

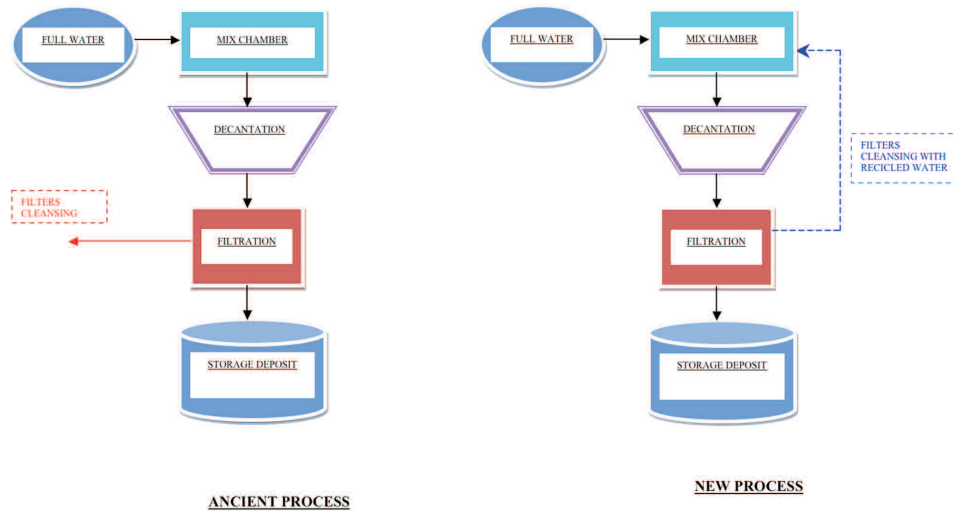
MedClean Propre Limpio


No. 108
Pollution prevention case studies

Water consumption reduce in water treatment plant (filtration process)

Company	Empresa Municipal de Abastecimiento y Saneamiento de Granada, S.A. (EMASAGRA)
Industrial sector	The company works in the entire cycle of water.
Environmental considerations	<p>In order to treat collected water to become drinking water, a filtration process is needed to stop all the particles that have not been eliminated by previous processes. On each function period the used filters collapse and don't work as it should.</p> <p>The accumulation of solids during the filter process puts up with the overflow of the bed and the reduction of the quality and capacity of the filter. Then a clean system is needed. It is essential for this cleaning to bring back the capacity to the filter again. Without these capacities the filter will lose his effectiveness and the filter material (sand) must be replaced entirely to a deep cleaning or to be totally replaced by new sand. This increases the operational costs.</p>
Background	<p>The Lancha de Genil (Granada, Spain) water treatment plant, operated by EMASAGRA, has three independent lines to pour off and filtration. The water consumes for filters clean of the Line 1 means the 82% of the total cleanings of the plant. The rest comes from the Line 2. Line 3 has a system to recover the water and introduce it again at the treatment line.</p> <p>The target of the company when it decide to invest in this change of process was to retrieve the total amount of filter cleaning water from Line 1 due to the long thirst, that began in 2005.</p> <p>Another important element was the potential energetic savings the company can obtain from the non-connection to the underground water capture in thirst period that correspond exactly with the total amount of extra water needed to clean filters.</p> <p>So the actions were set on the road to reduce the energy consumption and the process water too.</p>
Summary of actions	In short, the actions consist on creating a 300 m ³ underground deposit for the collection and adjustment of water coming from the Line 1 filter cleaning and its introduction to the treatment line by means of pump equipment.

Scheme of the process



Balances

Old Process

New process

Balance of raw materials

Consumed treated water for filter cleaning: 350.000 m³/year.

Consumed treated water for filter cleaning: 0 m³/year.
Reused treatment water for filter cleaning: 350.000 m³/year.

Economic balance

Underground water pumping cost:
0,0873 €/m³
Pumping equipment operational costs:
0,97 kWh/m³

Savings

Cleaning water recovery economic savings: 30.555 €/year

Total savings (€/y)

30.555

Investment in installations (€)

Underground deposit: 64.391
Cleaning water recovery pump: 7.490

Total investment (€)

71.881

Investment payback

2,3 years

Conclusions

The start of this project supposes 82% decrease in water consumption coming from the filters cleansing of the water treatment plant. It must to be noted the 339.500 kWh/year of energy savings coming from no connection of the pump system to extract additional water consumed at the cleaning process in line 1.

The application of this prevention initiative came from the total engagement of the company to diminish the social and environmental impact of the sites where they are located.