

## Efficient Management of Small and Medium Wastewater Treatment Plants (OptimEDAR)

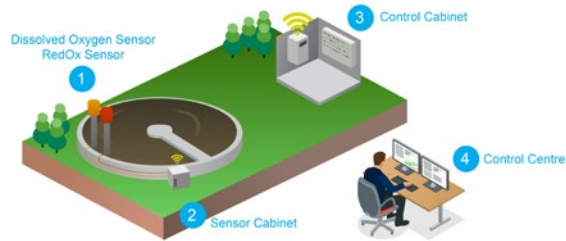
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### INFORMATION ON THE ECO-INNOVATIVE SOLUTION PROVIDER

This eco-innovative solution is the output from the project titled “Efficient Management of Small and Medium Wastewater Treatment Plants” co-funded by the European Commission within the framework of the Competitive and Innovation Program. This solution has been developed by the Spanish ADASA Sistemas S.A.U and validated in partnership with AMMI Technologies (ES), Ecotrus (RO) and Agencia Catalana de l’Aigua (ES).

### SHORT DESCRIPTION OF THE ECO-INNOVATIVE SOLUTION

The innovation consists of a system to improve the energy efficiency of (municipal) waste water treatment plants by an optimised control of the biological reactor with non-expensive probes. A new control and management product for small and medium waste water treatment plants (WWTP) based on an eco-innovative online monitoring of the aeration process in the biological reactor has been implemented. The OptimEDAR product allows small and medium WWTPs to run affordable on-line management schemes of the aeration process, resulting in a higher quality of treated water (less reactant and chemical by-products) and less energy consumption. This in turn results in increased productivity of the whole system and a faster water quality control loop.

### INDUSTRIAL SECTOR – MARKET SEGMENT AND ACTUAL APPLICATION IN INDUSTRY

49 Electric, Gas and Sanitary Services

### INDUSTRIAL CLASSIFICATION - NACE CODE;

36 Water collection, treatment and supply

## 1. DESCRIPTION OF ECO-INNOVATIVE SOLUTION

### Technical aspects of the eco-innovative solution

OptimEDAR is a control solution that increases the energy efficiency and improves the quality of effluent in activated sludge treatment plants. This solution is based on innovative online monitoring of the aeration process in the biological reactor. OptimEDAR elements are:

- The Control Cabinet, with the PLC, the display, the wireless communication and the GSM/GPRS modem;
- The Sensors Cabinet, with wireless communication with the control cabinet connection to the DO and ORP sensors;
- The ancillary components.

OptimEDAR optimizes the blowing cycle through the continuous measurement of the dissolved oxygen (DO) and oxidation-reduction potential (ORP). The solution is suitable for existing small and medium WWTPs with a low degree of optimization and an intermediate level of automatization. Prevailing conditions: 1. Plant not optimised; 2. Plant should have non-constant influent such as variations between night and day, 3. High nitrate concentration. These plants usually use a basic blower control based on fixed on/off times or oxygen set points. In these cases, OptimEDAR can achieve an extraordinary reduction of the energy consumption in the aeration system (up to 30%). This is thanks to successful regulation of the process by automatic corrections and adjustments, taking into consideration influent and environmental conditions.

### Economic and environmental benefits of the eco-innovative solution

OptimEDAR requires a low level of investment with a minimum cost of maintenance. The system is based on commercial DO and ORP wireless sensors, which makes the system cheap compared to conventional automatic blower control systems using expensive ammonia sensors that are only cost effective for large plants.

The indicative price of the OptimEDAR unit (Control Cabinet plus Sensors Cabinet plus sensors and ancillary components) is 19,500 € (EXW, without engineering, installation and commissioning).

Costs related to configuration, installation and commissioning have to be allowed for. The only operational expenditure derives from the yearly replacement of the DO sensor membrane and ORP sensor electrode. Expected payback would be achieved after 2 to 6 years depending on the installed power and the local energy tariffs. The energy consumption reduction achieved ranges from 12% to 24%.

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

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

There are currently three commercial installations in the cities of Barcelona and Badajoz in Spain. These treatment plants handle wastewater from a population equivalent to 4,000 - 20,000 and they recycle between 1 ML and 4ML per day

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

OptimEDAR requires minor changes in the current control system with a simple and straightforward installation, thanks to the use of wireless communications and with only minor disruption to ongoing operations. However, a fully functioning plant must be in place.

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

As OptimEDAR is distributed by local specialist partners, they offer maintenance and support services.

### Targeted local business partners

OptimEDAR solution is addressed mainly to small and medium (municipal) WWTP operators, and to turn-key engineering companies providing WWTP design and installation.

### Type of local business partnership sought

OptimEDAR should be distributed by local partners who offer design, installation, commissioning, maintenance and support services.