

Case Study

Rising to the Cause

Working towards sustainability

When this five star Colombo hotel was built in the mid-1970s, it reflected the ethos of that time. It was built to satisfy the tastes of society, without a focus on resource efficiency and sustainability. However, the situation changed when the hotel was recently refurbished and re-hauled at the cost of over \$20 million.

Today, this modernized hotel has over 500 guest rooms and suites, over a dozen restaurants, and several function halls. It employs around 1200 employees and is considered a prominent and popular corporate hotel. The management's business philosophy is centered on growth beyond profits, within the framework of its commitment to sustainability.

For the hotel's management, the larger objective was to look at all possibilities for efficiency improvement and, through a gradual and continuous process, incorporate them into the hotel's operations. With this in mind, goals were set in three key areas:



To achieve these goals, the management appointed a green team comprising of members from various departments. Each member was given a goal and, most importantly, the task of spreading the culture of environmental awareness through earth-friendly initiatives.

The green team successfully spread the culture of sustainability across the entire employee base. As a result, environmental conservation has become key in their day-to-day life. The lessons learnt at their workplace are ones they endeavor to spread throughout their personal lives.

Due to space constraints, the management had to be careful when incorporating plans and processes. Despite this, and working within the Global Reporting Initiative¹ framework, an annual target was set to reduce electricity and water consumption by five percent. The initiatives were successful and this hotel is now a trend-setter for its resource efficient practices.

This case study lists the efforts made in different areas, and the results achieved by the hotel's management

¹ The Global Reporting Initiative is a non-profit organization that promotes economic, environmental and social sustainability.

Energy Conservation

Three energy efficient chillers with a capacity of 400 tons of refrigeration were installed each at a cost of around \$760,000. The plants save around 2,500,000 kilowatt hours of electricity per year - a monetary saving of \$240,000! The investment was recovered in just over three years.

Investments and Savings- Energy Efficient Chiller

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|----------------------------------|--------------------------|
| Investment involved | \$760,000 |
| Annual electricity savings | 2,500,000 kilowatt hours |
| Annual monetary savings | \$240,000 |
| Estimated payback period | 3.1 years |
| Annual CO ₂ reduction | 1,378 tonnes |

To maximize efficiencies, the management adopted various measures across the hotel. The use of centralized air conditioning, specifically in administrative areas such as accounts, sales, and food and beverages was rationalized by installing fan coil units that allowed temperatures and switches to be controlled individually.

Investments and Savings - Rationalization of Centralized Air Conditioning

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|----------------------------------|------------------------|
| Investment involved | \$33,000 |
| Annual electricity savings | 180,000 kilowatt hours |
| Annual monetary savings | \$17,000 |
| Estimated payback period | 1.9 years |
| Annual CO ₂ reduction | 114 tonnes |

Like in most hotels, lighting consumes a significant amount of electricity. Here, 3,500 incandescent light bulbs were replaced with compact florescent lamps. This resulted in a reduction of annual electricity consumption by approximately 133,000 kilowatt hours. Around 350 fluorescent tube lights were also replaced with T5 fluorescent tube lights in the kitchen and other common areas. This reduced consumption further, from 46,000 kilowatt hours to 36,000 kilowatt hours. Sensor light systems were installed in the premium wing and ground floor corridors resulting in an annual monetary saving of \$2000 and an energy saving of 22,000 kilowatt hours a year.

Cumulative Investments and Savings - Lighting Initiatives

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|----------------------------------|------------------------|
| Investment involved | \$18,000 |
| Annual electricity savings | 165,000 kilowatt hours |
| Annual monetary savings | \$16,000 |
| Estimated payback period | 1.12 years |
| Annual CO ₂ reduction | 105 tonnes |

Key cards in every room ensures that lights and other electrical devices, except the mini bar refrigerator, are automatically switched off when rooms are unoccupied. The key card is also connected to a thermostat, which automatically reduces the level of air conditioning when the room becomes vacant.

To improve power factor, a 700 kilovolt amperes capacitor bank was installed. This improved power factor from 0.85 to 0.96 and reduced monthly demand from 2500 kilovolt amperes to 2200 kilovolt amperes.

