire. They all have a class B-s2, d0 performance against fire.



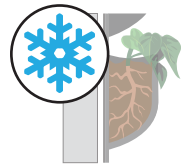
Fytotextile® System high durability

All Fytotextile modules have been subjected to accelerated aging tests by Applus® based on the standard UNE-EN ISO 4892/2, and tested the results according to UNE-EN ISO 13934_1 method, obtaining a traction test in the outer material of more than 10 times of the maximum load request for the longest exposure without protection.



Fytotextile® Tensile and tear strength

The Fytotextile® system has been tested at the University of Seville to determine the maximum resistance of the assembly and its components, obtaining values up to 6 times higher than the maximum load.



Fytotextile® Freezing behavior

Fytotextile® modules perform well in continuous freezer-defrosting cycles, with no change in physical and mechanical characteristics.



Special Fytotextile® certified systems



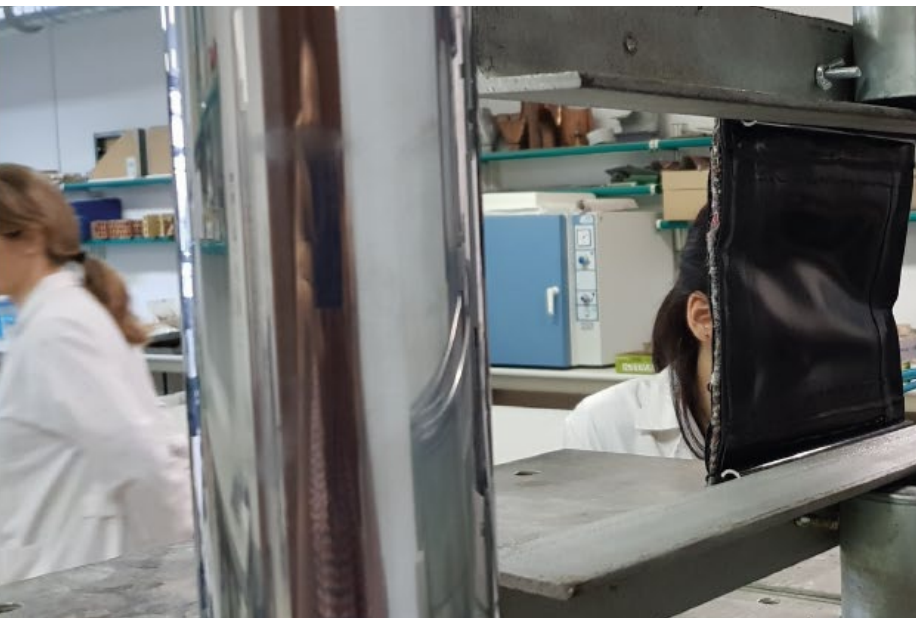
Fytotextile-FR® Fire resistance certified

In case the regulations require the specific fire resistance certification we have developed specific type of module, **Fytotextile-FR module** certified with **CLASS B-s2, d0**.



Fytotextile-C+® for very hot climates

We have developed and tested at the University of Seville a new type of module called **Fytotextile® C+ module** with increased water holding capacity for very warm climates.

