

Sheelah Gullion



Lifestyle Garden Centre has literally risen from the ashes to become a green building to be reckoned with. Remarkably, in size it has almost doubled without increasing electricity consumption.

Twice as

SAME ENERGY

It's not easy being green, and it's not cheap, but the partners of the Lifestyle Garden Centre in Randpark Ridge, Johannesburg, and those who helped them build it, are confident their R85-million was spent well. The 2008 bout of load shedding enables them to see returns on their heavy investment far sooner than originally anticipated.

More than a year has passed since Lifestyle suffered heavy damage in a fire just two weeks before completing major renovations. The plan was to complete the vision of a green building that had been envisaged by the company's shareholders since 1998 when the first renovation was undertaken. Rather more investment had to be made and some betterment was undertaken that would not have been done otherwise but the vision of a green building has been largely a success. Their efforts can now stand as an example for other commercial developments to implement sustainable systems.

Multiple systems ensure sustainability

What makes Lifestyle's situation different to some of the other green buildings is its endeavour to implement multiple systems into a single facility. Brent Buchanan, director of Nsika Architects and principal agent for the project, credits his client with having "the right credentials" for such an undertaking. "They are horticulturists and conservationists first and entrepreneurs second," he says. "Nothing, in terms of the sustainable ideas implemented in the centre, is overtly unique but it's just the scale and combination," he tells *Urban Green File*.

Oscar Lockwood, a shareholder in the property, says the renovations were "a most wonderful exercise for all of us because it taught us about the true meaning of being green and not just paying lip service." Lockwood, a dynamic entrepreneur with a quick wit and innovative ideas, says the seed idea for the pro-

ject was one of growth: the decision was made to double the footprint of the existing centre – to 32 575 m² from 15 000 m². Unfortunately, doubling electricity capacity was disallowed by City Power, which informed the team, at 600 kW, it was already at its maximum allowable capacity. The renovation went ahead and the centre now functions on 32 575 m² using no more than 600 kW.

Passive design plays central role

Buchanan says much of what can be accomplished in this, or any, green building design is achieved through passive design: light wells, better glazing and building orientation all contribute greatly to improved energy efficiency.

Polycarbonate sheeting is used in the garden centre's ceiling to allow light to penetrate during the day. Indeed, no lights are needed at all in the centre until mid-to-late-afternoon, depending on the season.



much space

CONSUMPTION

However, on the day *Urban Green File* visited, the lights were blazing at 15:00; demonstrating human error can defeat the best intentions. No discernible change in lighting could be detected when the lights were hastily switched off.

In the retail and office sections of the centre, floor-to-ceiling windows have been installed wherever possible to allow ample light into high-use areas. In addition, light wells have been created between buildings to brighten the covered car-parking areas while roof overhangs were built to keep direct sunlight off windows.

Parking has been expanded by more than 1 000 bays. As Lifestyle Garden Centre sees its core customer as a mother, it takes special care to ensure the parking area is as level as possible to avoid runaway trollies, Lockwood says, adding the ubiquitous trollies precludes the use of soft paving materials to avoid heat islands.

Light bulbs replaced

"We saved 110 kW of power just by changing every globe in this property," Lockwood says. "It cost us around R500 000 to change every fitting and globe. I think it's a wonderful thing to be able to quote the figures so you don't get any illusion if you're reading this article and thinking of adapting your building."

But it's not only light bulbs that save energy in the building. Extensive use of solar power has been implemented with 32 traditional-style geysers replaced by six solar ones. Unnecessary old geysers were disconnected completely.

Essential services like retail cash registers and computers are all connected to the diesel generator and there are approximately 150 to 200 red plugs on the property; seeing Lifestyle through periods of load shedding or power outages.

Lifestyle Garden Centre has spent R2,3-million on solar panels for heating water and space (underfloor system) while saving 110 kW of power just by changing every globe on the property.



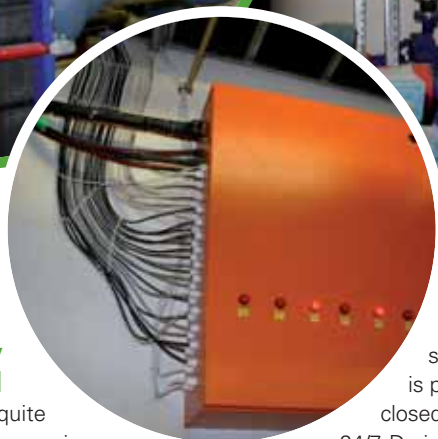
Photographs by Sheelah Gullion



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Power supply uninterrupted

"We have worked quite efficiently without power in offices where there are windows," says administrative director Christine Trotman. "The red plugs worked marvellously, the computers were going and, from a retail point of view, all the tills and points of sale continued working," she says. "This is a huge benefit to any prospective retailer: uninterrupted power."

Another key energy-saver is the implementation of a building-management system that identifies unused, non-essential systems and shuts them down when power use climbs toward 600 kW. The only unplanned system was the lift. It, naturally, had someone in it the first time the system kicked in. Schindler will be installing a system to allow passengers in either the passenger lift or the cargo lift to complete the trip in progress on diesel power. The lift can then be shut down.

Solar geysers for hot water, underfloor heating

Omnibus Engineering installed R2,3-million worth of German-manufactured solar panels in the newly-renovated facility, which provide virtually all of the hot water needed on the premises. The facility has reduced its number of geysers to six from 32.