Investments and Savings - Installation of Capacitor Bank

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|--------------------------|------------------------|
| Investment involved | \$19,000 |
| Annual demand savings | 3,600 kilovolt amperes |
| Annual monetary savings | \$21,000 |
| Estimated payback period | 0.9 Years |

A 4 kilowatt energy efficient water pump was installed for the swimming pool, replacing two low efficient pumps. This initiative saves approximately 24,000 kilowatt hours a year, with an annual monetary saving of \$2,000. In another initiative, the efficiency of water pumps in the basement was improved; instead of two pumps of 15 kilowatts each, the hotel currently has one pump of 15 kilowatts to generate the required three bar pressure, resulting in an annual electricity saving of 54,000 kilowatt hours and monetary saving of \$5,000.

Investments and Savings - Pumping related initiatives

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|----------------------------|-----------------------|
| Investment involved | \$4,000 |
| Annual electricity savings | 78,000 kilowatt hours |
| Annual monetary savings | \$7,000 |
| Estimated payback period | 0.6 Years |

Water Conservation

The hotel's management took up water conservation as a top priority. It installed dual flush cisterns and low flow taps and showers in most guest rooms, saving approximately 30,000 cubic meters of water annually. This translates into water saving of 60 percent.

Cumulative Investments and Savings - Dual Flushes and Low Flow Taps and Showers

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|---|-----------------------|
| Number of low flow taps and showers installed | 500 units approx. |
| Number of dual flushes installed | 250 units approx. |
| Annual water savings | 30,000 m ³ |
| Annual monetary savings | \$19,000 |

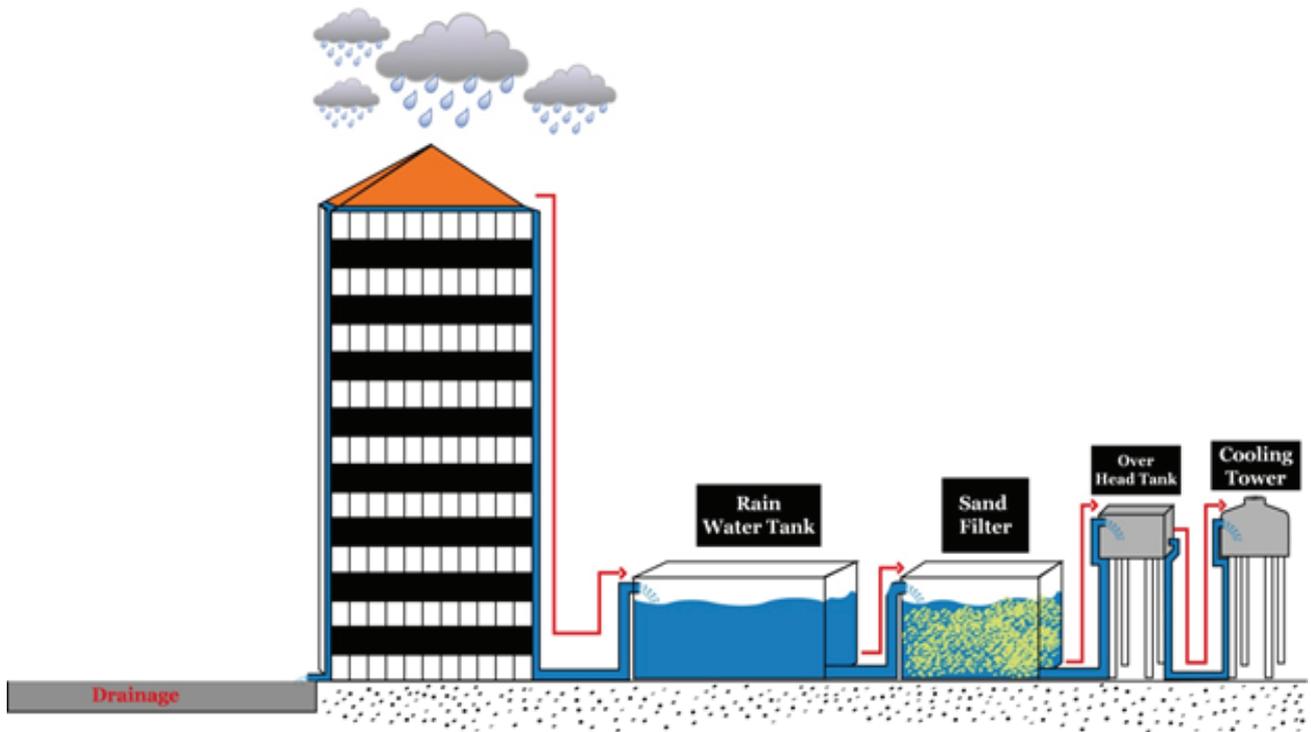
Twenty four water efficient self-closing taps were installed at all staff areas to reduce water usage, conserving around 720 cubic meters of water.