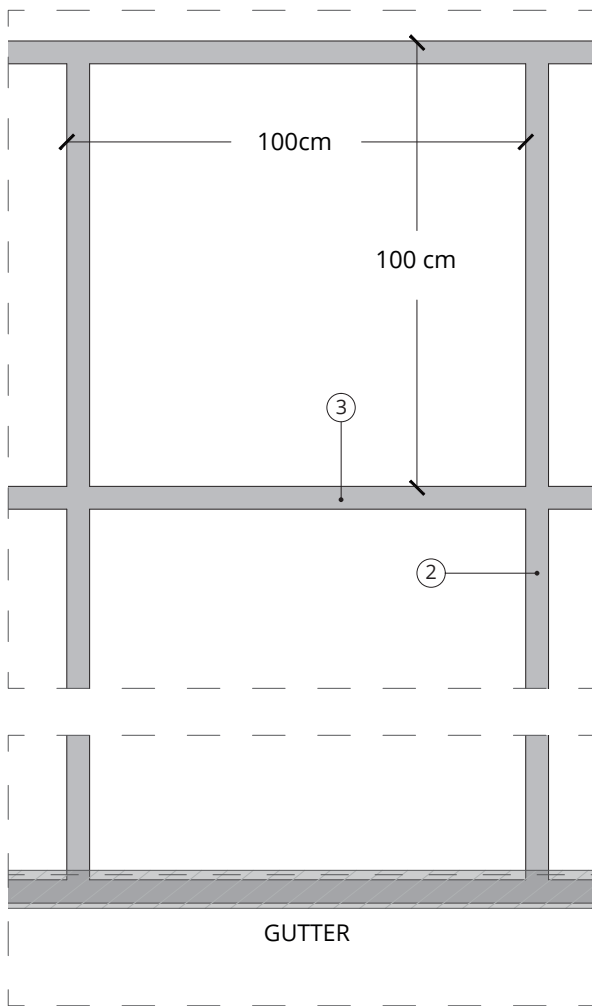


Terapia Urbana develops, produces and markets the Fytotextile® modules for professionals only.

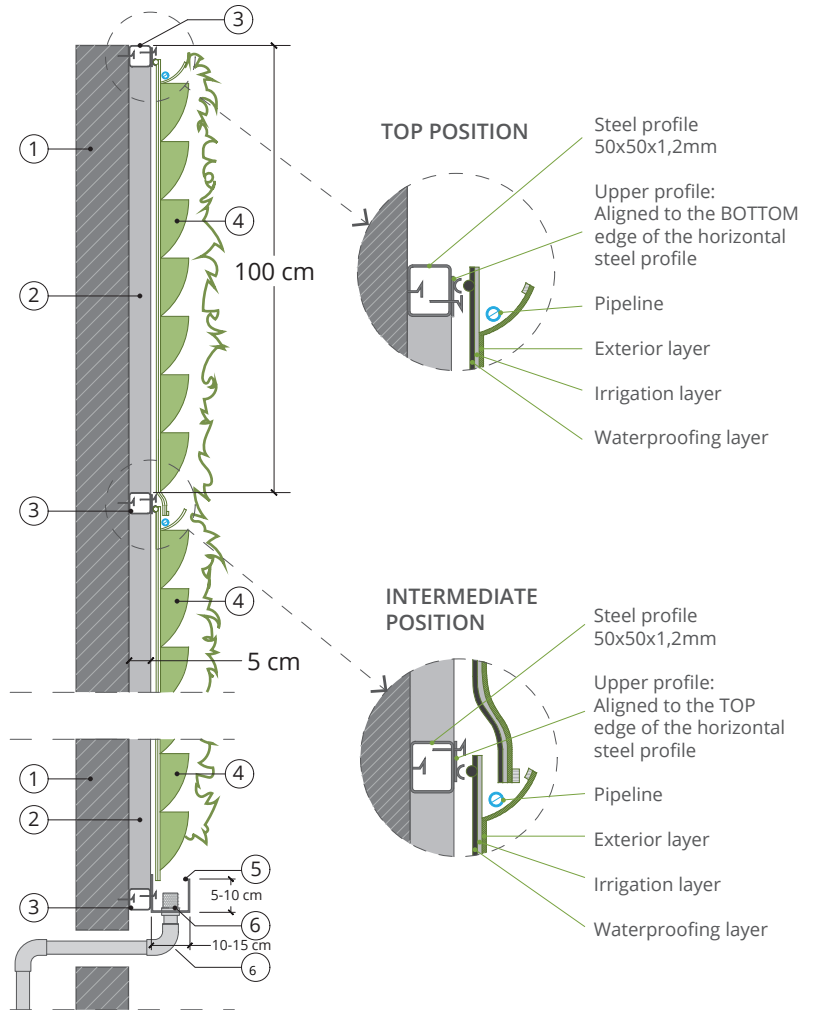
Quality control is carried out in the production that ensures the benefits for which it was designed.

