



The IFAS-MBR process: a compact combination of biofilm and MBR technology as RO pretreatment

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ABSTRACT

An advanced treatment for wastewater reclamation has been studied for nine months in a pilot plant in the south of Spain. This consisted in a combination of integrated fixed-film activated sludge (IFAS) and membrane bioreactor (MBR) technology (called here IFAS-MBR) with posterior reverse osmosis (RO) for the achievement of a high-quality effluent. The pilot plant was obtained from a former MBR plant, where plastic carriers for the support of the biology were introduced in the second aerobic chamber. The system consisted of two parallel lines, one working with a hollow fibre module and the other with a flat sheet module. After the hollow fibre line, an RO system treated the effluent. The permeability of the process decreased gradually along the experimentation period and after six months, the membrane modules of both lines were chemically cleaned. The RO membranes showed a stable permeability working with the IFAS-MBR permeate and chemically cleaned after four months of operation. The studied system combined the advantages of both IFAS and MBR technologies and it is an interesting choice when the footprint is limited or a high effluent quality is required and it is an attractive pretreatment for reverse osmosis systems.

Keywords: Membrane bioreactor; Biofilm; IFAS; Reverse osmosis

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