Hotel Verde

Brief details of the initiative and the changes made – this may be a change in technology, of fuel, operating procedures or behaviour.

From pre-design phase, our mandate was to create Africa's greenest hotel and implement a holistically sustainable business case. This meant that each and every element of the process needed to be strategized with the goal of reducing the environmental impact. Increasing the carbon efficiency of the hotel was thus implemented from design and construction and now through daily operations, as well as, the further offsetting of scope 1 and 2 emissions.

Design & Construction
During the development of Hotel Verde, several considerations, active and passive designs, technologies and equipment were included into the design of the building.

The LEED (Leadership for Energy and Environmental Design) certification for New Construction from the United States Green Building Council was used as a guideline and its highest certification level, Platinum, was awarded in 2014. A comprehensive list of factors were thus considered, such as energy savings, water efficiency, CO_2 and other greenhouse and harmful gas emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Energy Technology
Renewable Energy Installations
- Three vertical-axis wind turbines
- 220 Photovoltaic panels
- Elevators with regenerative braking
- Energy generating gym equipment

Active systems / technical installations
- Intelligent Building Management System to actively optimise efficiency and autonomously report malfunctions or inefficiently running equipment with live info channel for public viewing of environmental statistics
- Energy efficient and intelligent Heating Ventilation and Air-Conditioning system using geothermal ground loops coupled to heat pumps for central heating/cooling and domestic hot water generation
- Motion/Occupancy controlled lighting
- Key-card main power isolation switches in bedrooms and conferencing venues
- Demand controlled ventilation

Passive Design
- Thermally (and acoustically) well insulated structure
- Airtightness to minimise losses of conditioned air
- Northern facing windows shaded by photovoltaic panels
- Natural ventilation in strategic areas
- Utilising indirect sunlight for lighting
- Utilising light interior colours to increase light penetration
- 4 skylights
- Green Roof
- Living wall

They also tacked water consumption

Active Systems
- The Grey Water Recycling System is the most notable water saving installation at Hotel Verde. Water from the showers and bath tubs and condensate from the HVAC fan coil units is drained to a PONTOS grey water recycling plant where it is filtered and sterilized. The processed grey water is then reticulated throughout the hotel and used for the flushing of toilets, saving up to 6000l per day.
- The rainwater from one third of the roof is captured and passed through a passive Wisy filter before being channelled to a 40,000l stainless steel tank in the basement. The water from the tank is used for uses such as irrigation, car washing, aquaponics units and the cleaning of hardscapes.

Passive Design
- Low-flow fittings
- Dual flush toilets
- Waterless urinals
- Water-wise landscaping
- 'Drip' irrigation systems
- Only 8 of the 145 bedrooms have baths

Hotel Operation

In July 2015, the hotel achieved a Platinum certification, making Hotel Verde the first hotel globally to have double LEED Platinum certification from the United States Green Building Council, proving the sustainable management of the hotel is of the highest global standard.

Some of the hotel's sustainable operating practices include:

Carbon Offsetting

The carbon footprint of Hotel Verde is calculated on an annual basis according to both the Hotel Carbon Measurement Initiative (HCMI) as well as the Greenhouse Gas Protocol (GHG Protocol). The carbon footprint "per room night" and "per hour-of-use of conference facility" takes into account the scope 1 and 2 emissions of the hotel. The hotel then offsets these already significantly reduced emissions through the responsible purchasing of carbon credits thereby providing guests the benefit of a carbon neutral experience at the hotel. The hotel is also currently in discussions with their suppliers in order to encourage them to offset their own scope 1 and 2 emissions in order to decrease the hotel's scope 3 emissions.

Waste Management

When procuring any goods for the hotel, a waste minimisation strategy is implemented. We are in the process of eliminating all non-recyclable packaging from our suppliers and implementing recycled and compostable packaging where possible. We currently purchase re-usable kitchen containers and refill them, buy in bulk, use refillable guest amenity dispensers, promote use of the K-way or draught beer as opposed to the bottled option and bottle and filter water onsite. The hotel has a 100% waste-to-landfill diversion goal. All waste produced on site is recycled or upcycled where possible. Bedrooms have bins for recyclables and wet waste whilst public areas have 4 separate bins in strategic locations. All staff are expected to separate waste before it reaches the waste area. Waste is then sorted into further waste streams and weighed daily to keep a record. Each week a different staff member is assigned to help with the sorting of the recycling waste in the waste area. Food waste is kept and composted on site to provide the compost needed for the hotel's gardens through Bokashi composting.

On-going staff training and education

Staff members all receive intensive induction training when they start at the hotel and continue to receive training and educationals through the Avanti programme. Avanti, which means 'moving forward' in Italian is the in-house sustainability drive to engage staff with departmental sustainability and a lifestyle that they can take back to their homes and communities.

Environmental Committee

Within the staff there is Green Team who meet monthly to analyse environmental data and discuss sustainability. This includes creating sustainability targets, assessing progress, bringing forward and implementing new ideas as well as planning Avanti training themes based on needed focus areas.

Staff participation in waste sorting

Each week a different staff member is assigned to help with the sorting of the recycling waste in the waste area. This shows staff first-hand how important it is to rethink waste management, placing responsibility on each and every staff member on a personal level.

Guest Incentives

The hotel has an in-house currency called a Verdino. Verdinos can be used to offset a room bill, restaurant tab, at the deli or be donated to the Rhino Foundation. Guests can earn them by being a responsible traveller and making their stay greener. For example by, re-using towels, utilising the power generating gym equipment and separating their room waste.

Educational Signage

Educational posters and signs are placed strategically around the hotel to inform guests of sustainable features and educate them on their footprint. The IPTV screens in the guest rooms and conference venues showcase hotel information and facts on the hotel's sustainability initiatives and live statistics.

Outcomes

The increase in carbon efficiency or reduction in emissions which may be reported in fuel burnt per unit of output or the actual emissions reduction.

- Over the period 1 March 2014 – 28 February 2015 Hotel Verde:
- Generated 101 305 kWh of renewable energy
- Saved 2 001 898 kWh of electricity
- Saved 16 385 747 litres of water
- Diverted 87% of waste from landfill

Due to the savings associated with the hotel's efficient design and operating practices, the hotel has a significantly reduced carbon footprint (Scope 1 & 2) of 946.14 metric tonnes of CO2-e. This was offset through the Kariba Redd+ project which reduces deforestation and degradation through a range of activities.

The payback period i.e. the number of months of operation to achieve costs savings equivalent to the investment

The **pure utilities cost payback** period can calculated based on the green cost divided by the average monthly savings of R157 933 which comes to approximately 128 months. It **must** be noted though that this is purely utilities costs and no other of the numerous difficult to quantify benefits.

There are also other bottom line benefits.

There are also many savings that are difficult to quantify which have an impact on return on investment. For example increased staff productivity and reduced absenteeism due to improved environmental quality, or the increased return guest portfolio due to the feel-good aspect staying at a green hotel. In addition, Hotel Verde received a great deal of free local press exposure over a period of two years due to its innovation in hospitality and sustainability.

The company/individual names for acknowledgment
Hotel Verde, Africa's greenest hotel at Cape Town International Airport
Owners: Mario & Annemarie Delicio
General Manager: Samantha Annandale
Project Manager & Technical Manager: David Pollock
Primary Sustainability Consultant: Andre Harms, owner of Ecolution Consulting

Case Study provided by Sarah Farrell of Hotel Verde October 2015