



# Landmark

open space structures & solutions



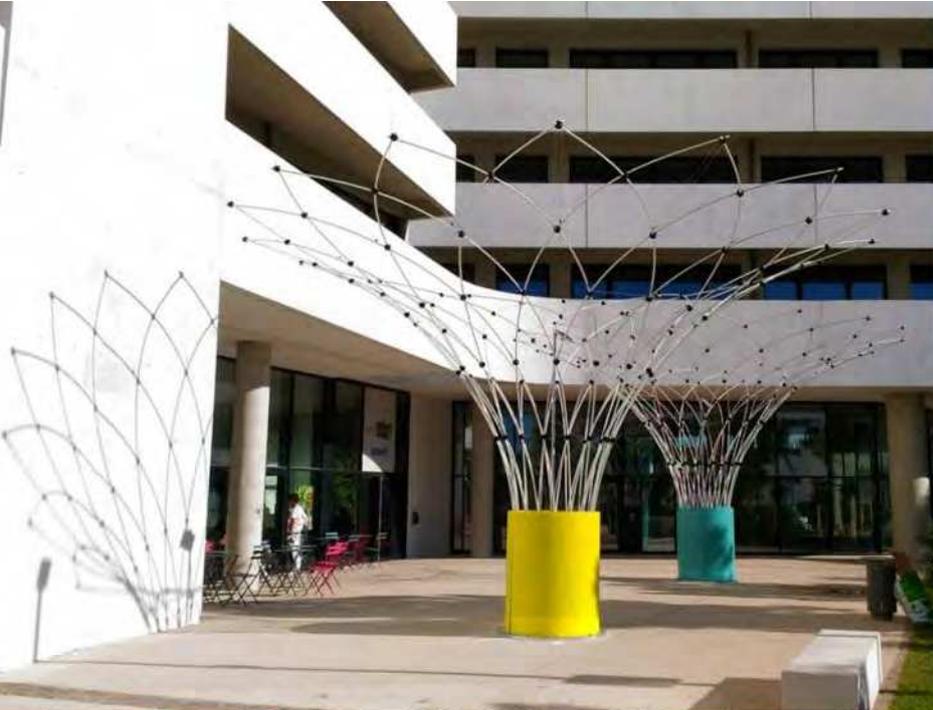
## URBAN CANOPEE

### GREEN FUNNEL

TECHNICAL AND COMMERCIAL  
SPECIFICATIONS

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## 01. PRESENTATION

URBAN CANOPEE offers innovative solutions to help combat the effects of global warming in the urban environment. Our innovative lightweight structures enable rapid installation of green canopies over the city. Those solutions assist with:

- combating heat island effects by installing cool islands where most needed,
- re-establishing urban biodiversity by extending ecological corridors for the local Fauna and Flora in locations where it has typically not been possible,
- the optimisation of water storage and use to maximise water resources,
- improving cities' air quality,
- enhancing city dwellers' quality of life by creating more opportunity to interact with nature.

URBAN CANOPEE provides decision-makers with new opportunities to green up tomorrow's urban landscape to:

- create more climate resilient cities,
- assist towards building's and neighbourhood's green certification programs ratings as well as urban green canopy cover targets,
- increase building's value through nature's aesthetics and create an urban modern feel,
- create aesthetically pleasing shade areas requiring minimal floor space,
- make urban green assets management easy and predictable.

Heat island effect makes cities and their populations vulnerable to extreme climate events. Such phenomena are unfortunately, predicted to increase in future. The built environment must at once prepare for major challenges of the 21<sup>st</sup> century such as global warming and increased urbanization.



## 02. VALUE PROPOSITION

### 2.1 TECHNOLOGY AND EXPERTISE

Our expertise lies in the design, engineering and installation of lightweight composite structures in “grid shell” patterns. These structures are then used as support for climbing plants to grow and flourish. The plants’ optimal growth is assisted by our proprietary smart connected irrigation systems.

URBAN CANOPEE originates from 12 years’ experience in innovative building materials research and engineering on light structures at the Navier laboratory from the prestigious Civil Engineering School ParisTech.

We have been awarded the 2016 “GreenTech” Award by the French ministry of ecological transition. We are also the recipient of the “Eco-neighborhood Innovation Award 2018 – UrbanLab Paris” and “Tech Challenge Woman4Climate” organized by the C40 cities global program.

