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Prefabricated Building

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PREFABRICATED BUILDING

THE NEED

With the continuous demand for construction of new buildings, an easier, more sustainable, energy-efficient and environmentally friendly building method is necessary to save time, energy and cost. Hence, there has been an increasing need for a system such as BROAD sustainable building (BSB). There have been prefabricated parts of buildings used in construction but an entire prefabricated building had not been uncovered previously.

THE TECHNOLOGY

A form of prefabricated building by BROAD Sustainable Building Co., LTD (BSB). It consists of flooring and ceiling, embedded shafts of ventilation, water supply & drainage, electricity and lighting. Other items include pillars, diagonal bracings, doors, windows, walls and sanitary wares, air conditioning, air quality products, lifts, building thermal insulations. The components of the BSB are prefabricated and installed onsite and consist of the following (Council on Tall Buildings and Urban Habitat, 2014):

The floor slab is made up of a concrete-filled, profiled steel sheet, which is affixed to steel beams – this creates a “board” module.

Columns support the board; diagonal bracing is set between beams and columns. Heavy construction members are joined by high-strength bolts on-site.

The link below shows the video of a 30-story hotel building being built in 360 hours. Some features of this building include:

- 9 magnitude earthquake resistance, compared with conventional steel buildings, the steel consumption is 30% less and concrete consumption is 80~90% less.
- 5 times energy efficiency, free from sick building syndrome, 10%~30% lower in cost than conventional methods
- 100% filtered fresh air, no cross contamination
- Air quality monitor & energy consumption can be visible in every room 24/7, the building automation level is even higher than that of the most advanced smart buildings
- Amazing construction speed, while zero injury during construction process.

- Perfect construction quality, while no fire, no water & no dust (no welding, no concrete, and no polish with emery cloth), construction waste is less than 1% of that of conventional buildings.
- The 30-storey hotel was built in 360 hours to avoid the rainy season.

VIDEO CLIP: [30-story building built in 15 days](#)

FIGURE 1 30 STORY HOTEL BUILDING IN 360 HOURS, 48 DAYS FROM GROUNDBREAKING TO OPENING

FIGURE 2 30-STORY HOTEL AFTER CONSTRUCTION

THE BENEFITS

Sustainability originates from 8 aspects: earthquake resistance, energy conservation, air purification, durability, material saving, recyclable construction materials, construction materials free of formaldehyde, lead, radiation & asbestos and no construction sewage, dust or wastes. BSB has accomplished the extremity

of these 8 aspects. It provides factory-made sustainable buildings with Level 9 earthquake resistant, with 6 times material less, 5 times energy efficient, and 20 times air purification.

STATUS

BSB constructed the world's first factory building, which avoided construction risks such as: Risk of design quality, Risk of construction quality, Risk of construction budget, and Risk of construction delay. BSB Prefabricated Construction Method was recognized as an *"Innovation Award Winner in the 2013 CTBUH (Council on Tall Buildings and Urban Habitat) Awards Program"*.

BARRIERS

Not known

POINTS OF CONTACT

BSB International, Broad Sustainable Building Co., LTD (BSB), Changsha, Hunan, China
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REFERENCES

BROAD GROUP. (n.d.). Retrieved August 21, 2015, from <http://en.broad.com/index.html>

REVIEWERS

Peer reviewed as an emerging construction technology

DISCLAIMER

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