The system undergoes constant improvement and development that endow it with technical characteristics to solve the construction demands.

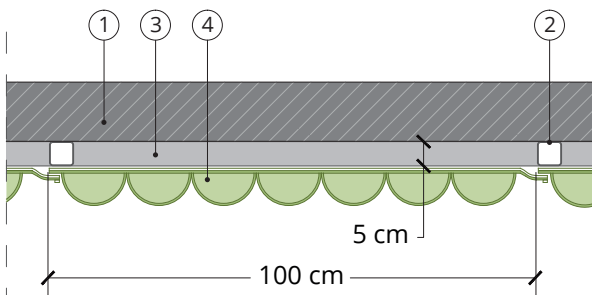
FRAMEWORK- FRONT VIEW



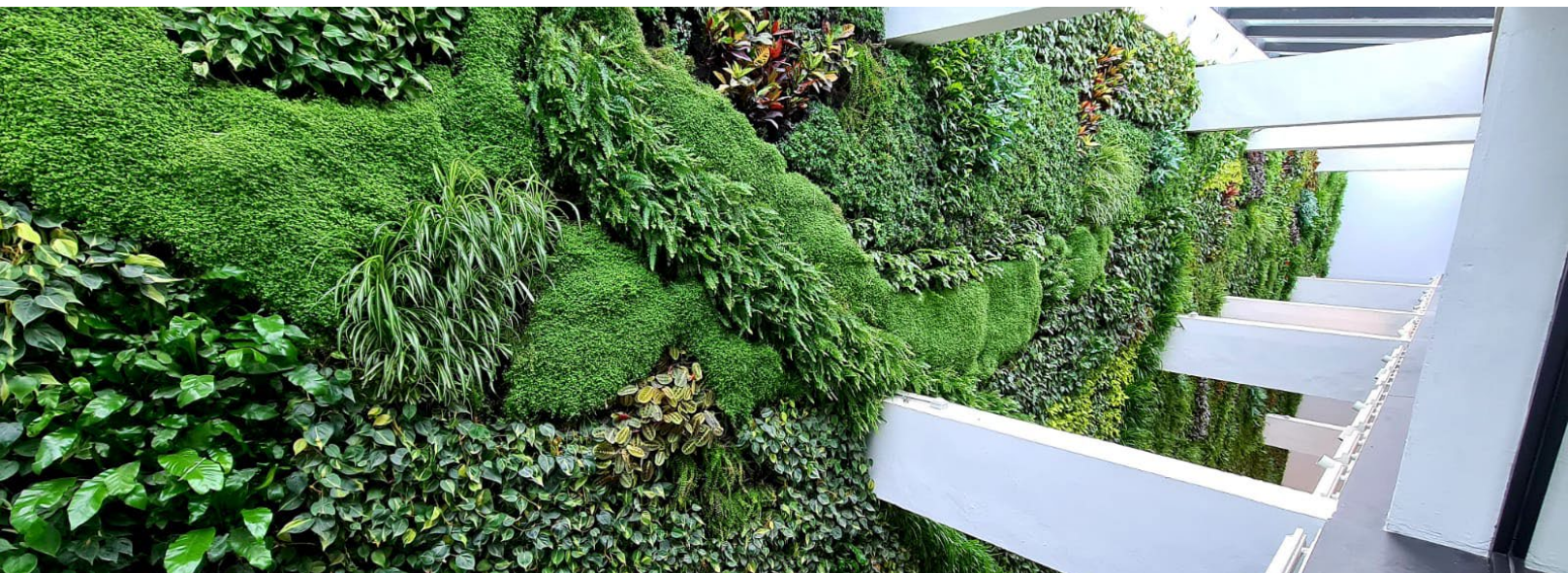
VERTICAL DETAILED SECTION



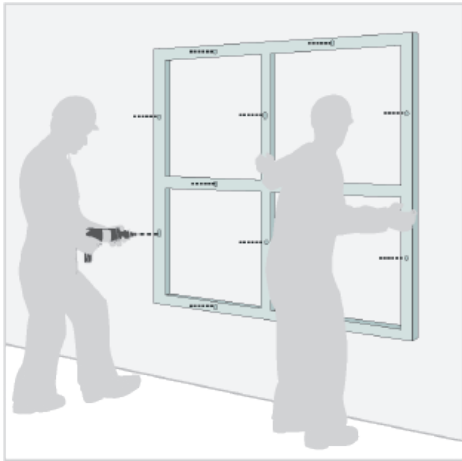
HORIZONTAL DETAILED SECTION



- ① CONCRETE WALL
- ② VERTICAL GALVANIZED STEEL PROFILE (50X50X1,2mm)
- ③ HORIZONTAL GALVANIZED STEEL PROFILE (50X50X1,2mm)
- ④ LIVING WALL FYTOTEXTILE MODULE
- ⑤ GALVANIZED STEEL GUTTER, e=1,2mm SCREWED TO SUPPORTS WITH SIDE COVERS + 15mm EDGE PLATE
- ⑥ MESH FILTER AT GUTTER DRAINPIPE
