Emotile image/photo used on commercial offices building. CERACASA offers a complete service of bespoke porcelain, winning the ALFA DE ORO award for the most innovative product.

Clad All Over

WORDS Anthony Stock

Peter Halliday's excellent article '*The tile industry of the future*' is regularly downloaded from the Archived Articles segment of www.infotile.com by numerous visitors. The article which appeared in Issue 40 of *Tile Today* touches on all the products and factors which were tipped to be of prime interest in the 21st century. Façade materials and related installation practices featured prominently, as did sustainable development.

Today, the two subjects are inextricably linked, by manufacturers seeking to emphasise the bioclimatic design benefits which flow from use of tile as a ventilated façade cladding.

The quest for sustainable development continues unabated. However, some observers believe that despite the fact that almost 500 Green Star projects have been completed in Australia, more could be done. A relevant article at designbuildsource.com.au stated that:

> '*compared to other developed countries — at least in terms of energy efficiency — Australia's current performance now ranks around the middle of the road. In a recent study by the American Council for an Energy Efficient Economy, Australia ranked sixth overall out of 12 of the world's largest economies based on 27 energy efficiency metrics regarding buildings, industry and transportation and national policy.*
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> *The scorecard indicates that Australia is doing reasonably well when it comes to buildings but less well in other areas such as transport.*
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> *Even in terms of buildings, however, a number of commentators say we have room for improvement.*
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> *"I think we still have quite a bit to do within individual building design before we can honestly think that we are consistently doing well at green buildings," says David Jarratt, director of WSP Built Ecology in Melbourne.*'

Perhaps the biggest problem relates to an inability on behalf of suppliers to convince specifiers, builders and developers about the necessity of using sustainable products. Unless or until suppliers can measure or perceive that they are losing business because they lack a sustainable alternative, they will hesitate about promoting sustainable materials which come with a heftier price tag.

Ann Gardner, a partner at iRubber, one of the leading suppliers of colourful ESD rubber flooring products in Melbourne, said that despite continued efforts to promote environmentally sustainable materials it is a difficult task. Ann told designbuildsource.com, "We seem to have no problem getting our 'green' rubber flooring specified all over Australia, but at the moment we feel quite stuck at getting our 'green' rubber flooring actually *ordered* and *installed*."

Gardner says price and resistance to change are key stumbling blocks. With regard to price, she says there have been a number of cases where architects and designers have specified environmentally friendly products but builders have changed them at the last minute. She also says that despite strenuous efforts to talk to builders about new, environmentally-friendly flooring products, 'they usually go with what they know.'

Manufacturers of sustainable ceramic cladding materials face a similar problem. In the aforementioned article Peter Halliday described the pursuit of sustainable development as follows:

> *'A major driver of the industry in the future is likely to be the global pursuit of sustainable development, or development that meets the needs of the present world without compromising the ability of future generations to meet their own needs. A growing emphasis on sustainable architecture will increase pressure*

on manufacturing companies, as architects look for environmentally responsible products to meet the design requirements of the 21st Century.'

In another key paper presented at Qualicer 2002, *Ceramic tile at the forefront of Architecture*, Richard Goldberg wrote, "the development of a new generation of engineered systems for the construction of tile facades will be the driving force behind growth in the tile sector in the 21st century." He pointed to shortcomings in direct adhesion with *in situ* adhered tile facades as this technique could not produce consistent and reliable, structural engineering values. This led to an interest in prefabricated, ceramic tile panels which can be prepared in controlled conditions off-site. The most promising method of tile facade cladding, however, according to Mr Goldberg, was the ventilated rain-screen method, which employs mechanical attachment of the tile. The technique lends itself to the precise engineering required for the advanced technology employed in 21st century building facades. The low weight to strength ratio, ease of cleaning, low moisture absorption and high mechanical strength that tiles have over natural stone and many other cladding or facing materials, will see more tiles utilised in this way, as architects take advantage of the larger size formats available.

