

PROJECTS

STEEL CLADDING TREND HEIGHTENS AESTHETICS, ENERGY SAVINGS AND SAFETY

As the custodians of quality and technical excellence locally and pan-Africa, the Southern African Institute of Steel Construction (SAISC) has highlighted the trend of the increasing innovative use of steel cladding to enhance the architectural ornamentation of buildings in South Africa - and the myriad benefits of this durable, energy-saving and environmentally-friendly building option.

Steel cladding has always been the dominant material for industrial buildings, albeit purely functional rather than aesthetic - however, it is increasingly being installed as both roof and side cladding on upmarket residential and commercial buildings across the country, explains SAISC CEO Amanuel Gebremeskel.

The SAISC is one of just six similar industry professional bodies globally which is strategically positioned to track and understand key steel sector trends.

Gebremeskel explains the rising trend: "Architects are really delving into what can be done with steel cladding materials in a way that propels the industry towards (much-needed) energy conservation, environmental sustainability and improved aesthetics of buildings - and entire built environments - for the benefit of local communities and businesses, as well as the entire steel value chain."

Aesthetic appeal and environmental benefits

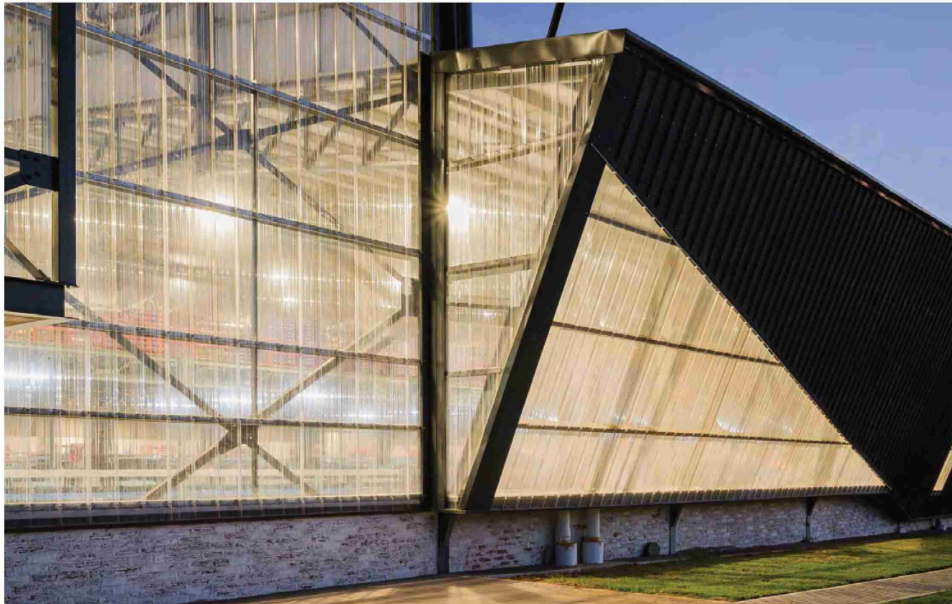
Gebremeskel notes that South Africa has already been ahead of other global players for decades, as on-site steel rolling

for cladding purposes was a local innovation back in the late 1960s and early 1970s.

"More recently, sky rolling has been introduced to facilitate the rolling of exceptionally long, single lengths of cladding directly onto the roofs of structures. A local profiler recently achieved the world record for a single length of 240 m."

However, Gebremeskel points out that architects and developers have now embraced both the aesthetic appeal and environmental benefits of steel cladding, including its energy-saving fire-resistant properties.

"Developers have discovered that architects can make a big difference with cladding from a visual perspective, which is increasingly regarded as being worth the extra cost. Industrial buildings previously, for example, involved minimal design work, and were built largely to be functional 'boxes'. The innovative use of cladding makes them more distinctive and aesthetically pleasing. From an energy-saving perspective, the use of insulated metal cladding is still in its infancy in South Africa in this regard, but we are



seeing examples coming through, which is an encouraging sign and a good value-add to the use of cladding for purely aesthetic reasons," he says.