- ⑦ PVC DRAINPIPE CONNECTED TO GENERAL SANITATION SYSTEM

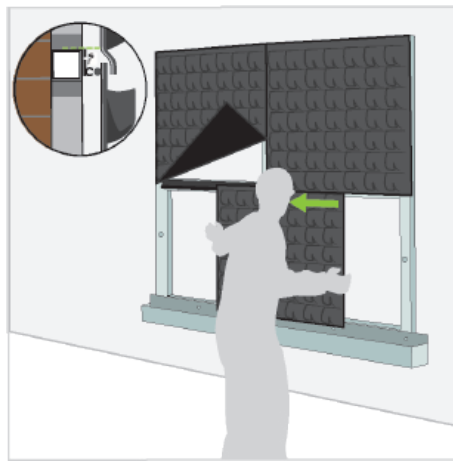


1 AUXILIARY STRUCTURE



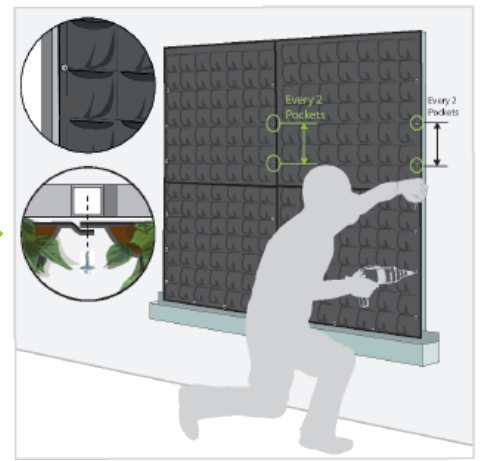
Framework will be screwed to the supporting wall with resistant and waterproof connections. Drainage gutter will be installed with a minimum slope of 2% to assure drain of water.

2 MODULE PLACEMENT



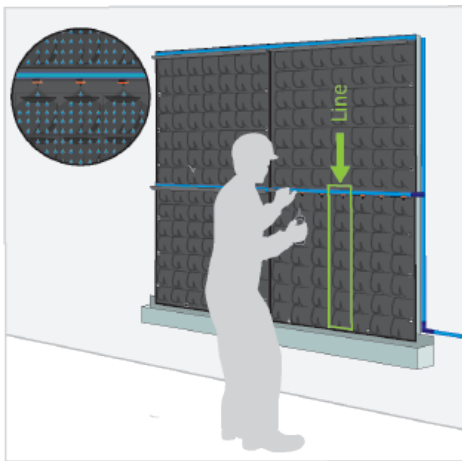
Once the rail profile is placed, back flap of the Fytotextile module needs to be inserted into the rail FYT-VOL. Place the module vertically and aligned with the rail, and slightly slip it from right to left until the end.

