



Life Desirows tests the effectiveness of up to seven desalination and denitrification technologies

Researchers from the Life Desirows project have verified the effectiveness and viability of up to seven desalination and denitrification technologies to recover groundwater from the Cartagena countryside for agricultural use, with high salinity and nitrates, without generating waste and using exclusively renewable energies: photovoltaic, biomass and wind for drying processes.

The results of the Life Desirows project, led by the company Regenera, and in which the Polytechnic University of Cartagena, the Arco Sur Mar Menor irrigation community, Hidrogea and Hidrotec also participate, have been announced coinciding with the completion of the project, which began in 2020.

This European project, “faces a problem that is very close to home in the Region of Murcia, but which other parts of the world will also suffer from with

climate change so we anticipate solutions for them,” highlights the researcher and technical manager of the project, Juan García Bermejo. The scientist also recalled the “growing interest” in non-conventional water resources to alleviate recurring droughts.

To demonstrate that it is possible to remove brine and nitrates from the well water using renewable energy at an affordable cost, Life Desirows researchers have combined up to 7 technologies.

Specifically, reverse osmosis with state of the art membranes, denitrification with serial bioreactors, a cooling tower, mechanical vapor compression and atmospheric evaporation using parallel fabrics to reduce the surface area required, as well as through the recovery and chemical precipitation of salts.

The use of water resources has been maximised with values greater than 92% of recovered water

Another objective of the Life Desirows project was to recover the largest amount of water used with the intention of maximising the use of water resources. And this has been achieved with values of over 92% of recovered water.

The Life Desirows project also contemplated minimising energy consumption and the cost for farmers, avoiding the emission of greenhouse gases and discharges into the Mar Menor, as well as eliminating waste through the crystallisation of brine, so that the resulting salts can be reused as a by-product for the industry. "It is part of the circular economy strategies", highlights the researcher from the Polytechnic University of Cartagena and technical manager of the project, Juan García Bermejo.

The Life Desirows pilot plant, made up of several elements with different technologies, has managed to treat up to 20 cubic metres of water per day. The pilot plant was at the Arco Sur Mar Menor wastewater treatment plant facilities and its equipment has been operating for around ten hours a day.

The researchers have calculated the different electrical consumptions for each combination of technologies and conclude that the option that requires less installed power is the use of reverse osmosis and atmospheric evaporation, with equivalent electrical consumption ratios ranging from 4.55 kWh/m³ incoming, close to those of seawater desalination.



A “highly replicable” project in all types of sectors to eliminate waste and take advantage of water

A highly replicable project. That is the main conclusion of Life Desirows, in the words of the project coordinator, Víctor Fabregat, from Regenera Levante.

“With Life Desirows we have achieved very interesting results in water recovery, in the elimination of waste such as brines and nitrates. And in the end we have a highly replicable project not only in the water and desalination sector, but also in the entire agri-food sector to prevent many types of industries from having this waste and debris. With Life Desirows we can cover a wide spectrum of waste disposal in the primary, secondary and tertiary sectors,” explains Víctor Fabregat.

On the other hand, the results are also perfectly aligned with the European and national policies on hydrological issues that are going to be implemented in terms of zero discharge of liquids and in terms of water economy.

The project coordinator continued, not forgetting the social and political-legislative component in terms of the results obtained: “One of the environmental problems of the Region of Murcia and by extrapolation of the entire Mediterranean Basin is the scarcity of water and the contamination of ecosystems as occurs in the Mar Menor with the problems it has with nitrates and other pollutant discharges. And a solution such as that of Life Desirows is very important because it shows that there are technologies proposed by the European Union that can solve these problems.”