Investments and Savings - Self Closing Taps

| | |
|---------------------------------------|--------------------|
| Number of self closing taps installed | 24 units |
| Investment involved | \$1,400 |
| Annual water savings | 720 m ³ |
| Annual monetary savings | \$400 |
| Estimated payback period | 3.2 years |

A new, efficient filtration system was installed at the hotel's main attraction, the water fountain, which continuously feeds it with clean, recycled water. This new system saves 6,000 cubic meters of water a year, which is an annual monetary saving of around \$4,000. Meanwhile air conditioner condensate, which was previously released into the waste water system, is now being used in the hotel's fish pond, saving 10,000 liters of water a year.

The hotel installed a 175,000 liter rainwater recovery tank. This water is used for the cooling towers.



The Rain Water Collection and Usage Process

Waste Minimization

Solid waste, including paper, plastic, glass, and metal, is segregated internally and sold to third party recyclers. Biodegradable waste is converted to fertilizer while non-biodegradable waste is reused and recycled wherever possible. The management also undertook other initiatives such as using waste cooking oil in boilers to save furnace oil and replacing paper-based TV guides with digital guides.

Achievements

Over the past several years, apart from various accolades for cuisine and customer service, the management has also been recognized for its environmental initiatives. It has won a bronze medal at the National Green Awards 2012 and a merit certificate at the National Energy Efficiency Awards. The hotel has obtained Green Globe Certification, ISO 14001 Environmental Management Certification, OHSAS 18001 and ISO 22000 certifications, EarthCheck compliance certification and a certificate of excellence from Trip Advisor. Further, the hotel received a carbon neutral certification for one of its restaurants, the first hotel in Asia to get this honor.

Future Initiatives

Looking beyond, the hotel's management plans to increase its overall energy efficiency by embracing even greener technologies and further improving energy management practices. Future initiatives include installation of detailed sub-metering systems to monitor energy consumption by area, replacing inefficient lamps with light emitting diodes, improving air circulation in the ballroom, further rationalizing central air conditioning in other administration areas, installing proper piping and filtering processes for the recirculation of water, and commissioning a wastewater treatment plant to recycle water for use in ponds and gardens.

Lessons Learnt

The key challenge faced by the hotel in implementing resource efficient initiatives was to change the mindset and behavioral patterns of its people. Experts were brought in to share knowledge and inspire staff to primarily incorporate sustainable changes in their personal lives. Events were organized to highlight how simple changes in habits and practices lead to significant savings. This approach eventually met with success as staff willingly realized and then embraced the importance of sustainability. The management was equally proactive in communicating its resource efficiency initiatives.

Management continues to engage staff through education to further inculcate sustainability as a way of life. A unique “green corridor” was created in the hotel to display and highlight sustainability related information and achievements to the staff.

The hotel was able to reduce nearly 13 percent of total current energy consumption or approximately 2,900,000 kilowatt hours of electricity per year as a result of its initiatives. Additionally, 37,000 cubic meters of water is saved every year, which works out to a 15 percent reduction in consumption. In all, total annual monetary saving for the hotel is approximately \$328,000 coupled with an annual reduction of around 1650 tonnes of CO₂ emissions.

To appreciate the magnitude of these achievements, consider this: the hotel’s annual electricity savings is enough to fulfill the total electricity needs of 2400 Sri Lankan households for an entire year. The water savings can cover the annual water needs of 170 households.

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