Fact Sheet

Project Information

WATCHPLANT

Grant agreement ID: 101017899

Funded under
H2020-EU.1.2.2.

Overall budget
€ 3 744 192,50

EU contribution
€ 3 744 192,50

Coordinated by
ASOCIACION INSTITUTO TECNOLOGICO DE LA ENERGIA
Spain

Project description

Wireless sensors for healthy plants

Wireless wearable devices can track our every move and monitor our health. This technology can also be used on plants for the benefit of urban policies, the agri-food industry and forestry. The EU-funded WATCHPLANT project will develop a wireless, wearable, self-powered sensor for in-situ monitoring of urban environments. Specifically, this system equips plants with artificial intelligence to create a smart net of sensors for measuring environmental parameters and the responding physiological state of plants at a very early stage, using a barely-explored fluid, phloem sap. The project will explore how to extract sufficient sap volume in a healthy...
plant and how to make long-lasting bioelectronics to use sap for sensing and energy harvesting purposes.

Objective

WatchPlant will develop a new biohybrid system technology, a wireless wearable self-powered sensor for in-situ monitoring of urban environments. This system equips urban biological organisms -plants- with Artificial Intelligence (AI) to create a smart sensor for measuring both, environmental parameters and the responding physiological state of plants, in a very early stage by the use of a barely explored fluid, phloem sap, in combination with chemical, and physical sensors. It will be integrated into complex network that allows performing distributed information processing, decision making, modeling and data fitting, paving the way for the self-awareness or self-adaptation. Additionally, it will constitute a clean energy self-powered device due to the novel use of sap, not only for transforming plants into living sensors, but also for clean energy generation.

A consortium of EU research, technology centers and ambitious high-tech SMEs will stretch and combine the limits of plant physiology and bioelectronics with microtechnology, multiphysics modelling, sensor engineering, AI and environmental modelling, to transform plant into living autonomous and self-powered sensors. The project has the ambition to solve how to extract sufficient sap volume in a healthy plant, how to make long-lasting bioelectronics, and how create a smart self-powered wearable phytosensor in a single device. It also has the challenge of modelling urban environments using novel combinations of exiting parameters and explores the future role of sap in this sense. Thus, it is a promising tool to carry out weather/pollution/pandemics development forecasting systems up to social networks for proving an ecological/environmental feedback to citizens. Thus it will be possible to perform specific actions and apply efficient use of resources and correct policies, which can have a great impact not only in urban monitoring but a huge range of plant-related sectors such as agro-food industry or forestry.

Fields of science

Programme(s)
Call for proposal
H2020-FETPROACT-2020-2

Funding Scheme
RIA - Research and Innovation action

Coordinator

**ASOCIACION INSTITUTO TECNOLOGICO DE LA ENERGIA**

- **Address**: Avda Juan De La Cierva 24
  46022 Paterna
  Spain
- **Activity type**: Research Organisations
- **EU contribution**: € 405 681,25

**Participants (6)**

**KUNGLIGA TEKNISKA HOEGSKOLAN**

- **Country**: Sweden
- **EU contribution**: € 718 318,75
- **Address**: Brinellvagen 8
  100 44 Stockholm
- **Activity type**: Higher or Secondary Education Establishments

**CYBRES GMBH**

- **Country**: Germany
- **EU contribution**: € 654 027,50
- **Address**: Melunerstrasse 40
  70569 Stuttgart
- **Activity type**: Private for-profit entities (excluding Higher or Secondary Education)
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<td>CIM-MES PROJEKT SP ZOO</td>
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<td>Ul. Al. Jerozolimskie 125/127, Lok 503, 02017 Warszawa</td>
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<td>AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS</td>
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<td>SVEUCILISTE U ZAGREBU FAKULTET ELEKTROTEHNIKE I RACUNARSTVA</td>
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<td>UNIVERSITAET zu LUEBECK</td>
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<td>€ 528 805</td>
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