### 2.2. COMPETITIVE ADVANTAGES

Our composite material “grid shell” solutions are ideal for climbing plants growth support and presents multiple advantages.

- Modular and autonomous, our structures allow for perfect architectural integration becoming an integral part of the city of the future.
- Used as a green canopy over public spaces or roofs and facades, they can shade large areas.
- Relocatable and with very little to no impact on their environment (above and underground), our structures are economical and can easily and quickly be installed.
- Whilst enjoying the mechanical strength of steel, our structures are four times lighter, provide far greater longevity (corrosion free and highly resistant to weather extremes) and are inherently electrically isolated. They are comparable to combining the strength of an oak tree with the flexibility of reeds.
- The patented (pending) connection nodes are at the core of our innovation. They allow for the efficient assembly and site installation. A Green Funnel is fully installed and commissioned within a day without any requirement for costly cranes.
- Our smart “Sensopee” irrigation system, combines humidity and temperature probes with an innovative connected IoT device providing 24/7 monitoring of climbing plants growing conditions. Irrigation happens automatically and optimally to preserve water resources.
- All data (temperatures, hygrometry and water level in tank) are captured and analysed. Data is available on our web platform and app. Remote monitoring for optimal plant growth management ends up cutting overall maintenance costs down.

## 03. TECHNICAL SPECIFICATIONS

Green Funnel is available in various sizes; providing shade over areas anywhere from 40-60m<sup>2</sup>. The crown opening angle can be adjusted to perfectly fit areas where existing overhead infrastructures can prevent full opening. Green Funnel requires minimal floor space whilst providing a large green canopy. It is a freestanding, relocatable solution with no impact on underground services that brings local cooling benefits; complementing existing urban green spaces.

### 3.1. SHAPE AND STRUCTURE



Following biomimicry principles, the Green Funnel shape is inspired by time proven shapes found in the natural world such as flowers and mushrooms. It is a solid design providing symmetrical weight distribution. An elegant add on to any urban landscape.

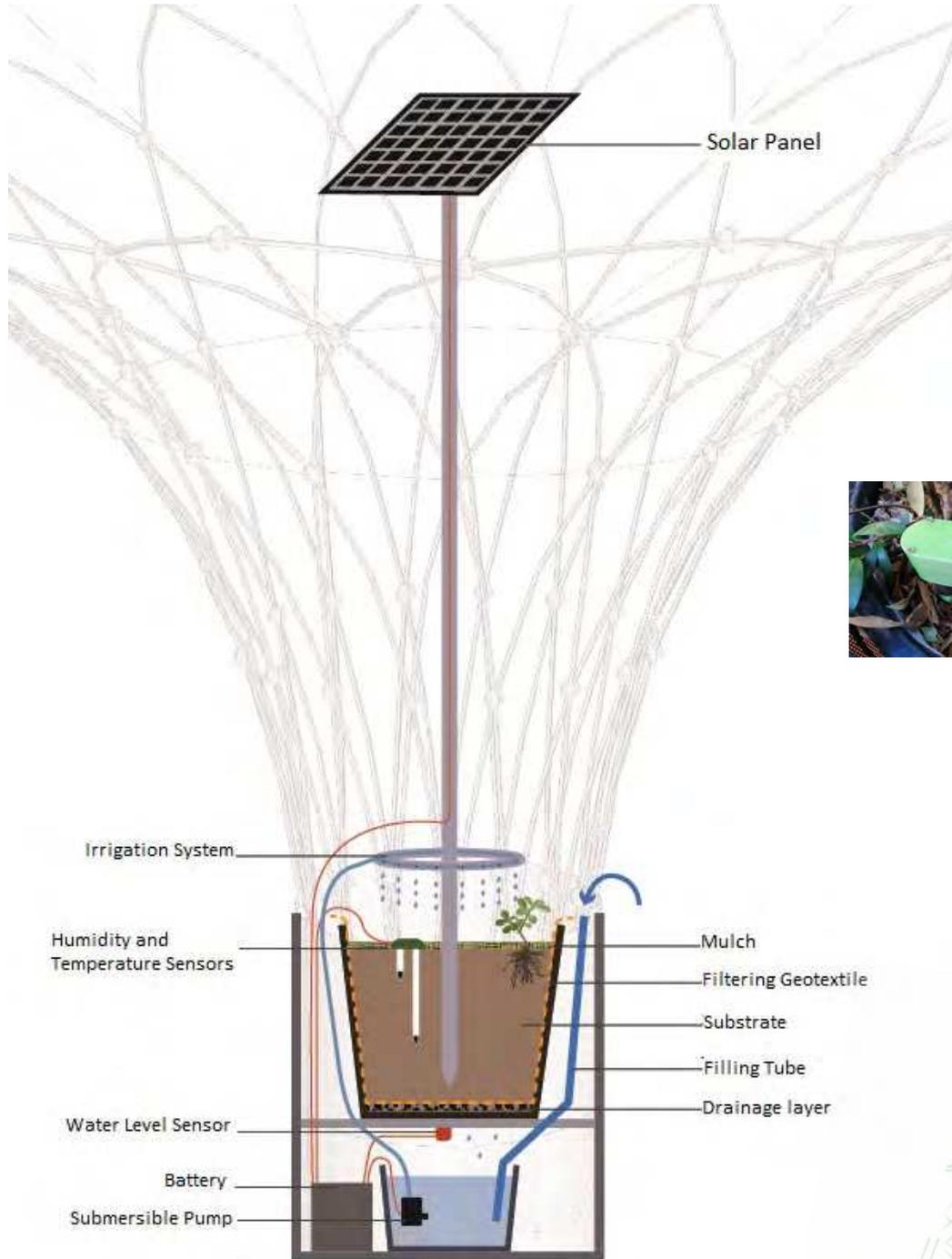
Ample engineering calculations have been made to ensure the solidity, wind resistance and stability of the structure.

