

## Green insulation at Apex

Energy efficiency; productivity drive new commercial building design

Serving as an excellent example of the move towards sustainable construction practices, Apex Strip Curtains and Doors' new Johannesburg facility embraces the latest green building trends.

Ground was broken on 31 March 2008 and the scheduled completion date of this new energy efficient development by City Square Developers is November 2008.

Designed by Four Design + Architecture to exceed standards, the building comprises three levels: a basement of 905m<sup>2</sup> for storage and parking; a ground floor of 930m<sup>2</sup>, which houses the manufacturing department; and a first floor area of 907m<sup>2</sup> containing offices and administration facilities.

Wim Dassing, managing director of Apex Strip Curtains and Doors, says his brief was very specific, with an emphasis on ensuring optimal thermal conditions. "Most manufacturing facilities are uncomfortable at any time of the year because they are generally not built with insulation," explains Dassing. "This means that they are always too hot in summer and too cold in winter. Personnel huddle around heaters in winter and they sweater in summer, resulting in productivity dropping."

Sean Wall of Four Design + Architecture says that in addition to creating a pleasant all year round working environment, "We also needed to take cognisance of the fact that it is expensive to cool and heat such a facility. Instead of spending excessive money on heating and cooling, we took a joint decision to insulate the building. There is, naturally, a dividend to pay for this type of construction, but in the long term it will save the company money.

"We have introduced a number of design elements to facilitate the optimisation of natural light and heat. Elements such as radiant heat, evaporative air conditioning, double glazing - all standard features overseas - and wall, roof and floor insulation ensure ideal ambient temperature.

"Together with these energy friendly elements, the use of energy saving lighting adds to the total package. We often get requests to incorporate isolated energy efficiency products into a building, but this is the first time that a building's entire design has been centred around complete energy efficiency and optimisation."

### Wall, floor & ceiling insulation

Products used for the actual construction of the building, including all walls, floors and first floor ceiling, are made

from expanded polystyrene (EPS). "Global warming, rising energy costs and power supply issues are driving the building industry to find more energy efficient building product solutions. Expanded polystyrene consists of 98% air and has long been used as a thermal insulator," Wall expands.

"Elements such as radiant heat, evaporative air conditioning, double glazing and wall, roof and floor insulation ensure ideal ambient temperature."

"We sourced the products from Automa Building Products (ABP) as they have a range of practical solutions to address the energy and labour issues in South Africa."

The product chosen for the floor slabs, TASS (Thermal Acoustic Structural Slab), has a number of advantages including thermal and sound insulation, accuracy in moulding, cost competitiveness and light weight; with AutomaPolyblock being used for the construction of the building's walls. This hollow EPS building block acts as a permanent formwork for a reinforced concrete infill and is finished by using a proprietary EPS plaster, Polyplast.

In addition to its thermal and sound insulation properties, EPS is lightweight, moisture and fire resistant. It is safe to use and long lasting, whilst its versatility and ease of use also mean building work is completed faster.

EPS is used extensively as a thermal insulating material and performs this function in the slab, moderating building temperatures and reducing energy costs associated with heating and cooling. EPS also acts as a sound barrier and, in combination with the

concrete slab, mutes all sound waves that could potentially be transmitted through floor slabs.

A fire retardant grade of EPS is used to manufacture the TASS floor slabs and as a result they do not add to any existing fire hazard and will not contribute to the development phase of a fire and will not propagate flame.

TUFS, a 40mm thick, EPS under-floor thermal insulating system, will be used as an integral part of the ground floor slabs between the conventional foundation walls. TUFS prevents heat generated inside buildings being soaked into the ground and is particularly effective in improving the performance of underfloor heating systems. The roof has also been insulated with 15mm thick TUFS to ensure unnecessary heat loss.

Regarding the orientation of the building, Wall says that often the position of the building is dictated by the particular site with regards to fall of the land, site orientation and corporate visibility. "The North facing section of the building is designed in such a way that excessive heat is reduced and shading on the windows on both the North and West side of the building reduce any glare. In addition, we have recessed the double volume shop front to the ground floor and first floors to eliminate direct sunlight."

In keeping with tradition, Apex will be using a number of its own roller doors and strip curtains throughout the building including its Apex SR 9000 insulated impact traffic doors.

Adds Dassing: "Our products are all proven in the industry to reduce the influx of excessive external heat and dust, so they, of course, were a natural choice for us."

CVW

An artist's impression of Apex's new energy efficient facility.