But the solar-heated water is also the source for underfloor heating, which is used throughout the facility. Buchanan believes no one has ever invested R2-million in solar-powered underfloor heating. It works like this: a giant boiler

sits in the basement; water is pumped from there, in closed circuit, around the facility 24/7. During winter days, the water is heated to a maximum of 59°C by the solar water heaters and, at night when the water cools down, it is heated electrically – although at non-peak times – from a minimum of 59°C back up to 87°C. This accomplishes two important goals: the growing area temperature never drops below 11°C and the indoor areas of the facility are warm all year round throughout the day.

Cooling with gelled ice

Cooling in the summer months throughout the office component of the centre is accomplished via the production of gelled ice in seven 10 000 l vats. The ice is made during off-peak hours. During the day, air is pumped through the ice to produce the chilled water that sends cool air into the office environments.

The retail, food and beverage areas are cooled using evaporative cooling, which is cost-effective and comfortable. Buchanan says the system leaves the indoor areas less exposed to fluctuations in temperature – in other words, it might be a bit hotter than typically air-conditioned environments – but in a garden centre, the clientèle is accustomed to a more natural ambience. The indoor areas are still sufficiently cool in the hot months.

Greywater recycling attempted

Two important systems have been implemented at Lifestyle to make the most of

South Africa's most precious resource: water. The first is a rain-harvesting system on the rooftop that collects the water and stores it for irrigating plants in the garden centre. The second is a greywater-recycling system implemented by Primi Life, which is part of the Primi Piatti group and one of two food-and-beverage outlets in the centre.

Greywater from the restaurant's kitchen, and basins in the ablution areas, was recycled to flush toilets and urinals in the restaurant but this system didn't operate for long and is one of few systems on site that has been a failure. Buchanan says the German manufacturer sent technicians to analyse and repair the system to no avail. No one really understands why the system doesn't function the way it should but Buchanan assumes the high grease content in the water is key to the problem. One way to make the best of this shortcoming is to, perhaps, send the greywater to the existing storage facility where the harvested rainwater is stored and use it for irrigation.

Scope for more green entrepreneurs

Buchanan points out, in the planning stages of a project like this, "a lot of ideas are tossed around the board room." These green ideas include railway sleepers used in the bar at Primi Life as a means to reuse materials but other ideas didn't have a lifespan much beyond the brainstorming sessions. "We talked about paving screed using waste lime and ash but, logistically, it doesn't work," he says. There is still a lot

- 1 Virtually all the hot water on site is heated by solar power. Only at night, as the water cools, is it heated with off-peak electricity. Underfloor heating maintains a consistent temperature throughout the facility with the help of heat-retaining concrete floors.
- 2 Air-conditioning is accomplished with the assistance of vats of gelled ice. Air is cooled by pumping it through these chillers and then to the offices on site.
- 3 It looks innocent but this box contains the "brain" of the entire building-management system. When the centre approaches maximum power use of 600 kW, non-essential services shut down to ensure business operates smoothly and without power cuts.

The growing area must have a minimum temperature of 11°C and this is maintained without great difficulty with solar-powered underfloor heating. Primi Life is also heated with underfloor heating while light wells make the covered car park and office blocks less industrial, improve security and save energy.

Photographs by Sheelah Gullion



of room, he points out, for creative (and green) entrepreneurs in the market for green building materials because, as he discovered in this project, there are shortcomings. "In order to produce a supply chain of sustainable materials, you must have environment-conscious entrepreneurs," says Buchanan.

120 000 earthworms required!

Although it's been open for well over a year, the renovated Lifestyle Garden Centre continues to evolve. For example, the Primi Life kitchen utilises a macerator to reduce kitchen waste but, surprisingly, there is no institutional compost facility at Lifestyle. Lockwood has visions of large-scale vermiculture – much to Trotman's reluctance – and is running experiments at home. Lockwood says, aside from the problem of obtaining the necessary 120 000 worms for Lifestyle, the colony of feral cats on the property would make the situation difficult so the vermicomposting bin would have to be in a caged area.

Lifestyle takes its conservation very

seriously; it even attempts to control the population of the local cat colony by trapping and neutering cats, and releasing them again.

Recycling embraced

The size of the colony could reduce naturally, however, if future plans for reducing solid waste are successful. Trotman is in charge of the property's recycling schemes, including institutionalising recycling of glass and paper. An internal system already exists for cardboard recycling, which has reduced the number of bins as well as weekly pick-ups required. The waste from the macerator is collected twice a week and, when glass and paper recycling comes on line later in 2008, Trotman says it will be open to the public.

"It will actually cut down on the use of the macerator at the same time," Lockwood says. "If we recycled most of our glass and paper waste, we could get the macerator to one collection a week."

Shortened payback period

Everyone involved in the project is frank about the cost. They emphasise it is expensive to build a facility like the Lifestyle Garden Centre.

However it is quite clear, while it could not have predicted, the sustainable systems were implemented at exactly the right time.

"I think there are a lot of mistakes in terms of what we did but we did this at exactly the right time in terms of the rand-euro exchange rate, for instance," Lockwood tells *Urban Green File*. "Now it's at a rand-dollar exchange rate of about 18% worse. And, with Eskom pushing up its prices by 27,5% since 2007 and more in 2009, our payback period is diminishing quite quickly." ■