3 SCREW PERIMETER



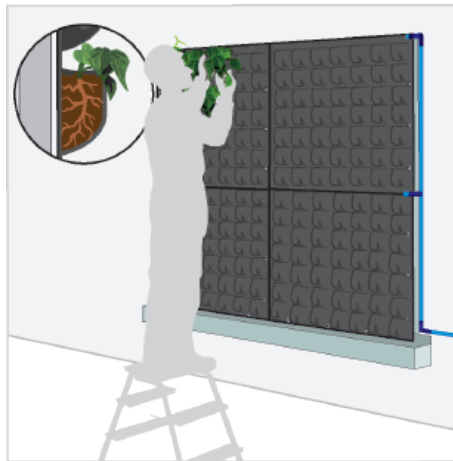
The perimeter of the system and vertical overlapping between modules will be screwed to the substructure by means of self tapping zinc screws. This will be done over the velcro tab, every 2 pockets.

4 IRRIGATION LINES AND DRIPPERS



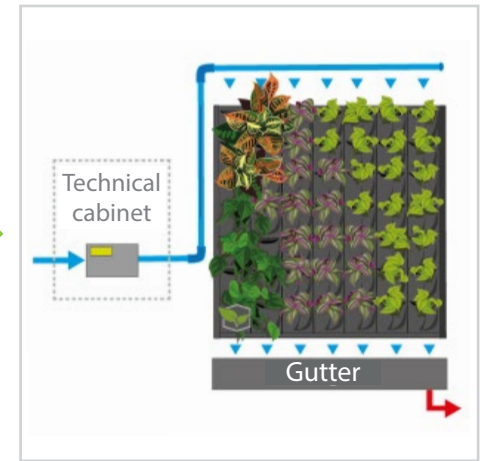
Horizontal irrigation lines are assembled every meter, using the top flange of modules, following the irrigation scheme defined in plans. At the end of every line, a plug will be installed.

5 PLANTING



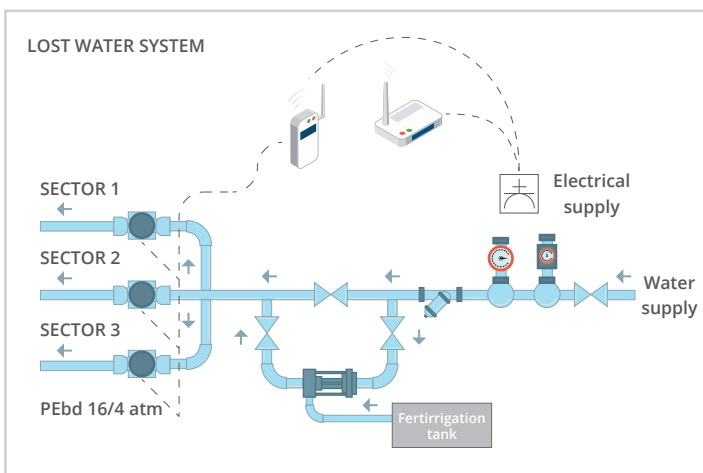
According to technical project, plants will be placed into the pockets (supplied in 11-13 cm diameter). They need to be extracted from their pots and then placed into their pocket applying a bit of pression.

6 CONNECT IRRIGATION SYSTEM

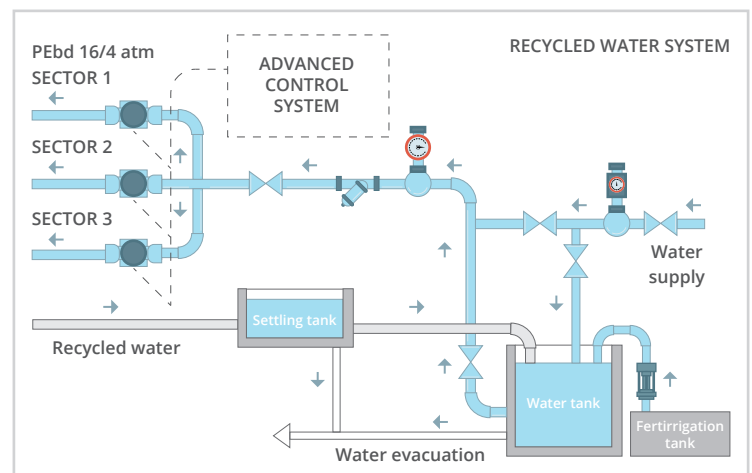


For small and medium installation, irrigation system will be a lost solution scheme. Harvesting water will be throw to drainage. This scheme requires an easy auxiliary installation.

