

REWATCH at a Glance



Why: To decrease freshwater consumption by the petrochemical industry

How: Implementation of an innovative water reuse scheme for treatment of wastewater streams generated in the petrochemical industry to enable reuse of reclaimed water

Where: In the petrochemical complex of DOW Chemical Ibérica in Tarragona

When: September 2016 to December 2019

Budget: 2,645,765 Euros

What are the objectives of REWATCH?



- Obtain a versatile water recycling scheme to treat different wastewater streams generated in petrochemical processes
- Demonstrate the feasibility and promote the implementation of an innovative water reuse scheme in petrochemical industries
- Disseminate the obtained results and transfer the knowledge acquired
- Quantify and disseminate the environmental benefits and the economic impact of the innovative water recycling scheme
- Develop a decision support tool to predict the environmental and economic benefits of the new technology



Project Coordinator



Partners



"In collaboration with DOW"

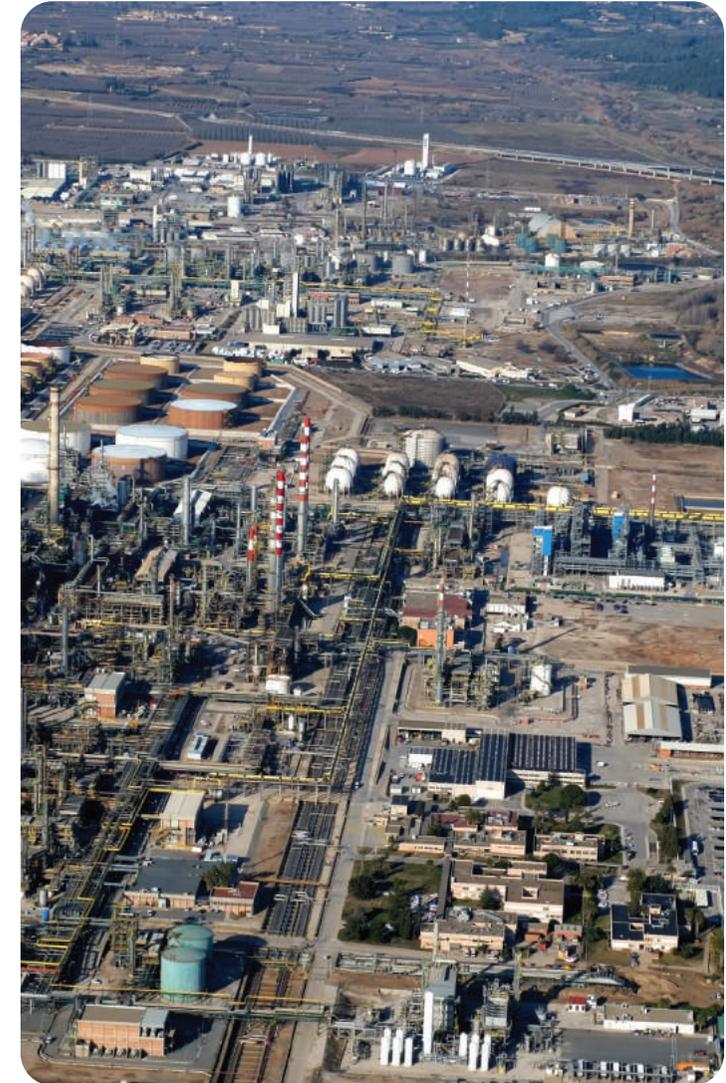
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The REWATCH Project



REWATCH



This research has received funding from the European Union's Life Programme under the grant LIFE15 ENV/ES/000480



Which challenges does REWATCH address?



- Water scarcity affects 11% of the European population
- Industry is the second largest user of water, after agriculture
- The petrochemical industry is within the manufacturing sector the largest water user, mainly for cooling purposes and steam production
- The petrochemical sector in Europe generates annually 1,750 hm³ of wastewater



What are the expected results of the project?



- Reduction in water abstraction of European petrochemical plants (i.e. steam crackers, etc.)
- Decrease in wastewater discharge
- Reduction in total energy consumption related to the water cycle
- Climate change mitigation



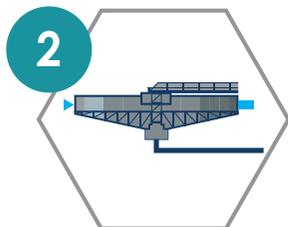
The main stages of REWATCH innovative treatment for water reuse

Wastewater Generation



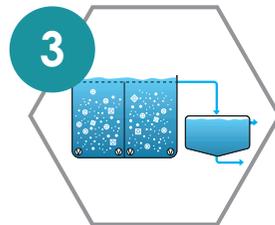
The petrochemical industry generates very complex and challenging wastewater effluents, with high content of toxic and recalcitrant compounds. All wastewater effluents are collected and pumped to the treatment plant

Physicochemical pre-treatment



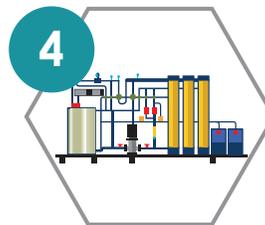
When wastewater enters the plant, it is driven to a physicochemical pre-treatment aimed to remove mainly suspended particles. This pre-treatment is based on the ACTIFLO® technology, developed by Veolia Water Technologies

Biological process



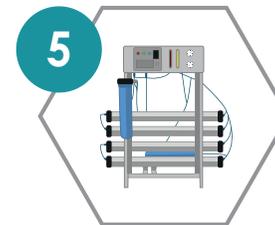
After the pre-treatment, the effluents are led to a biological system aimed at removing organic compounds. This biological treatment is based on the Anoxkaldnes® Moving Bed Biofilm Reactor (MBBR) technology, developed by Veolia Water Technologies

Ultrafiltration



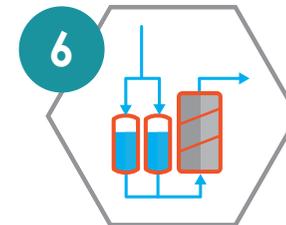
After the biological treatment, it is necessary to reduce solids concentration from the treated water to be suitable to enter the next filtration stage. Wastewaters will be treated with ultrafiltration membranes developed by DOW

Reverse osmosis



Water is then treated with reverse osmosis, a high pressure filtration aimed at removing dissolved organic matter, and dissolved multivalent and monovalent anions and cations using last-generation membranes manufactured by DOW.

Water deionization



To reach high quality specifications, i.e., boiler feed water, water is deionized by an ion exchange process using resins manufactured by DOW packed in columns.

Use of reclaimed water



Reclaimed water obtained by this on-site treatment scheme fulfils water quality specifications for its use as boiler feed water and cooling tower make-up, and thus may be used as water source in the same petrochemical plant.

