


ECOLTURE

Monitoring tools for a sustainable management of irrigation and microclimate in European greenhouses

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INFORMATION ON THE ECO-INNOVATIVE SOLUTION PROVIDER

The solution was developed within the EU Eco-Innovation program and finalised in 2012. The project was led by the Spanish organization Inkoa Sistemas and conducted with two Spanish partners Barrenetxe S Coop and Consejo Superior de Investigaciones Cientificas.

SHORT DESCRIPTION OF THE ECO-INNOVATIVE SOLUTION

Ecolture is a climate and irrigation control and monitoring software for controlling and monitoring greenhouses regardless of the number or type of systems and sensors used. The monitoring is carried out through a web-based user interface (through a local area network) or from remote installations (via the Internet). The purpose of the installation of more automated, systematic and integrated climate and fertilisation systems is to obtain optimal resource utilisation with minimal waste and pollution effect. The software offers the user both a navigation mechanism from which the user can easily access any of the modules composing the program (Control, Alarms and Graphs Modules) and an overview of the current operation of the installation (Alarms, Climate Information, Irrigation Programs etc.).

INDUSTRIAL SECTOR – MARKET SEGMENT AND ACTUAL APPLICATION IN INDUSTRY

07 Agricultural Services

INDUSTRIAL CLASSIFICATION - NACE CODE;

01 Crop and animal production, hunting and related service activities

1. DESCRIPTION OF ECO-INNOVATIVE SOLUTION

Technical aspects of the eco-innovative solution

Climate and Irrigation Control and Monitoring System integrated by a wireless network of sensors and a software platform that will provide sustainable and integrated management of production processes in greenhouses:

- Control and automation software platform that allows intervention in microclimate and fertilization conditions, as well as the recycling of water and fertilizers.
- Microsystems based on electrochemical ion detection of potassium, sodium, chlorine and nitrate (in answer to the necessity of controlling the recirculation solutions).
- New procedures for culture management and remote monitoring, in order to implement sustainable processes in the intensive horticulture sector, with a life-cycle approach.

All the sensors required to carry out the control and monitoring of the climate and the fertigation are delivered and installed by Inkoa.

Economic and environmental benefits of the eco-innovative solution

The solution demonstrated the following savings at end users' facilities:

- Reduction of 26% in the water consumption (1.26 l/m² per day) and of 37% (0.52 l/m² per day) in the wastewater production
- Decrease of NO₃ consumption by 2.41 mmol/l representing 17%, K 1,37 mmol/l equivalent to 17%, Na 0.46 mmol/l equivalent to 18% and Cl⁻ 0.38 mmol/l equivalent to 21%
- Reduction by 20% of the energy consumption (6,62 MJ/1000m²)

Regarding the economic benefits, there is a total cost saving of 1€ per square meter per year taking into account both water and energy consumption costs.

The cost of implementation of the Ecolture solution depends on the type of installation in which the product will be implemented since, apart from the software application itself, other systems must be installed (control and communication boards where the number varies with the type/surface and systems to be controlled). Moreover, the type and number of climates and/or fertigations to be controlled and automated also influences the resources required to implement and start up the service. As an average for different types of installations, the following prices can be considered:

- Ecolture Products for individual greenhouse operators, 12,600 €
- Ecolture Products for research and technological entities and SME associations, 18,500 €
- Ecolture Products to be integrated within existing monitoring and sensor equipment, 11,500 €
- Return on investment: 2 to 2.5 years.

2. AVAILABILITY OF THE ECO-INNOVATIVE SOLUTION AND BUSINESS PARTNERSHIP

Market readiness, Trade mark, existing market coverage, commercialization strategy

The solution is available on the market under the trademark Climagro and it has been implemented in several installations in Europe. Some reference applications are listed below:

- Barrenetxe (Spain) is a cooperative for the production and sale of horticultural products with an area of 10,000 m² of Venlo glass multi chapel greenhouses divided into 5 sectors, producing tomatoes in Hydroponic (Rockwool substrate).
- Viveiros Furadouro (Portugal) a company specialising in the production of large-scale Eucalyptus globulus that includes a glass greenhouse with a total area of nearly 9,000 m² divided internally into four sectors.
- Inkoa Sistemas worked on a turnkey project for the design and implementation of intelligent green houses for the sustainable production of tomatoes in Agadir (Morocco). A previous version of Ecolture solution for climate control and automatic fertigation (fertilisation through the irrigation) was implemented in such facilities.

Requirements to adapt the solution to the local market and potential applications/market size

The Ecolture solution can be adapted to any type of situation with the potential of being automated. The Ecolture system enables the automatic control of the climatic and fertigation conditions in greenhouses and therefore the infrastructure needs to have a minimum number of systems that can be automated for the control of climate and/or fertilisation.

On-site after-sales services support and the technical assistance requirements

Supplier to greenhouses / engineering company

Targeted local business partners

Commercial agreement for distribution and sales.