7 IRRIGATION SYSTEM SCHEME

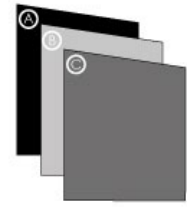
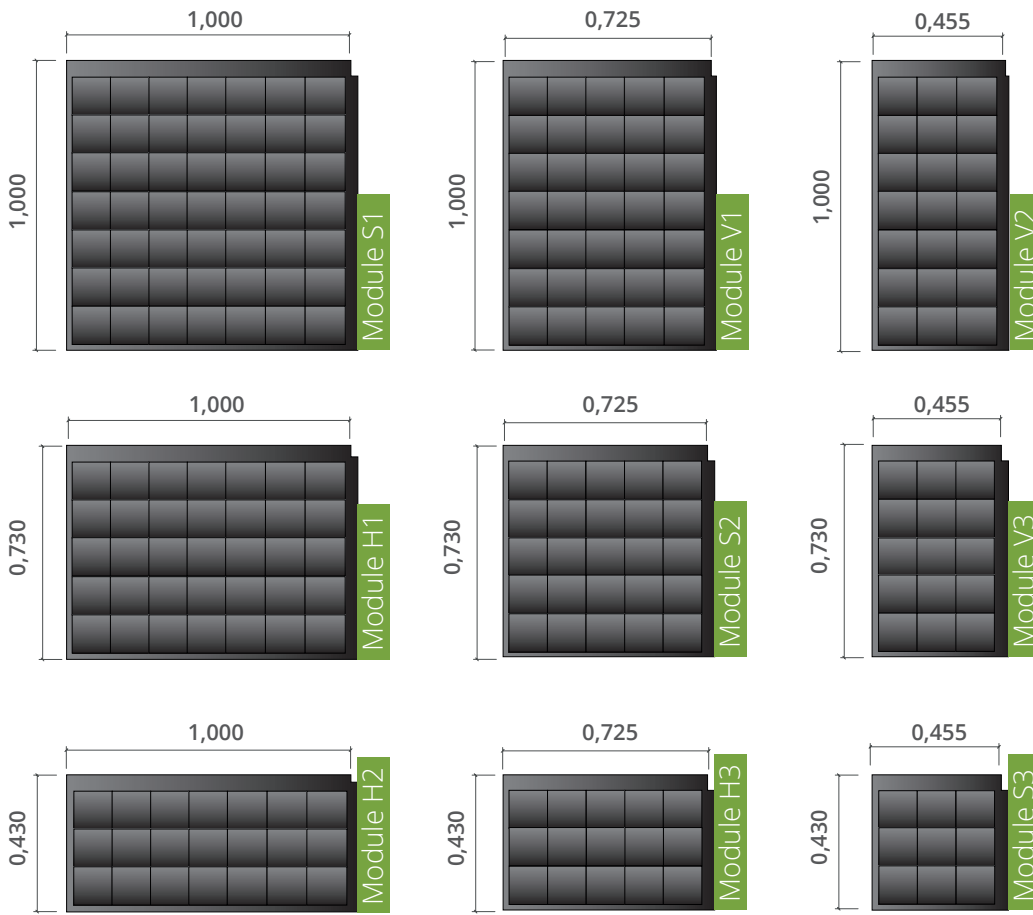


For basic small-medium size green walls, the irrigation system of lost water scheme is composed of manual valves, a flowmeter, a disc filter, a manometer, a fertirrigation system, a remote control system with a Wi-Fi router and a solenoid valve per sector.



For big installations, the irrigation scheme changes as it is recommended to have a closed circuit system. Water from the living wall will be headed to a water tank where it will be filtered to be used again. This scheme requires a complex auxiliary installation.