Gebremeskel adds that this trend was evident at the 2022 Steel Awards, which showcased several uses of cladding across categories, including in homes, offices and warehouses.

"It is exciting to see architects increasingly using significant amounts of cladding in innovative ways in the design and construction of large warehouses, a trend which has been evident for some five to six years," says Gebremeskel.

One such project, a citrus processing warehouse located in the Eastern Cape, which used steel cladding in its roofing, won the Popular Choice vote at the Steel Awards event. Due to the unique combination of steel cladding and vents this building does not require any artificial heating or cooling, saving energy costs and cutting carbon emissions. Another high-profile project was 108 Albert Road, Woodstock: an urban renewal development in Cape Town, which involved the stripping of the existing external brick walling, the addition of two storeys of lightweight steel framing - and then enclosing the entire structure with metal cladding.

"The design plan was to add additional storeys above the existing office space, re-cladding the structure and unifying the design through fenestration and balcony cut-outs. Of note is that all the brick walls in this project were converted to light steel frame studs with steel cladding. This greatly assisted in the reduction of the building weight, allowing for the additional storeys, while not adversely affecting the seismic behaviour of the building. Seismic load is directly proportional to weight - and Cape Town sits in a moderate seismic zone. The transformation of the building lifted the tone of the entire neighbourhood which was previously quite depressed," he explains.

He adds that the use of insulated panels also presents a significant growth opportunity and that these are already being used in the local steel construction sector.

"Another opportunity lies in energy conversion methods that could use solar photovoltaic (PV) panels to create cladding. There is significant research and development being invested into this arena, and it is anticipated to

become more cost-effective over the next few years," he says.

Overall, Gebremeskel believes the market outlook for steel cladding is 'positive' in the short- to-medium term.

From aesthetics to fire prevention

"South Africa is experiencing growth in the number of data centres being developed around the country. These require the construction of large buildings for which metal cladding is generally used. The same trend is evident regarding the need to build automated warehouses for imported goods. The prospects for cladding and large buildings are accordingly positive," he says.

Steel cladding also presents the steel industry globally with interesting research opportunities on the use of these materials in informal settlements - as various forms of cladding have traditionally been a fire prevention or retardation measure.

Gebremeskel explains how the SAISC's fire research centre at the University of Stellenbosch has attracted global attention for its research into the use of fire preventing metal cladding panels: "The SAISC's fire research centre at Stellenbosch university is involved in investigations into cladding systems that can actually slow down or stop the progression of fires in informal settlements. The strategic use of aesthetically-pleasing, safe metal cladding could also assist in the refurbishment of buildings in the Johannesburg central business district (CBD). The relationship between fires and cladding is a major and much-needed research topic around the world," he points out.

With the rapid trend towards a preference for steel cladding, Dennis White, Executive Director of the Southern African Metal Cladding and Roofing Association (SAMCRA) a sub-association of the SAISC - has for the past ten years been developing local product specifications and standards to ensure product quality.

Specifications and certification

"Our technical industry experts have been working on product specifications and certification to create a reliable testing regime for cladding properties, such as wind and gravity-induced loads, and to develop technical standards for products and the installation thereof.

There were previously only outdated, adopted basic standards for cladding - but now as an industry we have been able to contribute to this vital technical aspect of product certification," he says.

Gebremeskel adds that these new technical specifications will improve knowledge of quality among steel sector professionals, helping to raise standards and root out the use of cladding materials which are substandard or non-compliant. This is particularly relevant in the design of cladding for informal and low-cost developments where houses are typically built close together and therefore present a greater fire risk.

"We will be hosting a series of online and in-person technical question and answer (Q and A) sessions and seminars of interest to engineers, architects and other steel construction industry professionals, to highlight the technical aspects of quality and safety regarding cladding and fasteners and the new specifications in 2023.

In summary, the use of steel cladding will continue to be used extensively bringing with it impressive energy-efficiency, safety and aesthetic improvements to the built environment - provided the correct standards of safety and quality are adhered to," he concludes. ©

