CASE STUDY

Lubrication in the Ugandan beverage industry

2.3.5 Case study

Background information

The beverage industry in general is a major consumer of water that is used for the lubrication of conveyor belts and the cleaning of returnable glass bottles, among other processes. Lubricants reduce the friction of the conveyer belt so that bottles can move smoothly down the production line. Sodium hydroxide and additives are used to wash returnable glass bottles.

Introduction

Crown Beverages Limited (CBL) is an Ugandan beverage company that operates under Pepsi-Cola International Franchise. It produces several soft drink brands for clients in the Ugandan local market as well as for export markets in the African region. The company decided to integrate the Chemical Leasing business model in its operations, closely cooperating with one of its main suppliers, the American chemicals producer Diversey Eastern and Central Africa (U) Ltd. The common goal was to find synergies for joint product and process innovations and to increase CBL's process efficiency, particularly with regard to the company's water treatment processes and chemicals consumption.

Key changes and results

Chemical Leasing was successfully introduced (1) to the lubrication of conveyor belts on three returnable glass bottle lines and (2) in the cleaning of returnable glass bottles and cases. Within six months, CBL obtained direct savings of $175,000 and significant additional indirect savings related to the effluent treatment. Diversey largely increased the satisfaction of its customer without compromising the financial benefits from the collaboration. Encouraged by the results, both companies intend to scale up the Chemical Leasing concept to include other operations in the region.

Unit of payment applied

Before Chemical Leasing:	Uganda Shillings per litre or kilogramme of chemicals purchased
After Chemical Leasing:	Uganda Shillings per litre of beverage produced

Waste water foaming before Chemical Leasing

Foaming eliminated after implementation of the model

Results achieved

Before Chemical Leasing	After Chemical Leasing
• High water consumption both in bottle and case washing (116,000 m^3 per year) and conveyor belt lubrication (29,000 m^3 per year) • High consumption of sodium hydroxide (500 kg per day) • The soap based lubricant required additional cleaning and produced a high amount of foam in the effluent treatment plant and thus caused high treatment costs • Overstepping of relevant waste water discharge reference values • Lack of appropriate chemicals storage rooms • Poor management of obsolete chemicals at plant level	Environmental benefits: • Chemical use in bottle washing and conveyor belt lubrication reduced by 40% and 48%, respectively • Water consumption for the conveyor lubrication reduced by about 13,000 m^3 • Less consumption of chemicals in the waste water treatment plant • Compliance with the waste water discharge standards • No more overconsumption of sodium hydroxide • Less energy consumption resulting in reduced CO_2 emissions (about 150 tons per year) Economic benefits: • Economic savings of $350,000 per year • Long-term business partnership • Improved stock management Social benefits: • Better working environment with reduced chemical spillages • Reduced risk of chemical injuries due to substitution of solid sodium hydroxide by a diluted one • Constant information exchange between the supplier and the user of chemicals • On-site technical support from chemicals supplier to train the company's employees