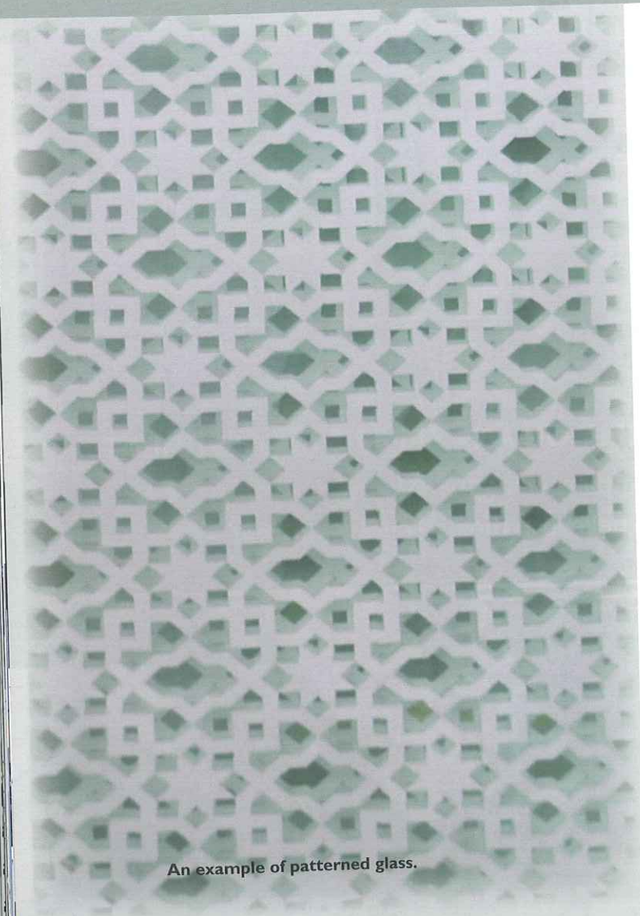
A cut above the rest



An example of patterned glass.

Imminent energy legislation will have a profound impact on how primary materials, such as concrete, steel, aluminium and glass are used in buildings. In fact, a second wave of change will see the glass industry revise the way it currently produces the material and its downstream use. The shift from designing aesthetically striking buildings will increasingly be replaced by designing high-performance buildings, explains PG Glass GM: architectural products Hugh Fraser.

Although glass production contributes less CO_2 in the world than concrete production, which contributes an estimated 5% of CO_2, glass, nevertheless, closely follows behind concrete.

Steel and aluminium, by comparison have a lower CO_2 footprint, largely because they are recyclable.

Moreover, escalating electricity prices will see attitudes change further, especially towards the more expensive double-glazed glass.

American and European countries have already taken to double-glazing, which is an environmentally more energy-efficient material.

"South Africans, however, are balking at using the more expensive double-glazed glass. Industry is going to have to spend money if it wants to deliver better-performing buildings," Fraser stresses.

"The area in South Africa that records the highest sales for domestic double-glazed glass is the Southern Cape, which, ironically, has one of the mildest climates in the country. Its sales are driven largely by foreigners – Europeans and Americans building there," he adds.

Buildings are one of the highest contributors to CO_2 levels, but clearly there is no way that people are going to stop building, so the alternative is to build more intelligently.

Glass's attractiveness, aside from aesthetics, is its low maintenance properties, which have seen the material evolve significantly over the last decade.

The high level of research and development from the US, Japan and European countries has led to technological developments that have increased the appeal for glass, and delivered opportunities to design beautiful and iconic buildings.

Where previously concrete or steel were used as the primary structural material, experiments using glass as a structural medium are proving to be highly successful in the development of avante garde designs, such as Nordketten in Innsbruck or Nordwesthaus in Bregenz – a precursor to what may, in the near future, become the norm rather than the exception.

Fraser anticipates that technological advances in the automotive sector will soon be replicated in buildings as a means to increase energy efficiency.

With the use of glass expected to increase significantly over the coming years, driven largely by the materials energy efficiency properties PFG – South Africa's only float glass producer – is well positioned to benefit from this growth.

In fact, over the past two years the company has invested more than R2.1bn in upgrading its processing facilities and acquiring state-of-the-art equipment and machines.

Last year the company spent R1.2bn on the installation of a state-of-the-art SP4 float plant and invested R600m in upgrading its SP3 float plant in Springs. "The PG Group of companies is well positioned to deliver energy-efficient technologically advanced products for the next 30 years," Fraser states.

In fact the company early this year purchased a Diptech machine costing some R4m from Israel. The equipment opens up massive opportunities to deliver patterned and decorative glass.

Since installing the machine at its Isando facility one of its first contracts was in producing patterned glass for Alice Lane Towers – a joint development between Zenprop and Tiber in Sandton, which is nearing completion.

