

MED TEST III Palestine

Transfer of Environmentally Sound Technologies

Paper and pulp sector

The National Carton Industry Company - NCI

Company overview

Number of employees:
54 full-time employees

Key products:

Cardboard sheets, open and closed boxes, single face rolls and sheets

Main markets:

Palestine

Standards & certifications before MED TEST III:

ISO 9001: 2015, PS (15-1997)

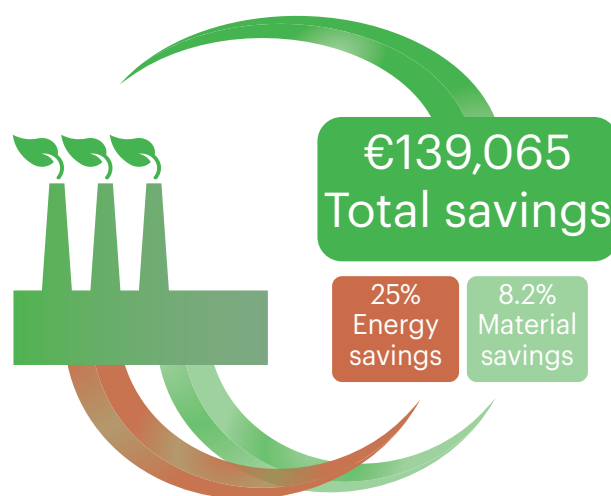
The National Carton Industry Company (NCI), located in Nablus City, Palestine, is one of the Palestinian pioneer companies working in the packaging sector in general and the carton industry in particular. NCI produces closed and opened carton boxes with high-quality standards and supplies the local market, among others, with paper-based packaging for the food industry. Since 1989, the company has operated as a private shareholding company through an initiative of Palestinian business investors. As of 1993, the company is running as a public shareholding company.

Benefits

The identified measures at NCI would require an investment of 105,131 Euro* (387,933 NIS), and by applying the feasible measures, the total savings for NCI would account for 139,065 Euro* (513,150 NIS). The central part from the identified savings was related to paper, the company's core raw material and most savings were achieved through product modifications. An optimized product design was applied just for one pilot product, bringing promising results. Economic savings from using this measure considering resource efficiency criteria for product design to more products could bring very high additional economic savings. By implementing the accepted measures, the materials' consumption will be reduced by 8.2%.

Most of the potential energy savings come from measures to the steam boiler. Thus, an investment of 195,810 NIS was put towards that saving. Energy use (electric and thermal energy) will be reduced by approximately 25%, and an annual reduction of 226 tons of CO₂ is expected. Implementing the identified measures will also reduce solid waste by 439 tons annually.

Identified annual savings



“ We decided to participate in the MED TEST III project to learn from the most paramount international sustainable and cleaner production practices that can be applied in our factory. We aim to reduce our production costs over higher efficiency and productivity that can also positively impact our environment.

Eng. Abdelnaser Dwaikat
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
Optimization of product design and its modifications	0	86,478	0	428 tons	-	226 tons CO ₂
Boiler maintenance and optimization	53,065	41,749	1.3	-	690	414 tons paper waste
Other energy conservation measures	11,687	5,057	2.3	-	35,6	25 tons wood waste
Maintenance	40,379	5,781	7	11 tons	-	
TOTAL	105,131	139,065	0.7	439 tons	725,6	

*Exchange rate as 1 Euro = 3.69 NIS (New Israeli Shekel)
 ** Numbers based on production value from 2021

Optimization of product design and its modifications

A significant cause of losses of paper and other resources is product design. A pilot project on design optimization was undertaken, and in dialogue with the customer, the factory changed the parameters of boxes for one product to reduce the paper waste without affecting the transport functionality of the paper box. This saved paper and other production inputs and reduced waste, while improving profitability.

Another measure, focusing on the reduction of paper waste in the company, lead to new product specifications stopping cutting off the excess parts of some products. The last measure in this group relates to transporting final products and increasing the number of sheet boards per wooden pallet from 600 to 700 for all customers shipped orders. This measure reduces the number of new pallets purchased by the company and avoids related solid waste generation, also lowering air pollution from the transportation.

Steam boiler maintenance and optimization

The factory operates a boiler with a capacity of 11.3 tons per hour, producing 10 bar steam for the carton sheets production line and glue preparation. The boiler has many saving opportunities, including excess air calibration, steam network insulation and leak maintenance, blowdown control and preheating intake water.

Other energy conservation measures

The factory operates an air compressor producing pressure air for the production line, and the distribution system suffers from many leaks. Fixing these leaks will provide good savings, and additional savings can be achieved by upgrading the compressor controller using a Variable Speed Drive (VSD).

Another measure would include the installation of a proper controller to reduce the motor speed during the machine's idle time at the shredding machine.

The last measure in this group includes the installation of occupancy sensors in the storage area, which will reduce electricity consumption by limiting the effective lighting time.

Maintenance

NCI invested in amending the forklift and paving the store grounds to reduce the damage to raw materials, such as the paper rolls, when transporting them in and out of the storage hall.

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A very competitive and turbulent market has pushed us to use professional tools to identify saving opportunities in our production. Through the TEST approach, we will now be able to improve our environmental and energy performance. With the positive impacts on our productivity and financial results, this methodology will help us remain competitive in the market.

Eng. Abdelnaser Dwaikat
 General Manager

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