Press release

The REMEB project, in which Centro Ceramico participates, concludes with the successful validation of its sustainable wastewater treatment system

- **The initiative has achieved to develop and validate, in three years, a low-cost ceramic membrane bioreactor for the wastewater treatment, manufactured with agro-industrial wastes.**
- **The use of these wastes in the membrane composition favours circular economy and reduces the cost of this technology.**

REMEB is a project funded by the European Union's Horizon 2020 research and innovation programme, which covers areas related to climate action, environment and resources and raw materials efficiency through the promotion of wastewater reuse, wastes valorisation and the development of innovative and sustainable products.

It started in 2015 with a budget of €2,361,622 and a funding of €1,909,292 and will end on 31st August 2018, after three years of work, with its purposes fulfilled.

The international consortium of the REMEB project is composed of 11 international partners from 7 countries, led by FACSA, Spanish company devoted to water life cycle management. The rest of the partners are ITC-UJI, the Spanish institute of ceramic technology, the French engineering IMECA PROCESS, the Cypriot consultancy ATLANTIS Consulting Cyprus, the Norwegian engineering BIOWATER Technology, the Valencia Region Council of Chambers of Commerce, the Castellón accredited laboratory for environmental studies IPROMA, the Italian ceramics research centre CENTRO CERAMICO, the Turkish ceramic research centre SAM, the Universidad Antonio Nariño of Colombia and the Wastewater Treatment and Sanitation Entity of the Region of Murcia, ESAMUR.

They can be proud to have developed an advanced sustainable wastewater treatment system; a recycled ceramic membrane bioreactor (MBR) based on wastes from several agro-industrial processes that will regenerate wastewater for agricultural use.

The current ceramic membranes are made from pure ceramic oxides (such as alumina, zirconia or titania), which involve a high cost due to the cost of raw materials and their complex manufacturing process. This fact limits the use of ceramic MBRs despite being one of the most advanced systems in the wastewater treatment sector.

The incorporation of wastes in the composition of the membrane not only reduces the volume of landfill waste, favouring circular economy, but also the price of this technology.

The solution provided by REMEB uses wastes such as olive stones, from the production of olive oil; *chamotte*, a residue from the ceramic tile industry; and marble dust. In its first phase, the membranes were manufactured on a pilot scale in the laboratory of the ITC-UJI. Once their optimum composition was detected, they were manufactured by extrusion at a real-scale in the Castellón ceramic tile company NATUCER, with the constant assistance of the ITC-UJI.

IMECA PROCESS, designed, manufactured and installed the bioreactor in the planned location in close collaboration with FACSA.

The ceramics centres of Italy and Turkey, CENTRO CERAMICO and SAM, reproduced the ceramic membranes with local wastes from both countries confirming their international replicability capacity.

With the joint work of FACSA and ESAMUR, the system has been validated in a wastewater treatment plant (WWTP) located in the municipality of Aledo, in the Region of Murcia, to regenerate wastewater and then reuse it for agriculture. However, the technology is totally translatable to the industrial sector. It is worth noting the suitability of the land chosen for its validation since Murcia, known as the orchard of Europe, is one of the regions with the greatest drought in Spain and a European leader in wastewater treatment and reuse.

ATLANTIS Consulting has carried out the analysis for the replication and exploitation of the results obtained during the project, while BIOWATER Technology has prepared a comprehensive Business Plan for the subsequent commercialisation of the MBR REMEB.

Antonio Nariño University, has studied the potential for the implementation of the technology in Colombia and nearby countries.

IPROMA has analysed the water treated with the REMEB MBR system and with the existing membrane system in Aledo WWTP. The different results have determined that the quality of the effluent meets the requirements of the current Spanish regulations regarding the reuse of treated wastewater (R.D. 1620/ 2007).

For its part, the Valencia Region Council of Chambers of Commerce has coordinated the project communication and dissemination tasks, promoting its visibility through its different local and international networks.

Throughout these three years, the project has been presented at multiple events in various countries where it has generated great interest: Spain, Brazil, Thailand, Belgium, Czech Republic, Greece and Colombia, among others.

The project technicians have already expressed their commitment to continue researching in this field, after the completion of the project, to achieve full optimization of the system. With this they aim to ensure their competitiveness against other existing technologies, thus facilitating the market uptake.

More information about the REMEB project: www.remeb-h2020.com