

Smart frames: The latest construction technology

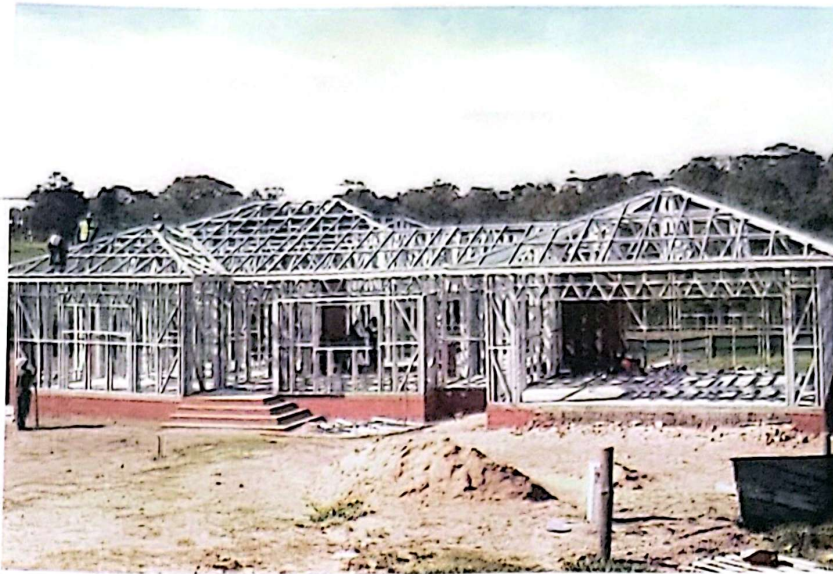
A smart frame is the latest technology used in construction. It is a complete building solution, which involves use of cold formed steel. Here are the advantages and limitations of this equipment.

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Investment in the housing sector has been minimal over the years leading to inadequate housing in both rural and urban areas, highlights the 2016 Uganda National Housing Policy.

Further, it mentions that urban areas have an extra burden of inadequate quantity leading to overcrowding and creation of slums and informal settlements while the rural areas have mainly a problem of quality of the houses.

Over the past years, respective house developers have come up with a number of resolutions to solve these issues including creating a smart frame mode of housing to cater for efficient use of space while building.



A steel house under construction. Steel framing has structural integrity, which means it stays straight and most importantly, safe. NET PHOTO

are screw fastened using self-tapping screws and a screw gun. The assembled binds are stacked together before lifting them onto the roof and joined together to form a roof," Mwesigye says.

Advantages

- Mwesigye says smart frames are cheap. "The lifespan perspective as well as the impact of weight on the design of heavy foundation for the building is reduced, hence saving on cost of the foundation for new buildings. Less labour is also required thereby reducing cost.
- The system provides better quality buildings, neat edges, heat insulation, water and sound insulation.
- There is an enhanced quality and speed of construction as compared to traditional methods. "Steel is faster to fabricate and the only site activity is the assembly of various steel parts, which is done quickly through bolting," Mwesigye says.
- In addition, the client is relieved of stress. "This is because much of the work is done in the factory thus eliminating the need to invest in heavy security to protect the material," says Mwesigye.

Limitation

Willis Otto Olanya, an architect, notes that smart-frames cannot work for buildings that are beyond three floors and also, its not applicable for use in areas where there are dynamic loads for example, night clubs.

How it works

Deogracius Bakole Mwesigye, the business development engineer at Builder's Yard, a company involved in the distribution and supply of building materials, says the smart frame (a light gauge steel) is a method of construction that uses cold formed steel and is revolutionising the way buildings are created because it can be easily recycled.

"It comprises different steel sections, connectors and bolts. The steel sections are made from 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," Mwesigye says.

There is an estimated backlog of 900,000 housing units as a result of sub-standard houses and structures which are unsuitable for human habitation.

Anil Sankaran, the Builder's Yard corporate manager says the smart frames mode of housing will go a long way in solving some of Uganda's housing problems.

Transportation and installation

After designing the smart frame, the product is either cut into sizeable structural elements or transported to site for assembling.

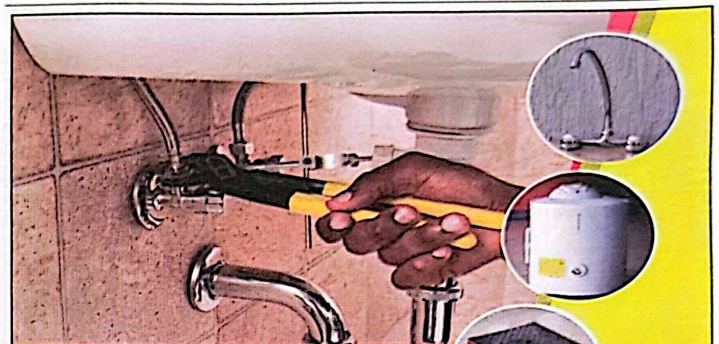
"When it comes to installation or roofing, the material is cut to size and then delivered to site in neat packs. Then, truss members

MORE ADVANTAGES

- Low maintenance: structure not subject to damage, cracking or rotting.
- Galvanized (zinc coated) steel resists rust & corrosion.
- Earthquake-safe: lightweight and flexible, meets all seismic requirements.
- Suitable for windy conditions.
- Thermal efficiency means significant energy savings.
- Moisture resistance means less mold problems caused by rain, humidity condensation.
- Termites don't like steel, and tightly sealed joinery reduces bug infestations.
- Steel is non-combustible and won't contribute to a fire's spread.



The smart frame. PHOTO BY ESTHER OLUKA



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