### 3.2. WEIGHT AND DIMENSIONS

- Pot Diameter: 1.10 m
- Pot Height: 1.4m
- Overall Height: 4 to 5 m
- Summit Diameter: 7 to 9 m
- Green Canopy Cover: 40 to 60 m<sup>2</sup>
- Total Weight incl. water, substrate and fully-grown plants: 1200 to 1600 kgs

3.3. UNDER THE HOOD

200L water tank, 300L substrate pot and irrigation system



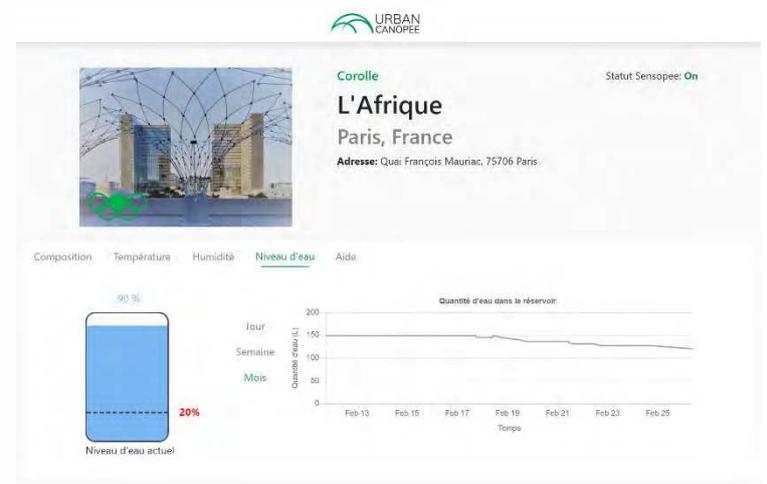
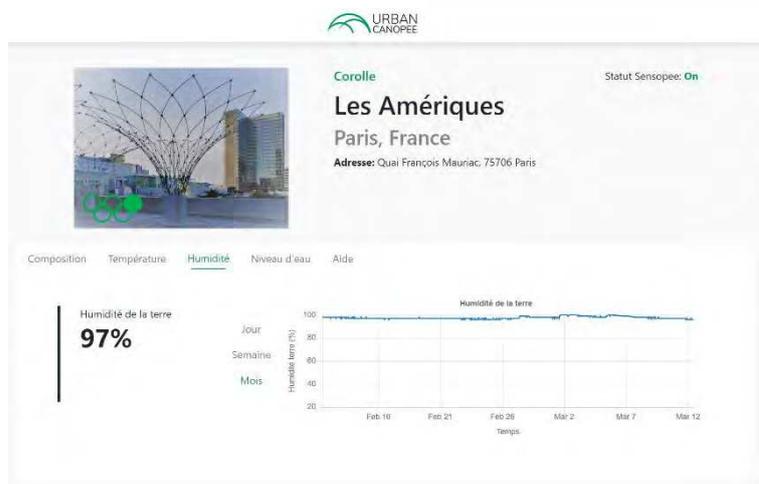
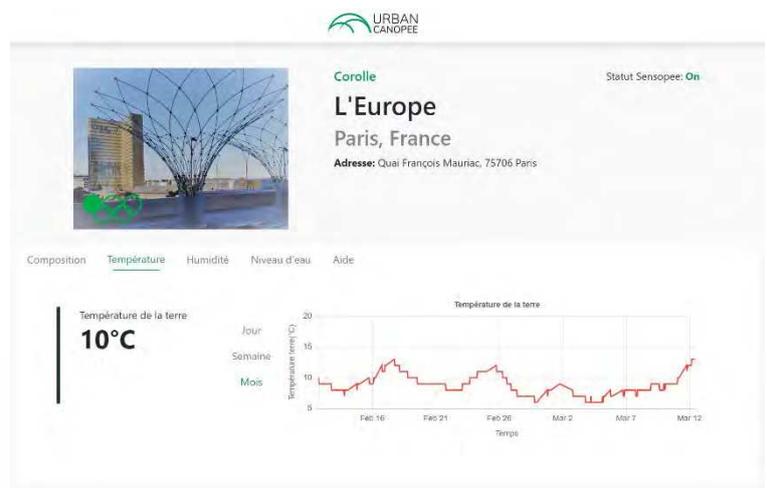
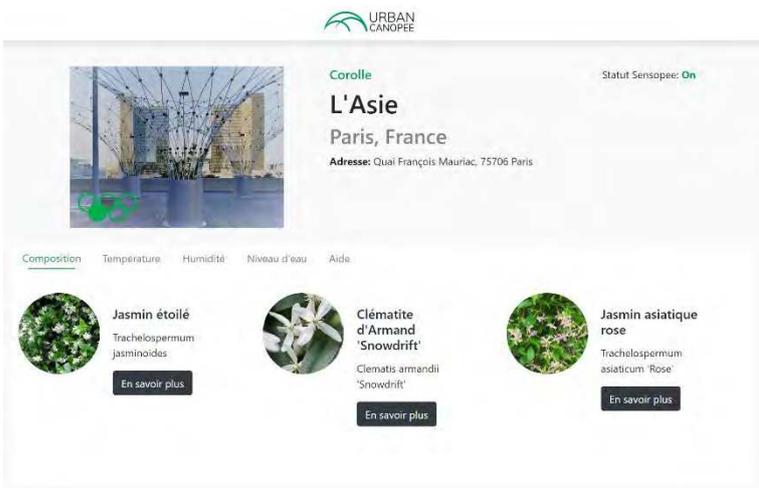
### 3.4. SENSOPEE SMART IRRIGATION SYSTEM

Humidity and temperature connected probes located in the substrate provide constant data stream to a proprietary web-based algorithm. The algorithm also takes into account live local weather forecast information to automatically pilot the water pump for accurate and efficient irrigation according to plants specific needs.

It is all about resource optimization. For example, if the humidity probe detects soil moisture content as getting too low for the plants wellbeing but rain is forecasted to fall later on in the day, the system will therefore automatically decide not to activate the pump to save water.

The entire system is energy self-sufficient, thanks to solar energy harnessed by a centrally located 7W solar panel feeding a 12 V/ 8 Ah lead battery nested at the base of the structure.

Tank water level is also remotely monitored. Low level email alerts are automatically sent to pre-registered users to organise tank refills.



### 3.5. PLANTS

Plants are handpicked according to the local climate and environment. The shortlisted plant species fulfill three major functions to fight heat island effects:

- The reflection of solar energy (albedo) drastically reduces heat storage in the ground
- The creation of a large green canopy cover providing shade
- Natural air-conditioning through evapotranspiration of the plants, cooling the surrounding air volume. The open nature of our structures also allows for optimal air flow through it.

