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Technological Offers type

[Technological solutions](#)

Research and innovation areas

- [Agriculture, Forestry, Natural Resources, Land Use and Blue Growth](#)
- [Architecture, Baukultur and Creativity](#)
- [Climate, Energy and Mobility](#)
- [Health and Wellbeing](#)

ODS



Where?

Bioclimatic Architecture in a sustainable environment – ABIO

Keywords: | [air](#) | [city](#)

Brief description of the solution and the added value it delivers

Modules for Urban Air Cleaning: an autonomous, nature-based system for purifying city air.

Description of the technological basis

Modules for Urban Air Cleaning (MUAC) is a **highly efficient air purification system** which combines technology and vegetation to capture, absorb and purify the pollutants in city air.

The project was **funded by the European Commission (EIT-EU) in 2018** to develop the first functional prototypes and its **patented purification system** helps to reduce air pollution (NOx, SOx, COx, PM10/PM2.5, etc.), as well as:

- **Increasing the amount of vegetation in highly asphalted areas.**
- **Moderating temperatures and increasing humidity relative to its surroundings**, creating microclimates that are more comfortable for the public.
- **Reducing installation and maintenance costs** in comparison with other competing technologies.

Thanks to these characteristics, the purification towers are able to create small microclimatic ‘oases’, improving the climatic conditions of their surroundings.

‘It reduces air pollution, improves air quality, improves the urban microclimate and increases the amount of vegetation in highly asphalted areas’

Business needs / application

- One in four people in the world lives in cities with poor air quality, affecting around 1.8 billion people (UN 2019).
- Every year, 7 million people die due to breathing poor-quality air (WHO 2018).
- The rapid growth of cities has created highly asphalted areas and an unequal distribution of vegetation (Eurostat 2016).
- According to the European Commission, in Spain around 15 million people breathe poor-quality air (EU Council 2017).

‘Improving air quality in cities will translate into fewer deaths from cardio-respiratory conditions and a better quality of life for their citizens’

Competitive advantages

- **Modular.** The system’s size (3 metres tall, with an area of 0.49 m²) and modular form speed up the installation process and reduce maintenance costs.
- **Adaptable.** The vegetation of the biofilters is indigenous, in order to adapt them to the different environments and climates of

each city.

- **Sustainable.** The towers moderate the temperature and increase the relative humidity around them, improving citizens' feelings of belonging and security.
- **Efficient.** The towers have a filtering surface area of 8 m², with 16 biofilters and 400 plants working 24 hours a day, 365 days a year.
- **Value for money.** The towers help to even out the distribution of green areas in cities, particularly in highly asphalted areas.
- **Recyclable.**
The materials used to build the structure and the biofilters are 100% recyclable.

References

- This system has been funded by the European Institute of Innovation and Technology (EIT), by means of a Climate-KIC Pathfinder project. [<https://spain.climate-kic.org/success-stories/muac/>].
- Two MVPs have been built and installed at UPM to promote the technology.
- We took part in the COTEC Foundation's Innovación Tecnológica Imperdible 03 (unmissable technological innovation) fair in 2018.
- Interest from Lanzadera (business incubator) in developing our business model.
- Letter from Querétaro City Council in Mexico expressing an interest in conducting a demo with 100 MUAC towers.

Protection

- Patent: ES2704170A1

Stage of development



Contact

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