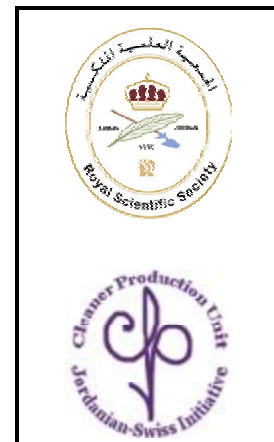


Cleaner Production in Jordan

Fact Sheet: Abu-Hammour Dairy Company Amman, Jordan



What is Cleaner Production?

Cleaner Production (CP) is the continuous application of an integrated and preventive strategy to processes, products and services to increase efficiency and reduce risks to humans and the environment.

In this fact sheet, the results achieved from conducting the CP QuickScan+ in Abu-Hammour Dairy Company are summarized. The information shall serve to demonstrate how CP can be implemented in dairy plants in Jordan.

RSS-UNESCO-IRADA Project

Based on an agreement between the United Nations Educational, Scientific and Cultural Organization "UNESCO", the Enhanced Productivity Centers Project "IRADA" and the Cleaner Production Unit of the Royal Scientific Society (CPU / RSS) the QuickScan+ methodology has been applied on this dairy company.



The aim of the project was to raise awareness about CP and thus to motivate the company to optimize their production process in order to reduce the consumption of raw materials, energy and water, and to utilize by products (whey) as a valuable raw material instead of draining it off as waste. This will lead to improve the eco-efficiency of the company, its image and position in the market as well as its environmental and economic performance.

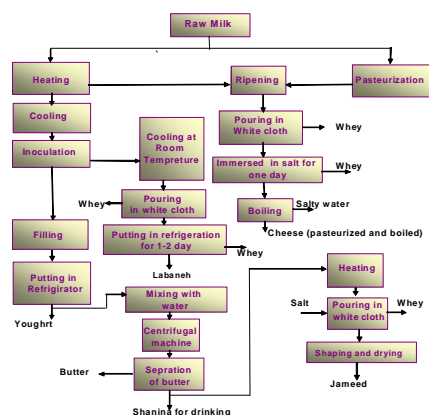
In practice, the production sections were assessed on CP potentials and specific recommendations were given to this dairy company.

General Information



Companies	Abu Hammour Dairy Company.
Sector	Food industry.
Products	Yoghurt, <i>labaneh</i> (hard yoghurt), cheese (pasteurized and boiled), <i>shaninah</i> , butter and <i>jameed</i> .
Market	Local market.
Employees	2 employees.

Production



Processes	Raw milk receiving, pasteurization (heating, cooling), inoculation, incubation (yoghurt and <i>labaneh</i> production). Raw milk receiving, pasteurization or heating, ripening, pressing, salting, boiling (cheese production). (See the flow chart).
Raw Materials	Sheep milk, cow milk, rennet powder, water, calcium carbonate and salt. The capacity of the company is 1-1.5 ton of milk/day.
Energy Sources	Electricity, diesel and LPG.
Wastes and Emissions	Wastewater (whey) and solid wastes (plastic, empty cans, etc.)

Results



Many CP options have been identified for this dairy company. Following are the expected benefits from the implementation of the CP options:

- § Reduction of manufacturing costs.
- § Improving hygienic conditions.
- § Product quality improvement.
- § Reduction of environmental impacts.

Following are some suggested CP and Good Housekeeping options:

Option	Environmental benefits	Economic saving		
	Water, material or energy consumption Reduction [Unit/yr]	Saving [JD/yr]	Investment [JD]	Payback [year]
Option 1: Reduce diesel consumption by insulating the three double jacket tanks.	899 L of diesel/year	656	325	0.49
Option 2: Reduce diesel, electricity and water consumption by installing a separate piping system for hot water and cold water pipes.	177 kWh/year 1439 L of diesel/year	1051	70	0.07
Option 3: Utilize the whey residue by using it as a drink, animal feed, for irrigation and/or to produce other side products like some kind of cheese or sorbets instead of draining-off the whey as waste. This option will reduce greatly the effluent load and thus the environmental impact and gives the opportunity to sell further products. Techniques for best utilization of whey were illustrated to the company.				
Option 4: Reduce water consumption by installing a pressure gun to the hose for manual cleaning. This option will reduce cleaning water consumption by 10% as well as reduce the wastewater generation.				
Option 5: Increase production hygiene by sterilizing the product plastic container and avoid putting the products directly on the floor of the refrigerator (use plastic/ wooden pallets) in order to reduce the risk of contaminating the products This option will improve production hygiene as a result it will increase the life time of the products.				

Contacts & Partners



Royal Scientific Society, Environmental Research Centre (ERC),
Cleaner Production Unit (CPU)
P.O. Box 1438, Al Jubeiha 11941, Jordan
Tel: + 962 6 53 44 701 ext 2475, Fax + 962 6 53 40 373
www.rss.gov.jo / www.cp.org.jo
Eng. Rafat Assi – Director of ERC / CPU, rafat@rss.gov.jo

Advisory services by



Financial support



Amman, 06 / 10 / 2008