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News

Innovation and Industry

Climate, environment and circular economy | Water cycle management

Toulouse-based start-up MAANEO is launching the first commercial PHOS-4® treatment unit, on behalf of the town of Baillargues (Hérault, southern France) and Montpellier-Méditerranée-Métropole. The process was developed by the company in partnership with IFP Energies nouvelles (IFPEN). A genuine innovation in the field of water treatment, the process captures phosphorous contained in water via adsorption on a reactive substrate, thereby preventing eutrophication of aquatic environments.

A first in water treatment

 Phosphorous is a key element for controlling the development of algae in fresh water. When left uncontrolled, such proliferation can be harmful in a number of ways: toxic microalgae making water unsuitable for drinking, fishing or bathing, reduced biodiversity, fish mortality, foul odors, etc.
Within the context of its leisure and water park, the municipality of Baillargues opted for the PHOS-4® solution based on its capacity to capture phosphorous, at very low concentrations, in the water on this 5-hectare site and thus prevent eutrophication.

Complementary expertise

MAANEO and IFPEN joined forces to develop a simple, efficient and eco-friendly process aimed at capturing phosphorous dissolved in water.

Thanks to the synergy of MAANEO’s expertise in water treatment and IFPEN’s expertise in solid chemistry, a material making it possible to effectively capture phosphorous in water was identified and tested to develop the PHOS-4® process. This material has not only proved to be highly efficient, but it can also be easily regenerated. That makes PHOS-4® a phosphorous recycling process, which is of considerable interest given that the resource is non-renewable and in the process of being depleted around the globe. This research resulted in a joint patent.

With the support of the Occitanie Region and the Adour-Garonne water agency, a pilot demonstration unit installed at a purification plant led to the validation of primary phosphorous fixation, thereby confirming the use of this process for waste water treatment. Excellent performances were obtained, with output concentrations permanently below the detection thresholds for trace phosphorous analyses (50 µg/L).

> As **Benoist Thirouard, IFPEN's SME Incubation Manager** emphasizes, "Maaneo's support in the development of the PHOS-4® process is in line with IFPEN's ambition to accelerate the emergence and growth of start-ups and SMEs developing innovations with a positive environmental impact."

> **François Cornet, CEO of Maaneo**, comments "This commercial first in the Montpellier region paves the way for new development opportunities for the PHOS-4® process. Its exceptional performances, in terms of retention capacity and post-treatment concentration, make it suitable for preventing or correcting the eutrophication phenomenon in natural or artificial stretches of water or natural bathing facilities. It should be noted that the risk of eutrophication is present across 75% of mainland France."

About MAANEO
MAANEO is a start-up created in 2016 with a view to transferring the results of research conducted in partnership with IFPEN on the innovative PHOS-4® phosphorous treatment process. It is also active in the construction and maintenance of reed-bed purification plants, primarily in the regions of Occitanie and Aquitaine, in southern France. It currently has a workforce of five. In 2021, it posted a turnover of €491k, a 30% increase on 2020.

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