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Regional Activity Centre for Cleaner Production

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Pollution prevention case studies

Water consumption minimization

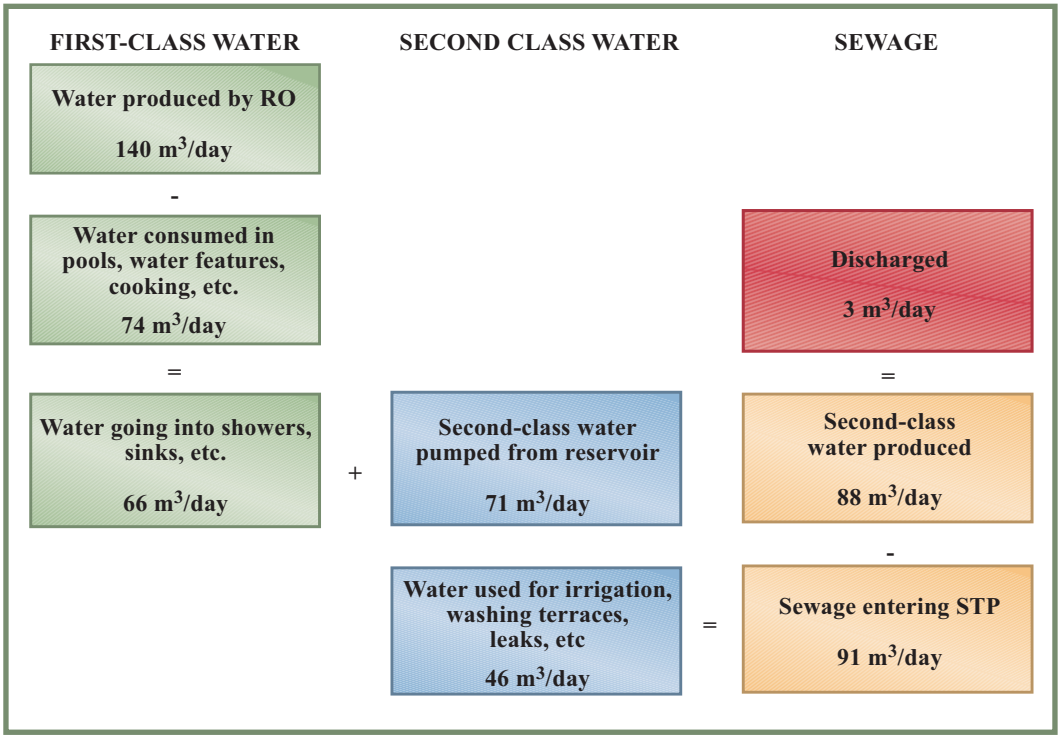
Company	Radisson BLU Resort & Spa Golden Sands (Malta)
Industrial sector	Short term accommodation activities ISIC Rev 4 n. 5510 (*International Standard Industrial Classification of All Economic Activities*)
Environmental considerations	Water reserves on the island are very limited because of the hot, dry, windy climate. The tourist industry demands large amounts of water, for pools, personal hygiene, laundry, etc. As a company, Radisson Golden Sands understood that preserving the environment was an essential step to maintain the demand from foreigners to visit the Island. A substantial investment was made in a biological sewage treatment plant, which is capable of treating 380 tons of sewage per day.
Background	A number of initiatives were adopted by the resort in favour of the environment. They have an environmental policy, and they are active in Rezidor group Responsible Business programmes. As such, they annually organize a number of activities to raise awareness amongst both guests and staff. All members of staff have participated in a 3-hour RB session where they were made to realize their responsibilities towards society and the environment. Consumption of electrical energy, gas and liquid fuels and water are favourably benchmarked with other hotels within the Rezidor group.
Summary of actions	Firstly most of the 3,000 trees and shrubs that were planted to embellish the surrounding landscape are indigenous. These are kept green most of the year by reusing sewage water. The sewage treatment plant at Golden Sands uses biological means to bring sewage to a level that is usable for irrigation and also for flushing WCs. This also means that no sewage is discharged into the sea. Further to this at Golden Sands they have 2 Reverse Osmosis trains that produce 95 litres of drinking water per minute from seawater. This makes the resort practically self-sufficient as regards water requirements, but it also minimizes air pollution that would otherwise be necessary for the transportation of all this water. They have a capacity to treat a maximum of 380 tons of liquid waste (sewage) per day, and a capacity to process more than 900 tons of seawater per day and convert it into about 250 tons of drinking water per day. Organizational measures have been taken: • The municipal main water supply is used only as a backup. • A preventive maintenance scheme has been set up, which includes regular monitoring of water quality and reserve. • Arrangements have been made with the Parks Department so that excess water is diverted into a nearby reservoir to be used by same department for other uses (afforestation and town embellishment projects).

Diagrams

Old process

Water for irrigation and flushing of water cisterns was normally transported from the water table through boreholes and by bowser to location.

New process *(Showing typical daily flow rates)*



Discharged water that could have gone into the municipal sewer is 3 m^3/91 m^3 or 3.2%.

Balances

Vector	Initial	Final	Investment	Annual savings	Payback period
Energy consumption Drinking water production	5.5 kWh/m^3	4 kWh/m^3	€252,000	€52,332	5 years
Energy consumption Sewage treatment	7.98 kWh/m^3	4.2 kWh/m^3	€279,600	€39,950	7 years

When considering the balances, one has to consider other costs besides those related to energy consumption. For example, maintenance costs or the cost of monitoring water quality. These were taken into considerations when annual savings were calculated. Also certain estimates were made when considering the cost of transporting second-class water by bowser; similarly the cost of electricity is not steady and is generally always on the increase. This would make payback periods shorter.

Conclusions

On a national level, producing water on site at Golden Sands has a number of environmental benefits, such as reducing carbon emissions into the atmosphere as less electricity and less transportation is required, reducing (almost eliminating) liquid waste, reducing the demand on underground water, and improving green surroundings, as plants are watered according to their needs. From a financial perspective, capital expenditure was relatively high and the payback period rather long. However in circumstances such as exist in Malta, this water strategy is highly recommended.

NOTE: This case study seeks only to illustrate a pollution prevention example and should not be taken as a general recommendation.

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