Each Green Funnel can be composed of up to 3 different climbing plant species. As an example, the following plants could be selected as they are well adapted to the harsh Australian weather and heat in temperate areas (non-exhaustive list):



***Pandorea Pandorana* - Wonga Wonga Vine**

A native fast-growing twiner that flowers from winter to summer and attracts lots of pollinators. It tolerates light frost. Suitable for full sun and part shade.



***Cissus Antarctica* - Kangaroo Vine**

This climber occurs naturally in Australia. Its persistent foliage is dense and decorative. This plant grows well in light shade to quite shady areas. It can tolerate light frost.



***Hardenbergia Violaacea* - Purple Coral Pea**

Evergreen native climber that suitable for a wide range of Australian climates. Performs as well in full sun or in half shade locations.



***Trachelospermum Jasminoides* - Star Jasmine**

This evergreen woody vine is native to Asia. It is commonly grown as an ornamental plant. It will bear delicate fragrant flowers. In full sun to total shade locations.



***Vitis Coignetiae* - Crimson Glory Vine**

This vigorous and strong growing climbing vine bears very little flowers and fruits, but its foliage is incredibly decorative.

This plant is easy to grow and will thrive in full sun to partial shade.



***Distictis Buccinatoria* - Mexican Blood Vine**

Vigorous evergreen climber that produces an abundance of bright red tubular flowers from summer through to autumn. It is fast growing and can cover very large areas. Good for sunny areas.

### 3.6. THE LIVING



The substrates used in our solutions are sourced according to very specific criteria. The project suitable substrate must provide ideal growing conditions for the plants, but this must not be to the detriment of the planet. Our substrate is sourced with a strong focus on eco-friendly and circular economy principles. Water retention, porosity, weight, longevity and local suitability are all considered when choosing the substrate for each project.

As much as we favor using fertilizer made from organic materials, the choice of fertilizer ultimately used will be made as a result of a consultative approach with every customer. The aim is to ensure a successful and easy to manage project in the long term for all stakeholders involved.

The same consultative approach is used for bouquet of three plants selection phase. URBAN CANOPEE has developed vast knowledge around climbing plants however, local climate conditions as well as customer's needs and wishes are all taken into account when selecting the right plants.

### 3.7. SITE INSTALLATION

The composite structure is secured to a galvanized steel frame on which the water tank and the substrate pot are nested. The climbing plants are planted in the substrate and use the structure as growth support. The base of the structure shape, material and finish can be tailored to each project specific requirements.

The structure is elevated in position using a purposefully designed lifting mechanism developed by URBAN CANOPEE; no cranes required. A Green Funnel is brought to site, assembled, elevated and anchored within a day.

Individual structures can also be connected with one another through the top extremities of the “petals”. These types of inter-connections afford the overall structure further stability.

### 3.8. GROUND ANCHORAGE

Depending on ground specific topography, different anchoring methods are used. The standard methodology is to use a galvanized steel grate to spread the overall structure’s load. The plate is then anchored to the ground through metal rods secured with chemical setting. The structure’s weight distribution and anchoring will be engineered for each project, taking into account site specific conditions.

Wind and tear-off resistance are thoroughly checked through design calculations to ensure compliance with local urban furniture regulations.

### 3.9. FIRE SAFETY

The structure’s composite material used is made of fiberglass. It offers far superior fire resistance compared to standard synthetic materials issued from other manufacturing technologies. This is primarily due to a high glass fiber composition ratio which is an incombustible material. This material offers excellent result in fire conditions:

- M1: Self-extinguishing (according to NFP 92-501, on a scale from 0 to 5)
- F0: Absence of toxic smoke (according to NF X 70-100 and 10-702, on a scale of 0 to 5)
- I0: Oxygen index (on a scale of 0 to 5)

### 3.10. MAINTENANCE

Made of fiberglass composite materials, our structures do not require much maintenance. The main maintenance requirement is providing on-going care for the plants and keeping the Green Funnel tidy.

URBAN CANOPEE has teamed up with carefully selected green spaces maintenance specialists around the country to offer our customers a cost-effective on-going maintenance program option.



Circular Bench around Green Funnel Base



Integration with more complex urban furniture solution



Integration with misting system



Cloth solution to provide instant shade while waiting for the plants to grow



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