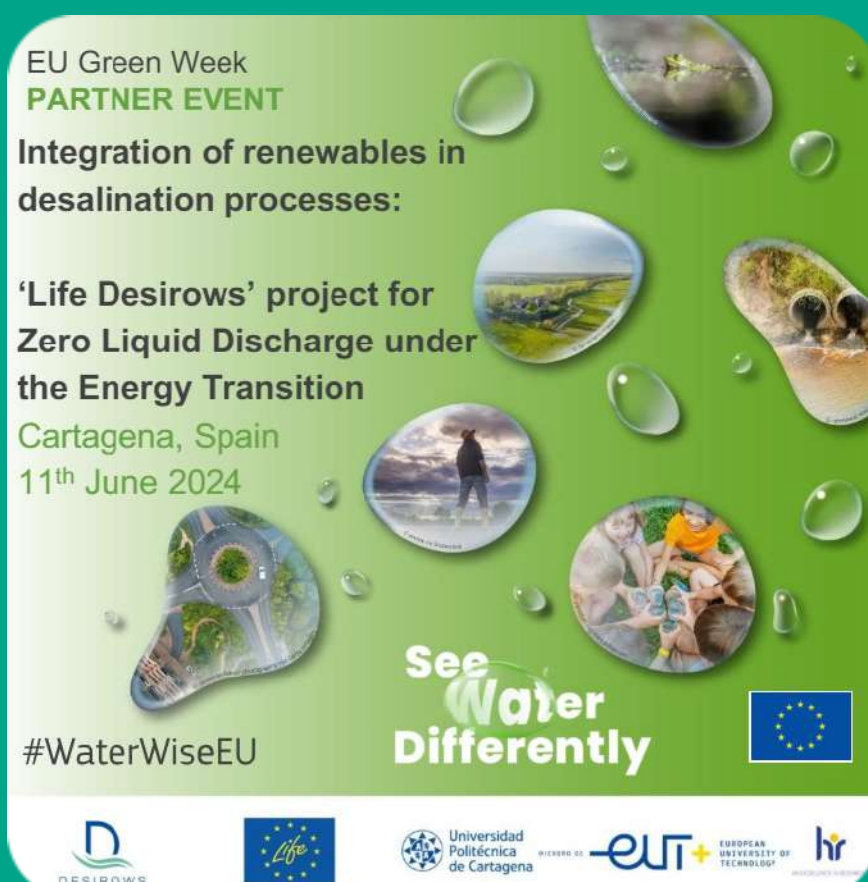
Informative day included in the European Green Week and the European Sustainable Energy Week



The European Life Desirows project held an informative day on June 11, 2024 to present its results after more than three years of work and to show its pilot plant.

The day began at the Rectorate of the Polytechnic University of Cartagena with technical explanations of the project and the presentation of results and conclusions. Later, a trip was made to the pilot plant, located in the facilities of the Arco Sur Irrigation Community, near Cabo de Palos.

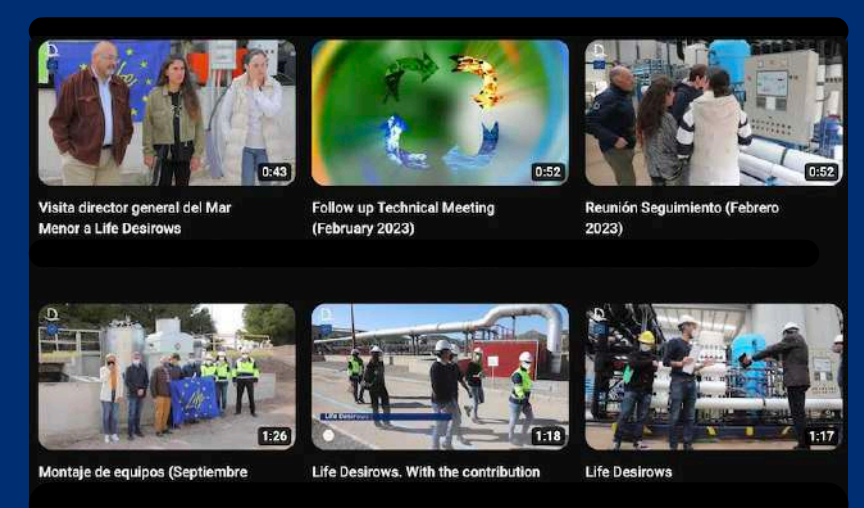
The Life Desirows event was part of the European Green Week: https://green-week.event.europa.eu/partner-events_en. As well as the European Sustainable Energy Week, where only six events have been selected throughout Spain: https://sustainable-energy-week.ec.europa.eu/sustainable-energy-days/find-sustainable-energy-day-near-you_en



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<https://lifedesirows.eu/>



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