

MedClean Propre Limpio



Regional Activity Centre
for Cleaner Production



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and Housing

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Pollution prevention case studies

Reducing pollution from wastewater, solid waste and dust emissions

Company	DARA starch and forage industry, Aleppo, Syria.
Industrial sector	Food industry.
Environmental considerations	DARA starch and forage industry produces starch, protein, forage materials and maize core, using six manufacturing processes: <i>corn-watering, corn-separating, corn-filtering, liquidation, drying, and packaging of the final product</i> . These processes entail approximately 250 m ³ /day of liquid waste with high concentrations of starch, sulphide and protein, a large quantity of dust containing starch substance compounds, and a large quantity of gas waste arising from the combustion of fuel.
Background	<p>DARA starch and forage industry was founded in 2003, with 40 employees. The company produces about 10,000 tonnes of starch, 2,500 tonnes of forage and 1,000 tonnes of corn core for oil (approximately 45 tonnes of all material per day for 300 days of work per year).</p> <p>The manufacturing process requires around 50 tonnes of maize, 500 kg of substance sulphur, 400 m³ of water (especially for the maceration process), 10,000 kWh of electricity, and 6 tonnes of fuel (for the steam production) per day.</p> <p>Through visits to identify production processes, meetings and discussions that took place with workers and managers in order to draw Environmental Situation Maps and set up an Environmental Management system, the following problems have been noted:</p> <ol style="list-style-type: none"> 1. Wastewater, estimated at about 250 m³/day, contains between 8 and 10% of the same material produced. That causes problems with the environmental authorities and implies the payment of taxes. In addition, there is a loss of material. This is due to the nature of separation and liquidation. 2. There are airborne dust emissions (starch), flying in large quantities (about 6%). 3. Due to non insulated and very long pipelines, there is a loss in energy consumption (between 3 and 5 %) and larger quantities of electricity and fuel for the power are required.
Summary of the initiative	<p>For each problem, a proposal has been made:</p> <p>1st problem: installing a wastewater treatment plant to recover the starch contained in the water, so that the quality of the water released conforms to the emissions limits values fixed by the environmental authorities.</p> <p>2nd problem: installing wet traps to recover the starch contained in the dust emissions.</p> <p>3rd problem: insulating the pipes to avoid loss and therefore reduce electricity and fuel consumption.</p>

Photo



Balances	Investment	Operating costs	Net savings	Payback period
Installation of a wastewater treatment plant	\$29,000	12,000 \$/year	69,000 \$/year	7 months
Installation of wet traps for dust emissions	\$11,500	1,200 \$/year	12,000 \$/year	1 year
Isolate pipelines for the steam transport	\$153,000	0 \$/year	5% of the energy consumption	1 year
Total	\$193,500	13,200 \$/year	81,000 \$/year + 5% of the energy consumption	10 months (average)

Conclusions

The use of the Environmental Situation Maps Guide helps companies to identify problems and then find solutions to these problems, in order to improve their environmental situations and respect the emission limit values fixed by the law.

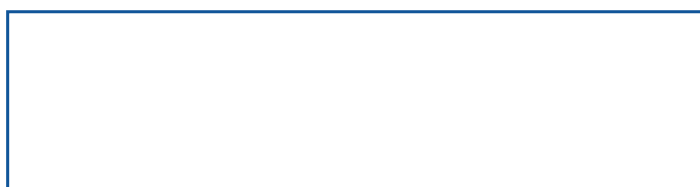
The setting up of the wastewater treatment plant and the use of the wet traps allowed the DARA industry to recover a large amount of starch contained in wastewater and dust emissions and to sell it.

That also permitted the DARA industry to solve their problems with environmental authorities and regularise their situation.

Finally, the insulation of all the pipes made it possible to reduce the amount of lost energy and consequently the electricity bills and the used oil amount.

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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