STANDARD SIZES - 49 POCKETS (7X7 MODULES)



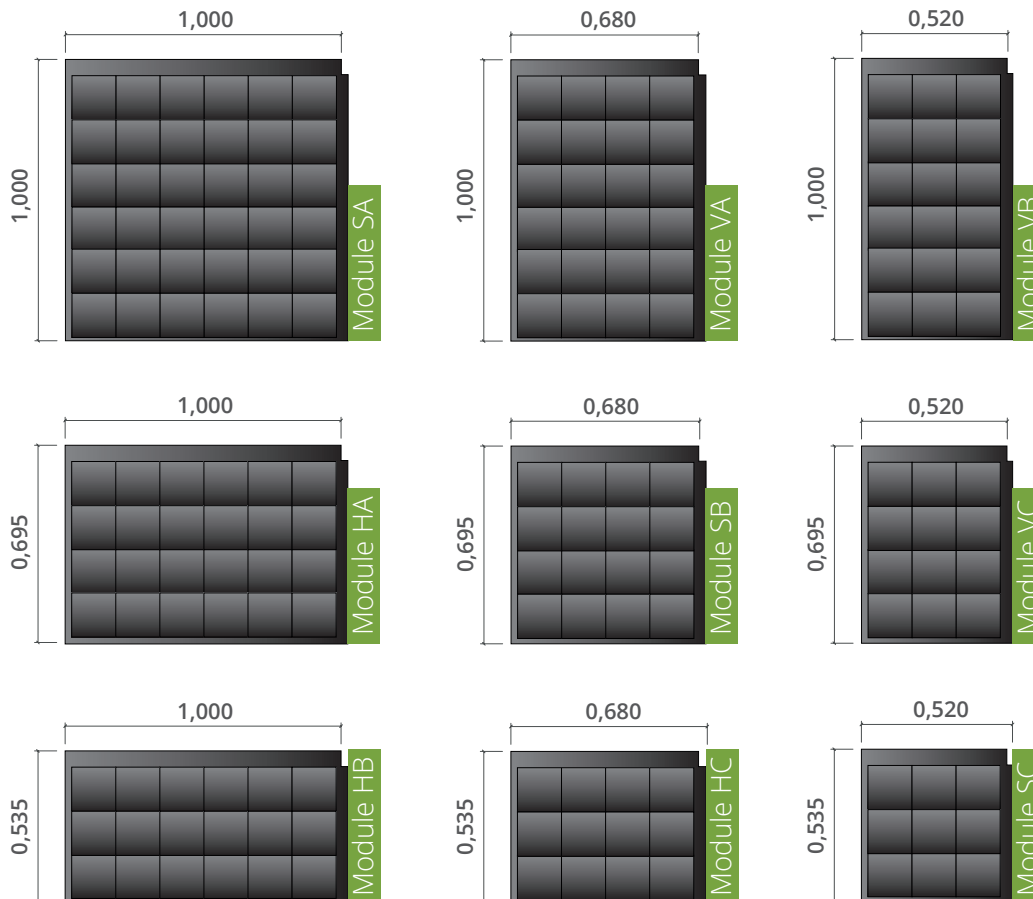
An optimal multilayer structure

- Ⓐ FYT-RCF waterproof layer
- Ⓑ FYT-DRA irrigation distributor
- Ⓒ FYT-AIR evapotranspiration
- Ⓓ Checkable irrigation

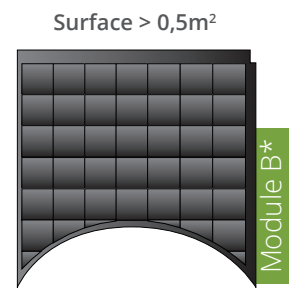
✓ Included aluminum fixation profile required for the fixation of the system to the substructure (auxiliary steel substructure not included in the price)

✓ Dimensions shown here are usable module dimensions, the dimensions are extended 2,5cm (B) and 2cm (H) for assembly flanges.

