

Boosting productivity, room by room

Construction's future lies in productive tech such as pre-finished rooms, says minister

FEB 12, 2016



Crowne Plaza Changi Airport's new 10-storey extension being built using the more productive Prefabricated Prefinished Volumetric Construction technology. PHOTO: CROWNE PLAZA CHANGI AIRPORT

It will take just a month for the top nine storeys of the new Crowne Plaza Changi Airport hotel extension to rise, as its rooms are stacked and slotted together like building blocks.

Complete with carpeting, lighting and even bathtubs, the rooms were shipped over from a factory in Shanghai to be assembled on-site.

Using this prefabricated pre-finished volumetric construction (PPVC) method, 112 out of 252 modules have already been installed.

The extension is expected to be fully completed by June, as more work will be required on the roof.

Such productive technology is crucial for the future of Singapore's construction industry, National Development Minister Lawrence Wong said during a visit to the site yesterday.

"We cannot possibly build our future infrastructure using the old ways of relying on more and more foreign workers," he told reporters.

Stacking up

Entire hotel rooms are built and fixtures added overseas, then shipped here to be assembled for the Crowne Plaza Changi Airport hotel extension. This prefabricated pre-finished volumetric construction method allows for strict quality control in factory conditions, and saves time and manpower on-site.

1 The steel structures of the rooms are manufactured in a fabrication plant in Shanghai. In another factory there, the rooms are fitted out and finished, complete with carpet, lights, shelving and even bathtubs.



2 The completed rooms are shipped to Singapore.



3 The rooms are stacked together and installed on-site.



4 Minister for National Development Lawrence Wong is shown one of the pre-finished rooms that has been installed. The fittings, from carpet to lights, were already present when the room arrived in Singapore.



5 An artist's impression of the 10-storey extension, due to be completed by June.



EXTENSION WING OF CROWNE PLAZA CHANGI AIRPORT HOTEL

Number of rooms

243

Size of each room

28 sq m

PRODUCTIVITY GAINS

40% fewer workers needed on-site

3-4 days

to construct one storey, compared with 14-21 days for conventional methods

Overall productivity boost of about 45%

Sources: BUILDING AND CONSTRUCTION AUTHORITY, DRAGAGES SINGAPORE PTE LTD Photos: ALPHONSUS CHERN, DRAGAGES SINGAPORE PTE LTD, OUE LIMITED ST GRAPHICS

The PPVC method has also helped overcome constraints of the building site, noted Ms Irene Meta, senior vice-president of development and projects at OUE, the developer of the project.

The site is small and access is limited owing to its location in the airport. Delivery traffic to the worksite is allowed only from 10pm to 5am. But PPVC requires much fewer vehicle trips - 300, compared with 1,250 for conventional building methods. As less work is needed on-site, the small site area is less of an issue. Assembly of the modules is also quieter, which means less disturbance for hotel guests. "So we felt that, overall, this project was very suitable for the use of PPVC," said Ms Meta.

The 10-storey, \$82 million extension will have 243 rooms, adding significant capacity to the existing 320-room hotel.

The first stage of construction, from the foundation to the floor of the second storey, took about 10 months. But installing individual modules that comprise the remaining floors will take just one month.

That still leaves three months more of other construction work, such as installing the roof. But the time taken on-site, from the second storey onwards till completion, is cut to four months, compared with 12 months otherwise.

And less manpower is needed - 36 workers, down from 60.

While manufacturing the rooms in Shanghai took seven months, said Mr Thierry Brezac, project director at construction firm Dragages Singapore, factory production has benefits such as strict quality control and better working conditions.

The PPVC method is expected to boost the project's overall productivity by about 45 per cent.

Building and Construction Authority chief executive John Keung said the project could serve as an example of what the PPVC method can achieve. "We hope we can build up the expertise here, whether it's architects or contractors or developers, to give this technology a big push," he said.

Source: The Straits Times © Singapore Press Holdings Limited. Permission required for reproduction.