GSA building division is currently fine-tuning the patterns that will be glassed for architects Bentel and Associates Legacy Group's Da Vinci Hotel in Sandton City.

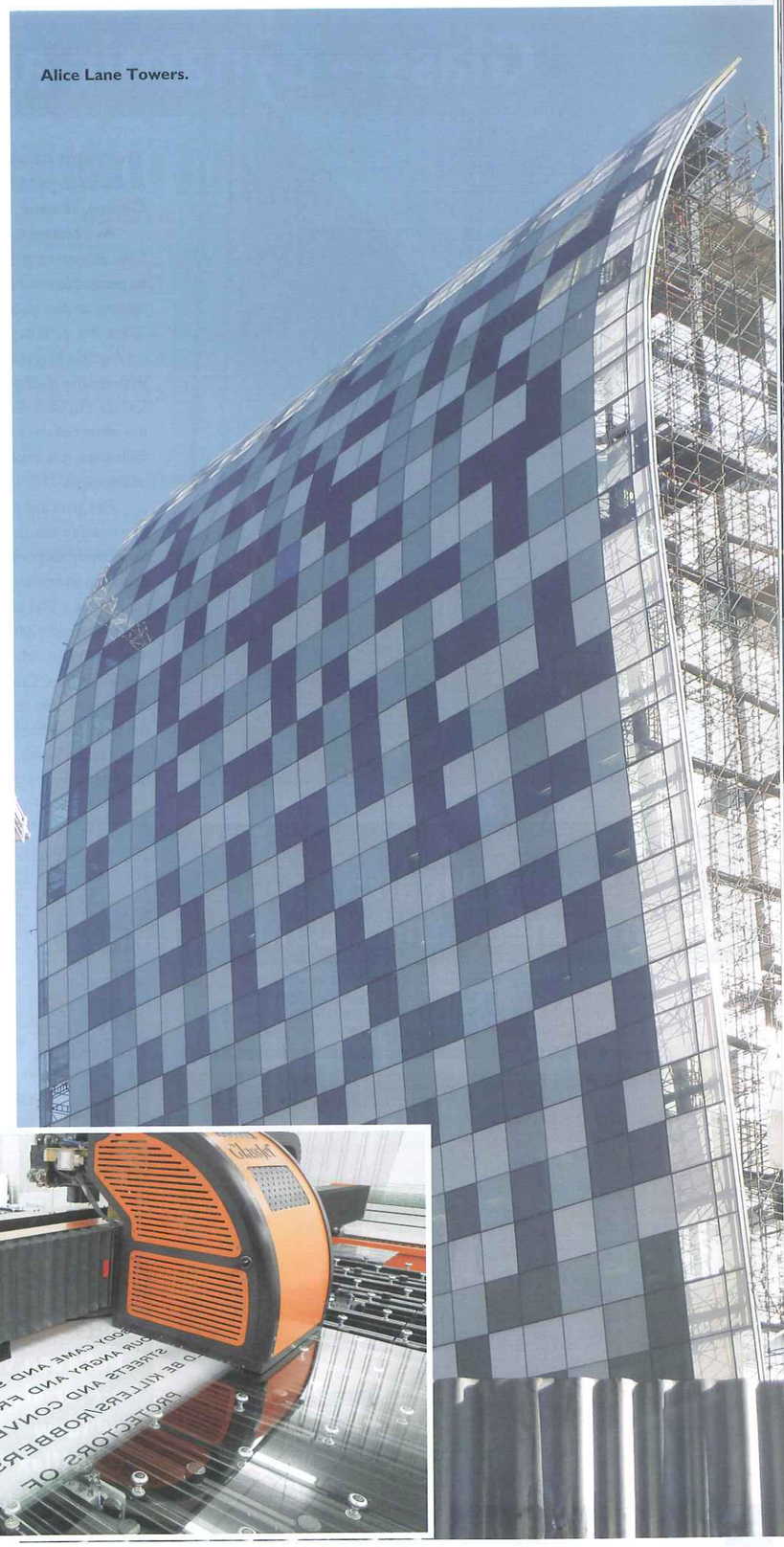
The application has both domestic and commercial possibilities for aesthetic and sun control purposes.

The company also delivered patterned glass for an office block on 12 Fredman Drive in Sandton.

Unlike previously, when patterns on glass had to be silk-screened, the new machine allows for any pattern, picture or icon to be transferred onto glass, which is then baked at 100°C and toughened at 700°C.

Although the company has been impacted by the recent economic slowdown, it has 'survived the storm quite well' and believes that, with Africa's growing infrastructure needs, future growth will happen north of our borders.

Angola, Kenya, Zambia, Mozambique and the Democratic Republic of Congo are significant growth nodes. ■



Alice Lane Towers.

Diptech machine.