Ceramic tile products are used extensively on walls and floors in residential and commercial tiling projects. The one area where growth has been relatively slow is in construction of tiled facades. However, contemporary mechanical façade installation systems coupled with new lightweight materials like Laminam 3m x 1m x 3mm panels of porcelain and a growing number of self-cleaning tiles that actually clean the air by removing pollutants from the atmosphere should lead to a change.

In Peter Halliday's *The tile industry of the Future*, Franco Stefani, Chairman of equipment producer System S.p.A, and president of the Association of Italian Ceramic Machinery and Equipment Builders (ACIMAC) said the future of ceramic applications does not mean exclusively focusing on tradition, but giving the imagination room and inventing new horizons of use. Speaking at the Qualicer 2002 roundtable conference, he observed that previous decades had concentrated on the use of ceramics in the home, with few exterior uses except for decorative purposes. This led Mr Stefani to observe the large external surfaces in urban architecture. A good comparison he felt was the use of large glass surfaces on buildings. At the beginning of the last century, glass was only used in small areas. This was due to its high cost, impossibility to produce in large sizes and the difficulty of installation.

The Ishtar Gate, the eighth gate to the city of Babylon, built by Nebuchadnezzar the second around 575 BC, featured glazed bricks. Now housed in the Pergamon museum, Berlin.

New Banco Popular headquarters designed by Ayala Architecture features a ventilated facade made from extruded stoneware (ceramic) cylinders.

Children's Education and Innovation Centre. Four Square Arquitectos, Ceramic facade by Natucer.

Ceramic facades created in the 1950's at the University of Mexico Central library and the School of Medicine (Mexico).

When the constraints of the production process and application were removed, the use of great glass surfaces became fundamental in modern urban structures. System's Laminam overcomes past manufacturing size limitations, with the production of lightweight porcelain panels, 3 x 1m in length and only 3 to 8 millimetres thick. One of the true revolutions in the industry, Laminam was intended to take ceramics into many areas where they had not been used in the past. Franco Stefani believes ceramics manufacturers should strive to integrate this new type of application, along with traditional uses. The Italian and Spanish tile associations, Confindustria and ASCER, are both promoting the use of tiles in urban architecture and see a large future for ceramics as an external building cladding material.

A change is taking place

Ten years on, Laminam, the brain child of Franco Stefani, is being distributed by four suppliers in virtually all states and territories. Around the globe Laminam products are gaining a strong foothold in a number of key markets. As a consequence, many of the world's leading tile manufacturers have developed thin product in a variety of formats and thicknesses. These slim products are ideal for use in tile on tile renovation projects. However, the prime goal is to inspire architects to specify lightweight materials like Laminam, for use on building facades, especially as an integral component of a ventilated mechanical façade system.

All the excitement created by the emergence of giant thin panels that can be customised to precise dimensions for internal or external use, and radical new products that literally clean the air, is naturally accompanied by a degree of uncertainty, but the fact remains that these products are being used far and wide for a variety of purposes that range from simple resurfacing of doors and table-tops to covering the façade of a growing number of buildings, particularly in Sydney's CBD.

Use of ceramic material as cladding dates back to antiquity, to the fabulous cobalt blue ceramic blocks used to clad the walls of King Nebuchadnezzar's Ishtar Gate. Incredible historic examples of ceramic art applied to building facades exist on virtually every continent. Today, a combination of thin-tile production processes, allied to digital ink-jet printing processes has the potential to revolutionise the appearance of our built environment.

Ceramic façade materials do not have to be thin, in fact, they do not even need to be flat. Flat or three dimensional, the durability and ease of maintenance are critical factors in the whole equation. The capacity of tile to provide protection against the sun, and harsh weather conditions, while providing a double-skin designed to promote excellent bio-climatic performance inside is the prime advantage.

Huge 3m x 1m x 3mm, lightweight (21kgs) panels of Laminam porcelain form a stunning facade.