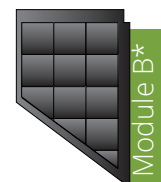
STANDARD SIZES - 36 POCKETS (6X6 MODULES)



BESPOKE MODULES



Surface > 0,5m²



- ✓ Under client request, all module sizes can be produced as following:
- Fytotextile
 - *Fytotextile FR
 - *Fytotextile C+

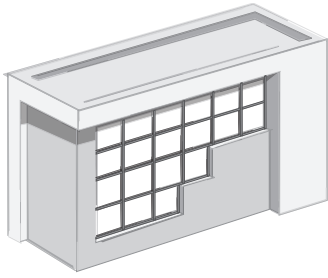


OXFORD & CAMBRIDGE
EXPEdition TO
SOUTH AMERICA

*Our modules have been adapted to the requirements of the international market, so more than **22.000 m²** of vertical gardens installed worldwide guarantee the good performance of the plants with the Fytotextile® system.*

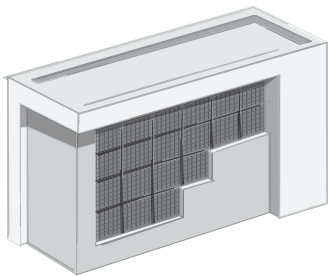


Technical documents provided.



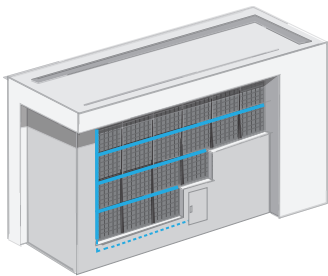
✓ Metallic Framework design

According to the modulation for every installation, the necessary metallic framework is designed for the correct connection of the modules. A complete technical definition of the framework with singular points details for every installation is provided.



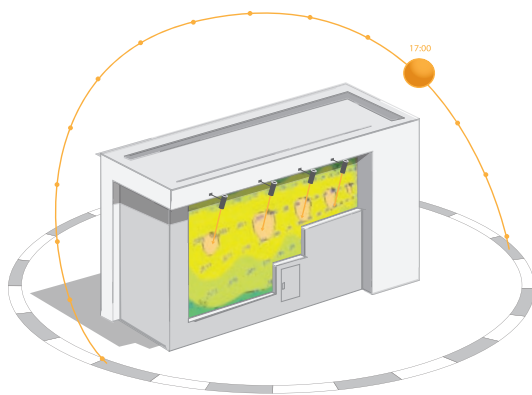
✓ Overlay and Modulation

According to every living wall shape, the modulation of the system is designed for a correct execution of the system. Installation plans are provided with specific technical details and the type of modules required, and its position in the system



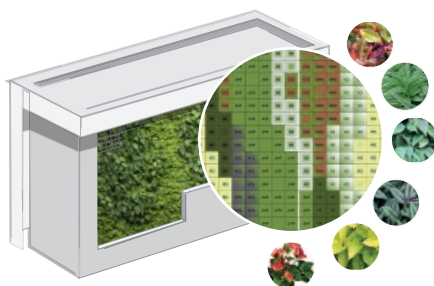
✓ Design of schemes and automation

According to location and specific features of every project, the optimal irrigation and automation scheme is defined. The plans include location and technical description of all the components required.



✓ Study and design of Auxiliary Lighting / Sunlight

Depending on the location of the vertical garden, a sunlight study for outdoor living walls, or an auxiliary lighting studio for interior ones, is carried out, using the most advanced technology and prescribing the most suitable luminaires. With the results obtained, the selection of species is made and, if necessary, it will define the necessary lighting to guarantee the correct development of the indoor plants.



✓ Plant selection and design

Starting from the analysis of the external conditions that affect to every installation, a specific plant selection and landscape design is done. Plans with type, size and position of every plant are provided for a correct installation. Design is performed taking into account the customer requirements and needs.



Quirón Sagrado Corazón Hospital (Seville)

This living Wall is the oldest built in Seville (from august 2012) with 17,00 m x 2,20 m, and is composed by more than 1400 plants selected between more than 40 species.

Carbon footprint

Fytotextile® Living Wall system has the FVS Environmental footprint distinctive, which is promoted by Vida Sostenible Foundation. This distinctive is the result of the life cycle analysis of the system, and identifies products and companies committed to protecting the environment, sustainability and the reduction of their footprint.

