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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

MED TEST III Jordan

Transfer of Environmentally Sound Technologies

Plastic sector

Arab Medical Containers LLC.

Company overview

Number of employees:
160 Full time employees

Key products:
HDPE, LDPE, PVC, PET and PP Bottles, ranging in capacity from 10ml up to 1,600ml, in addition to Jars, Vials, Closures, Eye Droppers, Spoons, Dosing Spoons and Cups

Main markets:
Local 66%, International 34%

Standards & certifications before MED TEST III:
ISO 9001, ISO 14001 and Health and Safety Management System ISO 45001

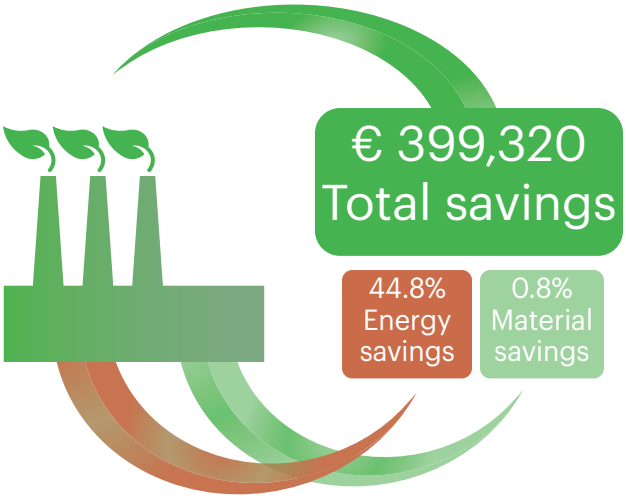
Arab Medical Containers (AMC) is the leader in health care-related plastic manufacturing in Jordan, specializing in supplying primary packaging material for a variety of products for the pharmaceutical, baby-food, veterinary and cosmetic industries. The company currently furnishes over 150 different volume containers within a range of different material applications, including Polyethylene (PE), Polyethylene Terephthalate (PET), Polypropylene (PP) and Polyvinyl Chloride (PVC). AMC's products are produced in compliance with international standards and USA CFR 21 primary packaging.

Benefits

The MED TEST III project identified total annual savings of 399,320 Euro* (299,490 JOD) in energy and raw materials with an estimated investment of 1,622,763 Euro*. (1,217,072 JOD). The average payback period is four years. The top management accepted 93% of the identified 15 measures for implementation, and 87% are already implemented or under implementation.

The consumption of materials will be reduced annually by 0.8% and energy consumption by approximately 39.7% from implementing the accepted measures. Additionally, each year, a reduction of 1,322 tons of CO_2-eq and solid waste reduction of 15,292 kg from the implementation of identified options are expected.

Identified annual savings



> We decided to participate in the MED TEST III project to adopt sustainable production practices in our factory and reduce our production costs, increase productivity while lowering our environmental footprint.
>
> Mr. Adnan Al-Asmar
> General Manager

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As part of the EU-funded SwitchMed programme, UNIDO demonstrates in the MED TEST III project pathways for industries in the Southern Mediterranean to become more resource efficient and to generate savings for improved competitiveness and environmental performance.

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Saving opportunities**

Actions	Economic key figures			Resource savings & Environmental impacts		
	Investment Euro*	Savings Euro* per year	Payback period years	Water & materials per year	Energy MWh per year	Environmental impact per year
Savings in material and reducing solid waste	61,029	34,060	1.8	17.8 tons	-	Total 1,322 tons CO_2-eq Total 15,292 kg solid waste
Electricity conservation	246,267	144,128	1.7	-	1,138	
Installing a monitoring system and power saving for the machines and utilities	75,467	25,997	2.9	-	205	
Upgrading machines	1,240,000	195,135	6.4	-	1,540	
TOTAL	**1,622,763**	**399,320**	**4.1**	**17.8 tons**	**2,883**	

*Exchange rate 0.75 Jordanian Dinar (JOD) = 1 Euro
** Numbers based on production value from 2020

Savings in material and reducing solid waste

Solid waste and material losses could be minimized by several good housekeeping measures, such as decreasing the weight of purging materials by 30%, calibrating the leak-testing machine and training the staff working on this device. In addition, a group of measures that need investment such as, changing the old molds, e.g. 50 ml victor and 30 mm cap to reduce the running cost and increase the product's quality and installation of the shrinking machine to minimize the losses in wrapping materials.

Electricity conservation

Several saving options were identified in the electricity supply of AMC, like:

- Lighting System Upgrading.
- Industrial Cooling System Upgrading includes running the lower capacity chiller when operating a low number of machines, adding thermal insulation on the internal chilled water network, replacing the existing chilled water pump with a larger size to achieve 6 bar network pressure at machines.
- Compressed Air System Upgrading includes using a VSD compressor instead of load/unload compressor, arresting compressed air leakages, improving air consumption in assembly machines, using automatic shut-off for the compressed air in assembly machines during non-production times and adjusting the pressure set-point and installing secondary air receivers near to assembly and injection-blow machines.
- HVAC System Upgrading includes ensuring good thermal insulation at the machines' heaters, using the ventilation only without chiller during normal temperature days and nights with full fresh air percentage, adjusting inside temperature set-point during un-occupied times, using VSD motors in AHUs to reduce the ventilation rate and the air change per hour at low-running machines.

Installing a monitoring system and power saving for the machines and utilities

This measure enables the factory to monitor the power consumption on the main panels during the working days and weekends to check that there is no continuous or uncontrolled power consumption during OFF times or weekends. Moreover, by installing sub-metering sensors at each machine for power or by measuring the energy consumption per each production hall via portable monitors, compressed air and cooling, OPIs for each machine can be calculated and monitored with each production batch allowing the company to quickly indicate the inefficiencies and root causes.

Upgrading machines

The total specific energy consumed (kWh/kg) in new technology machines is lower than in other machines with the same product type. This is due to the different technologies used in these machines, which use servo-actuated molds that consume less power and cooling and have higher production rates and lower waste percentages. Thus, up to 45% of energy savings can be achieved by using Servo-Actuated molds machines instead of the existing machine system.

> "We have executed many savings presented by the MED TEST III project and the RSS team and we will continue to use the methodology by the trained TEST AMC team to identify creative saving opportunities in our production that affect both power and material consumption."
>
> Mr. Adnan Al-Asmar
> General Manager

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