

## Consorzio Aquarno SpA of Italy acquires a dual reactor respirometry system model BM-EVO2 from Surcis



**Aquarno**



**SURCIS.L**



BM-EVO2 Multipurpose Respirometry System

### Consorzio Aquarno

[Consorzio Aquarno SpA](#) was founded in 1983 with the aim of solving the wastewater problem in the Tuscan Tanning District. However, due to the high polluting potential of tanning effluents, the treatment plant was already in operation since 1974, five years before the first Italian national environmental law was enacted.

Over the last 30 years, Aquarno has undergone continuous structural and technological evolution, with the aim of minimising environmental impact and guaranteeing high purification efficiency. The results of these activities find their best expression in the plant's treatment capacity which, to date, is around 2 million W.E. and 20,000 m<sup>3</sup>/day of wastewater, making Consorzio Aquarno one of the most important wastewater treatment plants in Europe.

The progressive increase in treatment capacity has been accompanied over the years by a proportional increase in the number of users connected to the treatment plant's collection system. Already in the early 1990s, two different treatment lines were built in the company itself: Urban Line and Industrial line

Currently, the plant collects and treats urban wastewater from the municipalities of Santa Croce Sull'Arno, Fucecchio Castelfranco di Sotto and Santa Maria a Monte.

While the treatment of urban wastewater is fairly standardised, most of the research and experimentation efforts for innovative solutions have been carried out on the treatment of industrial wastewater. This is due to the particular composition and recalcitrance to purification of this type of wastewater where, thanks to the constant commitment of internal staff and research projects financed by public and private funds, Consorzio Aquarno has succeeded in developing an optimised biological treatment with a minimum consumption of chemicals.



Wastewater Treatment Plant - Consorzio Aquarno SpA

Consorzio Aquarno has always collaborated with leading research institutions such as the Polo Tecnologico Conciario, the University of Pisa, the University of Florence and other accredited companies to find new effective solutions to reduce sludge production and gaseous emissions, as well as to improve the performance of biological wastewater treatment.

### **BM-EVO2 destination**

The BM-EVO2 respirometer is installed in the plant's analysis laboratory and the most important applications of BM respirometry, which form the backbone of the biological treatment process, will gradually be implemented.

These applications include rapid assessment of the current biomass status, analysis of the impact of industrial discharges on the biological activity of the sludge, COD fractionation, nitrification rate, current oxygen requirement in biological treatment, denitrification rate and many others.

In addition, the respirometer will be used as an analytical tool for ongoing and future research projects.



Laboratory of Consorzio Aquarno SpA

The most important points for the decision to purchase the BM-EVO2 were the fact that the BM-EVO2 respirometer is equipped with two reactors and its special flexibility to cope with different types of applications.

The BM-EVO2 respirometer is an investment that is part of the [LIFE I'M TAN](#) (Modified Innovative Natural Tannins) research project, a project co-funded by the European Life Programme

This instrument will be used to investigate the biodegradability of innovative and sustainable Chemically Modified Natural Tannins ([CMNT](#)) used in the production of high-end eco-leather. In particular, the BM-EVO2 respirometer will study the influence of CMNT on the activity of micro-organisms used in the biological purification steps of the Consorzio Aquarno.

### **Dual reactor BM Respirometry Systems in Italy**

This BM-EVO2 for Consorzio Aquarno is the third dual reactor respirometry system to be installed in Italy: the first is at the [Biotechnology Department of the University of Verona](#) and the second (BM-Advance2) at the [A2A Ciclo Idrico](#) company. A fourth is expected to be installed shortly at the Faculty of Engineering of [another important university](#). Thus, it seems that Italy is continuing its commitment to dual reactor BM respirometry.

