



MED TEST Case Study

FOOD sector — TUNISIA

Milk and dairy industry — Tunisie Lait

Company overview

Tunisie Lait is a dairy producer established in 1974. Its activities include the production and marketing of a wide range of beverages and other fresh products based on milk.

It annually produces about 73,316 hl for the local market and about 10% of its production is for export.

Among the key objectives that pushed the company to join the MED TEST project were the opportunities to learn how to reduce product losses, increase resource efficiency (water and energy) and improve the performance of the existing wastewater treatment plant.

At project start-up, the company was already certified ISO 9001, ISO 22000 and ISO 14001, but it currently plans to improve these systems in order to enhance environmental and economic performance.

Benefits

The implementation of measures identified within the MED TEST project has led to substantial financial gains of about \$US 746,638, with an investment amounting to \$US 827,410, resulting in reduced total water and energy consumption of 16% and 13% respectively.

Moreover, the company's efforts to minimize production losses have enabled to cut them down by 1.3% (from 4.5% to 3.2%), which corresponds to annual financial gains of about \$US 369,310.

Further environmental benefits have been achieved in terms of decrease of pollution loads in wastewater, corresponding to 33% of annual loads of BOD₅ and 90% COD respectively.



“MED TEST has contributed to the implementation of an efficient strategy to simultaneously reduce production losses and the environmental impact of our activities.”

Imed GHARBI, General Manager

The company's integrated management system has been strengthened as well throughout the implementation of the project. Indeed, the quality policy has been modified to include commitment to preventive measures; the environment management programme has integrated an action plan for cleaner production, which involves projects to reduce energy and water as well as the minimization of material losses in the production process.

MED TEST is a UNIDO green industry initiative to promote sustainability and competitiveness in the private sector in Egypt, Morocco and Tunisia. TEST integrated approach includes tools like resource efficiency and cleaner production, environmental management system and accounting, cleaner technology transfer and CSR.

Learn more about TEST approach at www.unido.org

MED TEST is sponsored by the Global Environment Facility, the Italian Government and the MedPartnership.

Saving opportunities

| Measure | Economic key figures | | | Resource savings per year | |
|--|----------------------|------------------|------------|--|--------------|
| | Savings [USD/yr] | Investment [USD] | PBP [yr] | Water, Chemicals | Energy [MWh] |
| Flushing time of cream and germ separators | 8 700 | 5 140 | 0.6 | 10,000 m ³ water | |
| Reception and pasteurization rehabilitation | 434 000 | 490 000 | 1.1 | 19,000 m ³ water, 8,500 Hl milk | 910 |
| CIP optimization, product push and crate washing | 94 900 | 77 570 | 0.8 | 86,580 m ³ water | 220 |
| Chilled water production | 10 5000 | 160 000 | 1.5 | - | 1 130 |
| Elimination of direct cooling at the sterilizer | 52 900 | 51 700 | 1 | 59,904 m ³ water | 1 292 |
| Electrical system, preventive maintenance | 51 138 | 43 000 | 0.8 | 10,000 m ³ water | 613 |
| TOTAL | 746 638 | 827 410 | 1.1 | | 4 165 |

Flushing time of cream and germ separators: This project essentially consists in a five-minute extension of the flushing time (time interval between the cleaning of cream separator and germ separator). This measure has entailed the reduction of water consumption by 2% and therewith of annual loads of BOD₅ by 3% and of COD by 12%.

Reception and pasteurization rehabilitation: The new project's approach consists of an on-line standardization of the semi-skimmed milk production, based on a system of densimetric scales. It will enable a total retrieval of the cream and its precise dosage into the skimmed milk. The implementation of this project will facilitate reductions of:

- milk losses resulting from product transfers by 1,3%, corresponding to 8,500 hl/year.
- water consumption by 4%, BOD₅ by 10% , COD by 29% and total energy consumption by 3%.

CIP optimization, product push and crate washers: Optimizing the time for pushing product between pipes and equipment at the milk and fresh dairy products lines, as well as a 50% reduction in the cleaning time of the cream and germ separators, have permitted reductions in water consumption (17%) as well as in BOD₅ (20%) and COD (59%). In addition, a closed system for water recovery has been installed at the crate washer to avoid

the previous open circuit. These measures have allowed for reductions in water and thermal energy (2% and 1% respectively).

Chilled water production: The installation of a control unit that regulates the chilled water flows according to the temperature of return waters has allowed for an 11% electricity reduction, equivalent to 1,130 MWh.

Elimination of direct cooling at the sterilizer: The installation of a closed loop in the bottle sterilizer line has made it possible to eliminate direct cooling with a shower system and to achieve the most substantial water and energy gain: the company has achieved reductions in water and thermal energy (13% and 5% respectively), equivalent to 600 MWh.

Electrical system/preventive maintenance: The installation of batteries of capacitors on the electrical panels of the main energy consumers (chillers, air compressor, sterilizer) has enabled to raise the power factor from 0.8 to 0.94 and to reduce the electricity consumption by 4%, corresponding to 500 MWh. A periodical inspection programme checking for leaks has also been devised by the technical maintenance office so as to come up with a maintenance schedule. As a result the company has achieved reductions in water (2%) and in total energy (about 1%).



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