

MedClean Propre Limpio



Regional Activity Centre
for Cleaner Production



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Pollution prevention case studies

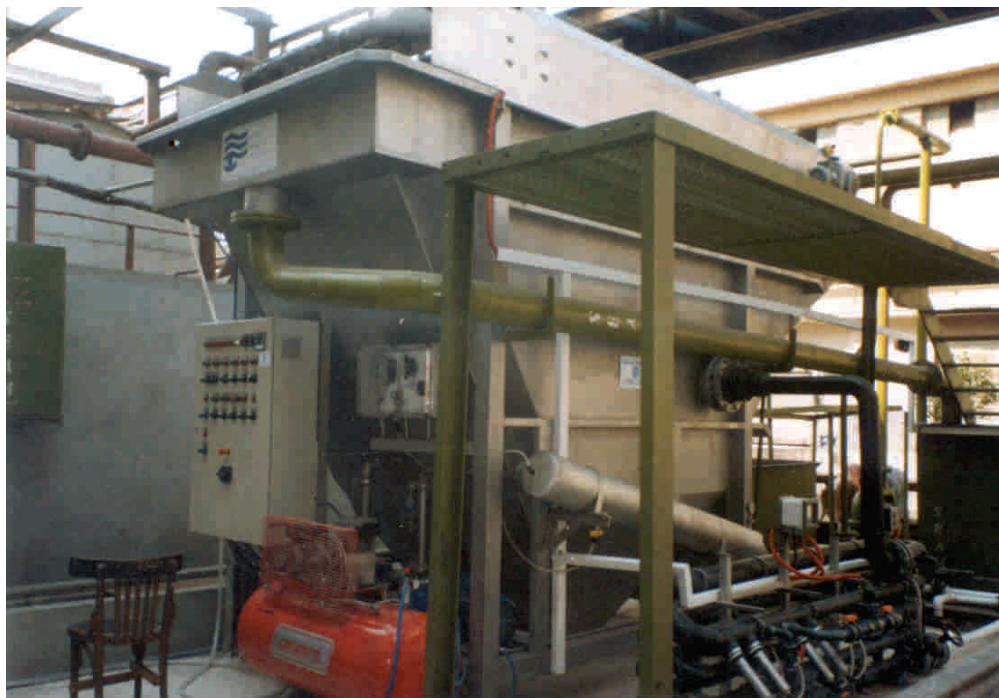
Oil and fats recovery at an oil and soap company

Company background	Tanta Oil and Soap Company is a public company that produces edible oil from cottonseeds, sunflower seeds and soy bean, and ghee using palm and other oil seeds. The factory also produces glycerine and animal fodder.
Industrial sector	Food sector (oil and soap).
Environmental considerations	Some of the main environmental impacts generated throughout the production process in the factory were due to oil, ghee, as well as fatty matter leakage and spillages. Likewise, large volumes were lost from the production discharged as effluents.
Background	<p>By means of an industrial audit of the company carried out by the SEAM Project (Support for Environmental Assessment and Management), the following pollution prevention opportunities were initially identified:</p> <ol style="list-style-type: none"> 1. Upgrade loading and unloading procedures for oil, ghee and fats to minimise spillage. 2. Improve housekeeping in the fatty acids splitting unit. 3. Recover oil from processing units, especially oil refining and packaging units. 4. Improve handling of animal fodder ingredients to prevent losses. 5. Control water consumption, by installing water meters for monitoring water consumption in various units, and installation of self closing taps to reduce water consumption in service units. 6. Segregate cooling water and process water and use the of cooling tower to recycle cooling water. 7. Reduce oil losses in spent bleaching earth, by upgrading bleaching filters.
Summary of actions	<p>The pollution prevention opportunities identified by the SEAM audit led the company to implement the following actions:</p> <p><i>Upgrading loading and unloading procedures</i> Issue improve procedural instructions and improved supervision of transfer operations eliminating the significant levels of leakage and spillages that were occurring during the loading and unloading of oil, ghee and fatty matter from batch reactors and separators.</p> <p><i>Recovery of oil, ghee and fatty matter</i></p> <ul style="list-style-type: none"> • Three gravity oil separators were installed on the oil washing line, immediately after the water was discharged from the batch reactors of oil and ghee refining, to recover volumes of oil and ghee that had been being discharged and lost to the refinery effluent. • Three new underground separators were installed replacing the existing units that recovered the mucilage produced during neutralisation and fatty matter from refinery effluents in oil separators and that had been found to be inefficient. The new units were installed to process effluents from the continuous refining unit, the fatty acids splitting unit and the effluent from the deodorisation unit. <p><i>Recovery of fodder ingredients</i> The installation of a cyclone vacuum eliminated heavy dust emissions generated by the animal fodder production unit during the loading and unloading of raw material system. The vacuum collected the suspended matter and transferred it directly to the raw material intake system.</p>

Water conservation

Huge volumes of water were being wasted, since cooling water was not being reused in a closed circuit system. This was addressed by segregating the cooling water, vacuum water, and process water from one another, in parallel with rehabilitating two existing cooling towers.

Photograph of the installation



Gravity oil separator

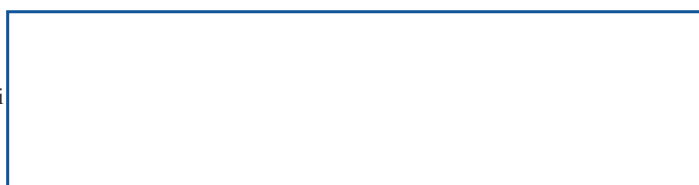
Balances	CAPITAL COST (€)	ANNUAL SAVINGS (€)	PAYBACK PERIOD (years)
Upgrading loading and unloading procedures	0	59,949.1	Immediate
Recovery of oil, ghee and fatty matter	79,527.3	59,059.8	1.3
Recovery of fodder ingredients	37,083.1	31,247.5	1.2
Water conservation	63,936.4	34,874.4	1.8
TOTAL	180,547	185,131	1

Conclusions

Through the implementation of the measures mentioned above, the company achieved significant benefits: annual recovery of oil, ghee, fats and animal feed totalled €150,256; water consumption was reduced by 23%; oil and grease concentrations and BOD loads in the final effluent were reduced by 99% and 85%, respectively. Thus, the investment needed for the industrial wastewater treatment plant was reduced by around €145,310.

NOTE: This case study seeks only to illustrate a pollution prevention example and should not be taken as a general recommendation.

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