

## InnoCell

### Hip Hing Engineering Company Limited

#### ORGANISATIONS TO BE CREDITED

- Hong Kong Science & Technology Park
- Leigh & Orange Ltd

#### PROJECT LOCATION

HKSTP, 1 Chong San Road

#### TYPE OF WORK

Building Construction

#### PROJECT TIMESCALE

6 AUG 2019 to 31 DEC 2020

#### INTRODUCTION OF PROJECT

InnoCell is the first Modular Integrated Construction (MiC) high-rise building completed in Hong Kong, it demonstrates a revolutionary game-changing breakthrough in our construction industry. BIM and DfMA integrations are widely adopted to unlock efficiency in the whole building life cycle. Digital applications including Virtual Reality (VR) and Augmented Reality (AR) are used to facilitate construction safety training and architectural visual rendering; drone scanning and GIS location system for MiC delivery simulation; 3D printing, 4D simulation and 5D BIM payment system for better visualisation on works; robotic aids and digital work supervision system (DWSS) to centralise progress records, as well as 360-degree camera captures and sensors in connection with Internet of Things (IoT) for handover to facility operators.

#### THREE WINNING FACTS

**A Pioneer Demonstration of MiC & DfMa to the Industry, evolving from fragmentation towards integration**

InnoCell's MiC adoption has demonstrated a transformation of fragmented site-based and multi-trade construction towards industrialised construction. Full integration of BIM was proven to be effective in order to provide holistic building information for the construction and operation

teams. It allows all parties to clearly identify area of concerns in well-advance and make necessary adjustment to cater a higher degree of buildability. Facility management team can quickly identify faulty parts for replacement and allow a shorter downtime of building operation.

#### Achieving Impossibly Fast Track Construction Cycle & Safe Work Culture

In total 418 MiC modules assembled the 17-storey building, where installation of modules were completed in merely 71 days. On a typical floor with 30 modules, a fastest 2-day floor cycle installation record was accomplished.

Furthermore, a bottom up concept, Design for Safety, was also adopted prior to the commencement of MiC mass fabrication, where provisions are reserved back in factory for future direct fixture of temporary fences and fall arrestors. This greatly reduces the risks that might occur when workers try to do safety provisions for others, yet, exposing themselves in the least protected situation in danger of falling from height.

#### Innovated and led by the young generation

Project team among consultants and contractors overall ages range below 35-year-old, innovative ideas are sparkled and new gadgets adoption are promoted. For instance, in order to streamline the inspection report and paper-work record procedures, a cloud-based supervision system was commissioned in early stage. Staff stationing at the MiC factory in China conduct quality check and record via the system, while review and comment could be given by Hong Kong team simultaneously. Given more adoption of digital and smart devices, difficulties occur at the factory can be addressed in a fast pace, cross boarder and off-site management become much easier.



InnoCell project was led by the young generations.



InnoCell, 1st MiC high-rise building completed in 14 months.



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## INTERACTIVE VR SAFETY TRAINING

Digital applications including Virtual Reality (VR) and Augmented Reality (AR) are used to facilitate construction safety training.