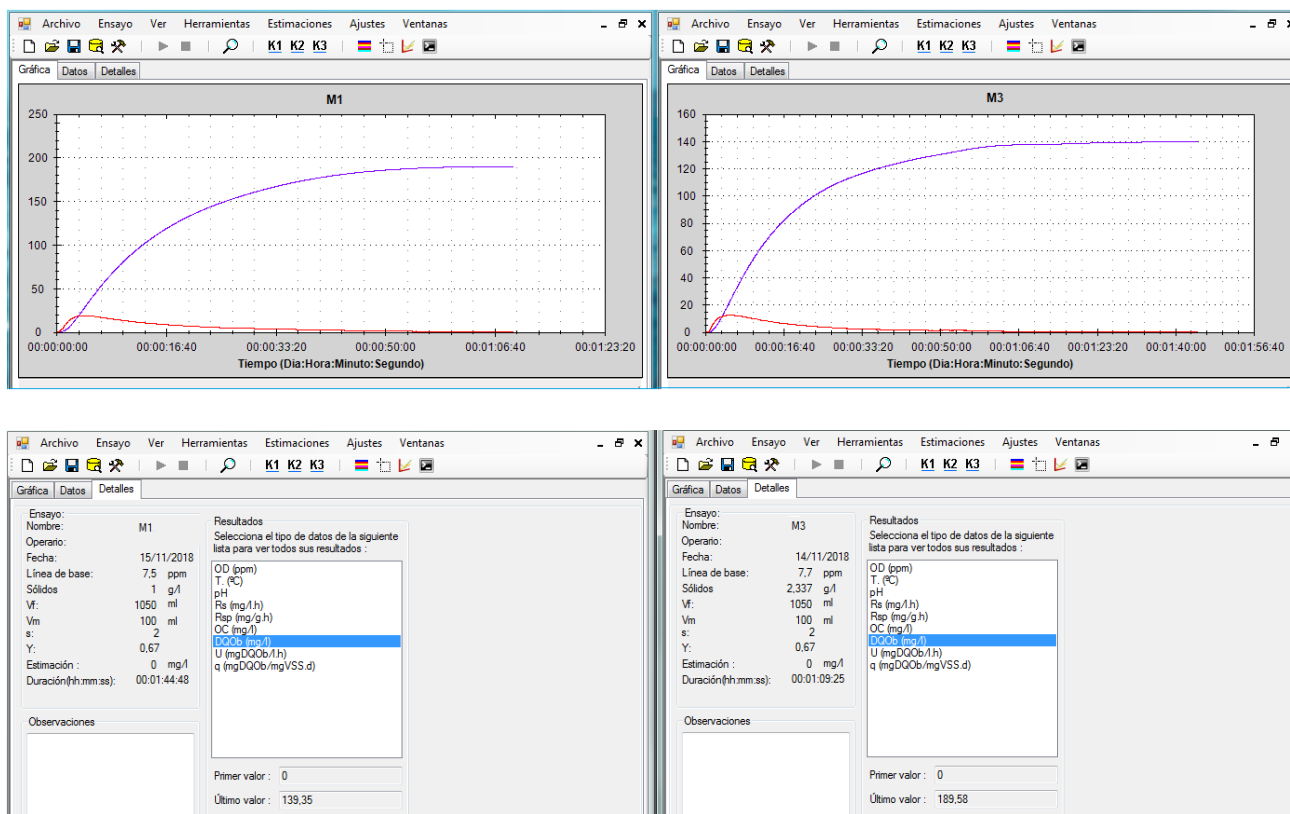
## Main features of the BM-EVO2

Together with the [BM-Advance2](#) model, the BM-EVO2 is the only two-reactor stand-alone respirometer on the market that can operate simultaneously with three types of operating modes (OUR, Cyclic and Dynamic R), with programmable automatic control of temperature, oxygen and sample volumes, and to which two [biomass-carrier reactors](#) for biomass carriers from moving bed processes (MBBR, granular biomass) can be retrofitted.

The BM-EVO2 operates with two programs loaded on a single computer.

It has a specific adaptation to be able to automatically generate respirograms of the different measurements being performed in each reactor at the same time.

The system software also supports the ability to display the respirograms and results in real time for comparison and monitoring of the different test screens performed in graphical (respirogram) and tabular form.



Respirograms and simultaneous results from each reactor

With this acquisition, Surcis continues to consolidate its position as a reference in laboratory respirometry systems in the main water groups, with a progressive and important expansion of its references at national and international level.