Sustainable I-CAT campus posed challenges

A roof overhang over the north-facing windows of the I-CAT office block shades the building during summer and partially during winter.

Pretoria building contractor JC van der Linde & Venter Projects has completed a multimillion rand contract for the construction of new "green" corporate offices and a warehouse for I-CAT Environmental Solutions.

The new sustainable I-CAT campus, in the N4 Gateway Park in Pretoria, was designed by Earthworld Architects and Interiors, and completed in August last year.

JC van der Linde & Venter Projects contracts director Pieter Venter says Earthworld Architects & Interiors concentrated on maximum sustainability in the design of the I-CAT campus.
For example, among the environmentally friendly features that had to be provided by the contractors was a rainwater harvesting system, incorporating a 50 000l reservoir, sunk beneath part of the structural pergola-covered courtyard outside the main building.

"The reservoir will collect all the rainwater from the combined roof area, which covers almost 1 500m^2. This water will be filtered and reused to flush toilets and for landscaping purposes. We also had to install solar water heaters that convert solar radiation into thermal energy, and solar powered heat pumps as part of Earthworld's focus on sustainability," Venter stated.

He said some of the unusual features that had to be provided – and the challenges faced – for the project included:

- The excessively clay soil had to be cut and filled with suitable material before work could start on the foundations.
- The design of the office building called for top quality off-shutter concrete on all the facades, meaning the contractors had to employ special formwork to produce a smooth off-shutter finish.
- Special recessed patterns had to be provided in the facebrick façade of the new building.
- The installation of a special interior floating concrete staircase, with structural steel frame, close to the reception area, called for in-situ casting of the top quality raw concrete stairs specified in the design.
- The provision of the structural steel pergola in the courtyard called for the supporting timber poles to be installed at specific angles instead of traditional upright installation.
- Interior finishing, apart from the top quality off-shutter concrete, required extensive installation of special eco-friendly spruce plywood for the office partitions and ceilings.
- The provision of an intricate, external curved spiral structural staircase in the courtyard leading to the roof garden.

Earthworld Architects and Interiors' Rudie Botha says the completion of the new I-CAT campus realised an ambition to achieve absolute minimal impact on the environment. Factors such as the local climate's effect on energy consumption, the use of natural light and shading devices on applicable facades, as well as the office staff's thermal, visual, and acoustic comfort, as well as air quality, were just some of many factors taken into account. **BA**