

The Tunisian Cleaner Production Project (TCPP) is an initiative based on an approach laid by the United Nations Industrial Development Organization (UNIDO) with technical and financial support from Switzerland. The TCPP is co-financed by Switzerland's State Secretariat for Economic Affairs (SECO) and Tunis International Center for Environmental Technologies (CITET). CITET is in charge of its implementation with help from the Swiss environmental consulting firm, SOFIES.

With a budget of approximately 2.5 million €, the project is set to last 5 years (2010-2015). The TCPP's objective is to build national capacities in terms of environmental engineering tools, methods and technologies while strengthening the competitiveness of Tunisian companies.



Case Study

Hotel Sector

Company Overview

The Royal Hammamet Resort opened in 1996. It counts 200 employees and 266 rooms and recorded a turnover of nearly 7 million € in 2010.

The hotel is certified ISO9001 and ISO22000 and is in the process of being certified ISO14001.

The Royal Hammamet resort is part of a group of 20 enterprises that has integrated the first phase of the Project in order to further improve environmental performance and productivity.



Source : M. Fritsch - emac

« Through this project, we wanted to save energy and we've succeeded! »

Jamel Guermassi,
Hotel director

Benefits : environment, competitiveness and capacity building

The team of experts has identified several measures that primarily target the hotel's exorbitant energy and water consumption, mitigate pollution and instill sensible business practices.

The first measure deals with tracking consumption. Setting up a resource monitoring system has the potential to save at least 2% on water, gas and electricity bills while allowing the hotel to benchmark in view of further certifications.

In terms of diminishing energy consumption, experts propose optimizing the hotel's air-conditioning and hot sanitation water systems as well as better regulating refrigeration unit temperatures. Together these measures can reduce the annual electric bill by approximately 12,000 € and cut just over 80 t of CO₂ emissions per year.

Beyond the direct savings and environmental benefits, the proposed approaches allow the hotel to adopt more responsible practices, improve its green image and attract more guests. Technical staff can also gain valuable experience with composting and renewable energy technologies.

Saving opportunities and environmental impacts

| Action | Savings (€/year) | Investment (€) | Payback Period | Resource savings and environmental impacts |
|---------------------------------------------------------------|-----------------------------------------|------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------|
| 1 Installation of a monitoring system* | 5,360 | 6,900 | 1.3 years | Reduced energy and water consumption (2%). |
| 2 Installation of strip curtains in refrigerated areas | 1,070 | 2,310 | 2.2 years | Reduction in electrical energy consumption. |
| 3 Valorization of waste by composting** | To be determined | To be determined | To be determined | Reduction in use of chemical fertilizers. |
| 4 Improving air-conditioning system* | 1) 6,790 or 2,470 2) 840 3) 3,150 | 1) 45,500 or 8,100 2) 950 3) 4,600 | 1) 6.8 or 4.1 years 2) 1.1 years 3) 1.5 years | Reduction in electrical energy consumption, 73 t of CO ₂ /year avoided. |
| 5 Improving the hot sanitation water system | 1) 460 2) 455 | 1) 14,000*** 2) 350 | 1) 15 years*** 2) 0.8 years | Reduction in gas consumption. 9.7 t of CO ₂ /year avoided. |
| 6 Installation of solar photovoltaic panels | 965 | 21,730*** | 13.6 years*** | Reduction in electrical energy consumption (15,311 kWh/year) and 8 t/year of CO ₂ . |

* Implementation initiated ** Implementation planned *** Scenarios taking into account existing subventions and an annual 5% raise in energy prices

Action 1

The installation of 36 water and 16 electricity meters linked to an automated accounting system allows the hotel to identify leaks, losses and the potential for process optimization.

Action 2

Significant energy losses result from high traffic into and out of the refrigerated storage areas. Installing 20 strip curtains on walk-in refrigerator doors will maintain internal temperatures, reduce the air exchange rate by 70% and cut electrical consumption by over 17,000 kWh.

Action 3

Experts suggest that the hotel valorize its kitchen and garden waste garden by composting and reusing it as natural fertilizer. The composting process requires 5 to 8 months, limited oversight and an area of 30 to 40 m² in the garden. Though exact savings cannot be determined due to a lack of information regarding the quantity of organic waste produced by the hotel, composting can drastically cut the hotel's need for chemical fertilizers.

Action 4

This measure aims to reduce electricity consumption by optimizing the hotel's air-conditioning system through three actions. The first action is made up of two options: either capture waste heat from the AC unit to heat the pool or use the air cooling system to also produce cold water for the rooms. The second action incorporates automated frequency controls on chiller units to regulate usage according to demand. Finally, installing a free-cooling system will allow the AC unit to automatically gather feed air from outside when exterior temperatures drop below 19°C.

Action 5

The main goal of this measure is to reduce the energy consumption associated with the production of hot sanitation water by 1) installing a solar thermal system and 2) reducing the consumption of circulation pumps.

Action 6

A pilot solar photovoltaic installation of 39.5 m² has a long payback period, but can bring benefits in terms of image and become more and more profitable with the raise of energy prices.