



MEDIA RELEASE

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Aurecon pushes 'green' boundaries for Grundfos

When Grundfos, one of the world's leading pump manufacturers and committed proponent of sustainable development, partnered with Growthpoint Properties, South Africa's largest listed property company, to create a state-of-the art office and warehouse facilities, the outcome was inevitably cutting edge.

The office component of the development has since been awarded a 5 Star Green Star SA – Office Design v1 rating by the Green Building Council of South Africa (GBCSA) and is the first industrial facility to be associated with a 5 Star rating in RSA.

Aurecon, with its track record for bringing challenging project outcomes to reality, was commissioned as principal agent for this project in January 2012, with services including civil, structural and mechanical design and execution, as well as acting as Environmentally Sustainable Design (ESD) consultant.

The offices have a gross floor area of 3 400 m², while the warehouse covers 6 500 m² and has been designed to complement the iconic office building. The project has been built on a high visibility site at the junction of the N12 and R24 in Meadowbrook, Germiston, giving it excellent exposure to major routes around OR Tambo International Airport.

Two major challenges were encountered on the project: that of a very sloped site with large amounts of storm water flow during rainstorms, calling for innovative design techniques, and the need to implement Environmentally Sustainable Design (ESD) to the highest standards, including achieving 'minimal usage of potable water' status.

Innovative use of difficult site produces time and cost savings

In developing the design, the steep cross fall on the site – a 9 m fall across 200 m – coupled with storm water flooding from the site posing a concern, had to be closely considered.

Very stringent requirements in terms of storm water management were imposed by the local authority (Ekurhuleni Metropolitan Municipality) as well as the various roads authorities (Gautrans & South African National Roads Agency Limited) to prevent flooding of the two major motorways at this junction. This required the attenuation of 1 250 m³ of storm water.

In a novel design decision, the slope of the site was cleverly used to accommodate parking underneath the buildings, resulting in the need for minimal ground works from a fill perspective, overall better space utilisation and faster construction time.

In addition, a storm water attenuation facility for the warehouse and the office building was provided through an oversized (1 500 m³) concrete attenuation tank under one of the parking areas.

The office and warehouse storm water attenuation facilities were therefore combined in a single structure, thereby facilitating speedy construction – earthworks started in July 2012 and the project was handed over on time in June 2013.

Groundbreaking water management a first for South Africa

The project's rainwater harvesting system incorporates Grundfos' own customised plant for purifying harvested rainwater to drinking water quality. This is believed to be the first implementation in a commercial office and warehouse building in South Africa. The domestic water supply of the building is designed to utilise three different sources of water, namely rain, borehole and municipal water.

With an extensive rain water catchment area, oversized attenuation tank and purification plant the quantity of rain water supplied to the building exceeds the demand for municipal water, except in the dry months of July and August.

To address this shortage, which is weather dependent, the system makes use of borehole water. The building will be supplied with municipal water only in the event of rain and borehole water being exhausted.

With expected zero demand for municipal water supply during the period of October through to May, the design of the rain water harvesting system, incorporating the Grundfos technology for water treatment to drinking quality, considerably contributes to the alleviation of the stress in the bulk potable water supply network.

What's more, the office's prominent bronze coloured west façade incorporates vertical shading louvres consisting of Grundfos solar panels and mesh, which absorb the west-side sun energy, generating enough electricity to run all pumps in the rain water purification plant.

Detailed attention to sustainability

"The Grundfos offices were intended to achieve a Green Star SA Office v1 rating, but we applied 'green' principles to the warehouse as well," says Aurecon Project Manager, Stoffel Mentz.

The most notable sustainable feature of the Grundfos development, including both office building and warehouse, is the ability to be independent of municipal water supply for as much as 75% of the year. Apart from this, the office building has been designed to incorporate various sustainable features in line with Green Star SA requirements for certification. Significant ones include:

- 70% of demolition and construction waste was reused or recycled to minimise the amount sent to landfill.
- All paints, adhesives, sealants and carpets were selected in terms of the Green Star SA guidelines for low volatile organic compounds. Thermal insulation was used on the roof, the exposed ground floor concrete slab, and the spandrel panels in the façade.
- In addition to the electricity from the solar panels installed in the fixed external shading louvres on the western façade, electricity is also generated by wind turbines on the roof.
- Employee comfort and wellbeing is considered with fresh air provided at rates exceeding the minimum regulatory requirements of SANS10400-O.
- Energy consumption is optimised throughout the building by using variable speed drives for mechanical equipment, energy efficient lighting, and heat pumps for supplying hot water for the kitchen and gymnasium, while all energy consumers above 100 kVA are sub-metered and monitored.
- Daylight glare control is achieved through vertical fixed shading elements in the western façade incorporating Photo Voltaic panels and internal blinds in the occupied areas.
- Facilities are provided that encourage the use of bicycles.

- In a novel touch that reminds car drivers to consider sustainability, those with fuel efficient vehicles have dedicated parking spaces.

“This was both a challenging and exceptionally satisfying project with all stakeholders aligned on extending the boundaries of sustainable building development,” adds Mentz.

“Currently there are 54 Green Star SA certifications in the country and our client, Growthpoint Properties, has achieved six of these. They also lead the real estate sector in carbon disclosure in Africa. This project saw Grundfos augment their considerable global experience in sustainability techniques which helped to ensure that this flagship building, which will serve 43 countries throughout the African continent, is an outstanding tribute to their corporate values.”

Contact details

Jody Boshoff

Communications Manager

T +27 12 427 2066 | F +27 86 606 0671 | M +27 83 275 2526

E Jody.Boshoff@aurecongroup.com

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