
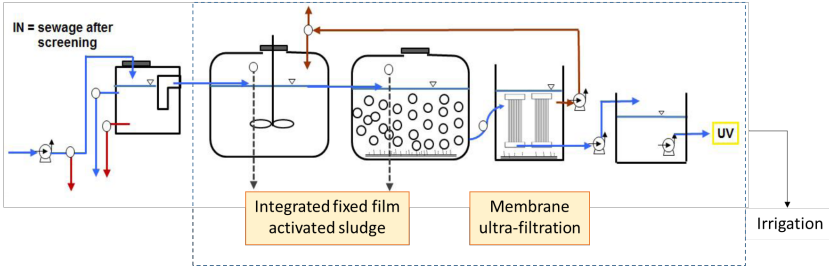


<b>Technology</b>	<b>Integrated Fixed-film Activated Sludge coupled with Membrane Bio Reactor (IFAS MBR) as an innovative municipal wastewater bio-treatment</b>
<b>Research organization</b> 	<p>The Water Research Institute (IRSA) is part of the Italian National Research Council (CNR). IRSA was established in 1968 as a scientific institution aimed at providing the National Parliament, the Governmental Administrations, as well as water-management agencies and national industries with the know-how necessary for rational utilization and protection of Italian water resources.</p>
<b>Description</b>	<p>Non-conventional coupling of Membrane Bio Reactor (MBR) with Integrated Fixed-film Activated Sludge (IFAS) is operated at the pilot scale on municipal sewage. This technology exploits the advantages of biofilms growing on carriers freely swimming in the oxidation tank and the effective separation of suspended biomass attainable with membranes.</p> <p>This approach limits biomass growth (i.e. sludge production) and provides high quality effluents suitable for unrestricted irrigation.</p> <p>Schematic layout of IFAS-MBR + UV treatment system is shown below:</p> 
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• Sludge production is reduced and high effluent quality is achieved</li> <li>• Complete removal of COD and TKN</li> <li>• IFAS-MBR system shows good nitrifying capacity</li> <li>• Recovered municipal effluents may be a very relevant water resource for irrigation in areas with insufficient natural water resources.</li> </ul>
<b>Financial viability</b>	<p>A detailed evaluation of financial viability needs to be performed. Investment cost can be expected to be higher with respect to conventional activated sludge, but this should be considered in the context of lower sludge production and higher effluent quality.</p>
<b>Potential users</b>	<p>Municipalities, waste water treatment industries</p>
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