

CONSTRUCTION It is fast and promotes preservation of the environment

Build smart with steel trusses

BY RITAH MUKASA

A strong structure does not necessarily have to be built using bricks, cement and sand. A trendy homeowner can have a durable house built with light gauge steel trusses.

This is also called a smart frame and is a more appropriate and sustainable approach to environmental preservation.

According to Deogracious Mwesige Bakole, a business development engineer with Builder's Yard, located in Nakawa Industrial Area, a smart frame is a green method of construction using cold formed steel.

"It is revolutionising the way buildings are created due to the fact that it can easily be recycled," he explains.

Apart from residential homes, the system can be used in the construction of schools, community centres and commercial buildings such as warehouses and apartments.

How it works

The smart frame comprises different steel sections, connectors and bolts. Bakole says the steel sections are made from steel coils coated with a protective coat of Zinc that forms a protective barrier against corrosion.

"The system is simple and easy to fix due to its bolt connection joints and all parameters are laboratory controlled, done by a machine," he explains.

The steel structure is 0.55mm to 1.55 mm thick and can be used with any roof covering material.

Bakole adds that since the smart frame can have a unit weight of 0.482kg to 1.73kg per running metre, it can be used to construct up to three floors.

The steel is fast to fabricate and the only site activity is

HOW IT IS DONE

Deogracious Mwesige Bakole, an engineer, explains that once they receive architectural drawings from a client, the structural designer designs the structure.

After providing the structural drawings, they prepare quotations, all done free of charge.

"In some cases we visit the site to obtain the dimensions in case changes were made or to obtain any other important data," Bakole says.

What follows is preparing the trusses and installation thereafter.



EXPERT
Deogracious Bakole

the assembly of various steel parts, which is done quickly through bolting.

Less skilled labour is required on site, which makes it cost-effective.

Meanwhile, after designing, the product is either cut into sizeable structural elements or transported to site for assembling. It can also be assembled in the factory and sent to site for installation in neat packs.

Truss members are screw-fastened using self-tapping screws and a screw gun.

Ready trusses are then stacked together before lifting them.

However, the material is stackable in such a way that large numbers of components can be stacked into relatively small, light bundles.

A complete roof can be transported on a single truck, cutting down transport costs, unlike the conventional timber solutions that have to be stacked together on site.

Why a steel structure
Anil Sankaran, a steel

expert, says a smart frame is an affordable solution for building low cost residential houses, hotels, villas, hospitals and hostels.

"You do not need bricks, cement, sand or heavy labour. All you require is manpower at the site to install the structure," he explains.

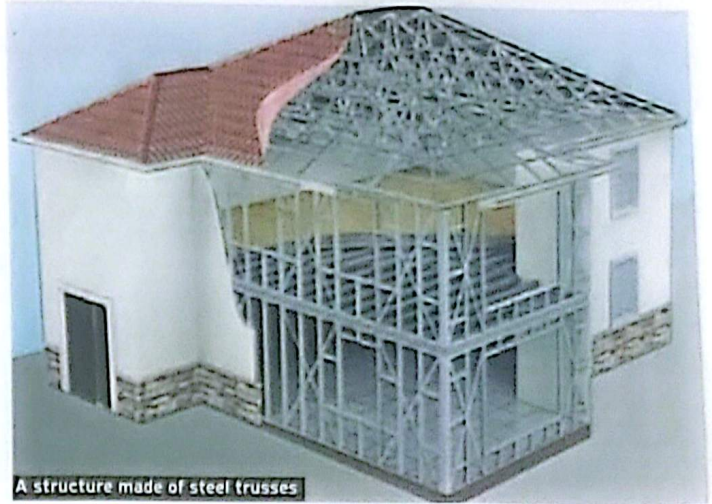
A smart frame encourages the construction of inclusive, safe and sustainable towns and human settlements. It can also be recycled.

"This kind of construction promotes preservation of the environment, hence tackling the challenges of climate change," Sankaran says.

The speed of construction using smart frame is also fast compared to traditional methods.

"Due to its ability to be prefabricated in the factory or off-site, the speed and quality of construction is greatly enhanced," Sankaran adds.

Besides, the system provides better quality buildings with neat edges, heat insulation, waterproofing and sound insulation.



A structure made of steel trusses

According to Bakole, there is also versatility of design; It can be combined with other traditional products such as wood and shipping containers during construction.

It can also be used for any shape and type of roof, with all kinds of roof covers such as iron sheets, clay, concrete and stone-coated tiles, among others.

Besides, the steel trusses provide a leveled and properly aligned roof because the trusses are well-fabricated and light.

Meanwhile, a smart frame creates less solid waste since machine cutting is done within the factory.

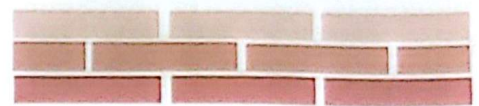
Apart from providing healthier and more sustainable buildings, this technology allows for easy modifications and dismantling. It can be re-used on another site when removed carefully.

"The system is highly resistant to fire and rusting due to the 0.04mm zinc coating," Bakole says.

There is no deterioration of quality from long exposure to weather, therefore no maintenance costs and treatment is required.

The smart frame is cheap when evaluated in terms of its cost-life span perspective; it lasts for a life time.

Nevertheless, the impact of weight on the design of heavy foundation for the building is reduced, hence saving on



The limitations

However much one wishes, they cannot use bricks or blocks for internal walls, starting from the first floor onwards. The maximum roof span is 14m when compared to hot rolled steel.

The floor decking clear span is only 6m, which cannot be used in areas with dynamic loads such as in night clubs, vibrating machines, among others. A smart frame cannot work for a building that is more than three floors.

cost of the foundation for new buildings.

Clients are relieved of stress because much of the work is

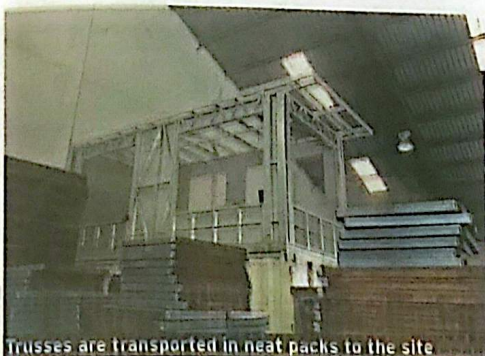
done in the factory and thus eliminates the need to invest in heavy security to protect the materials at the site.



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Trusses are transported in neat packs to the site



The steel trusses are versatile; they can be used with other construction materials