

## Project Full Title

SUSTAINABLE MEMBRANE DISTILLATION FOR INDUSTRIAL WATER REUSE AND DECENTRALISED DESALINATION  
APPROACHING ZERO WASTE

## Project Acronym

MELoDIZER

## Grant Agreement Number

101091915

## Topic

HORIZON-HLTH-2021-DISEASE-04-04

## Total cost and EU contribution

EUR 7,007,470.74

## Duration

48 months

## Project Coordinator

Politecnico di Torino (POLITO)

## Project Website

[www.melodizer.eu](http://www.melodizer.eu)

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## SUSTAINABLE MEMBRANE DISTILLATION FOR INDUSTRIAL WATER REUSE AND DECENTRALISED DESALINATION APPROACHING ZERO WASTE – MELODIZER

The official kick-off meeting of the European project “MELODIZER” which brings together a consortium of 18 partners from 9 European Union countries, plus Switzerland and Israel, and coordinated by Politecnico di Torino (Italy), took place January 30-31 in Turin.

The topic of the project is membrane distillation, a very promising technology both for the desalination of highly salinity waters and for the reuse and valorisation of wastewaters. At present, the full potential of this technology is hampered by the lack of high-performance membranes and membrane modules, the environmental impact of their production and use, as well as their implementation in unsuitable configurations and environments.

The heart of the research will be the manufacturing of membrane distillation components that can be used on a large scale and are sustainable, by replacing the current potentially harmful materials with non-harmful ones and following the principles of green chemistry. Emphasis will also be placed on improving the design of the technology and on maximizing its energy efficiency, its energy efficiency, which will operate using only waste heat and solar energy. The improved design of this technology when combined with the most appropriate mix of renewable energy resources will be the key to its effective application in different fields, both in industry and at domestic or community scale.

The MELODIZER project, funded by the European Union under the Horizon Europe program with a contribution of more than 7 million euros (of which 1.4 million euros to Politecnico di Torino), will have a duration of 4 years.

Specifically, prototypes will be developed and tested at an industrial level (textile, chemical, aquaculture, and beverage sectors) to achieve a high percentage of recovery of contaminated water (70-90%), thus reducing the freshwater footprint of these activities and approaching the zero-waste target, at the same time recovering valuable secondary raw materials from contaminated waters.

Furthermore, MELODIZER intends to demonstrate the functioning of passive, autonomous, economical and small-scale drinking water production systems, using solar energy as the only energy source.

The ambition of the project is therefore to contribute to three of the strategic objectives for the European Union and worldwide, namely, the sustainable use of water resources - both at an industrial level and in small communities, access to critical raw materials, and the transition to processes powered by renewable energy.

“With this project, we will demonstrate the next generation of the technology, considering its performance and energy efficiency, but also from the point of view of the sustainability of the materials and the type of energy resources used to power the systems, thus demonstrating their implementation for the reduction of water footprint of industries and for the supply of drinking water in areas subject to severe drought” says Prof. Alberto Tiraferri, associate professor of the Department of Environmental, Land and Infrastructure Engineering of the Polytechnic and project coordinator together with Prof Matteo Fasano of the Department of Energy. At Politecnico di Torino, the interdepartmental center CleanWaterCenter@Polito will host the laboratories which, thanks to the contribution of the European Union, will develop some of the prototypes of this innovative technology for the sustainable treatment of water.

