# BIM Can Do For Bamboo Too

COMPANY
**CLP Power Hong Kong Limited**

PROJECT
**Refurbishment of External Façade at CLP Shatin Centre**

LOCATION
**6 On Lai Street, Shatin, New Territories, Hong Kong**

TYPE
**Building Refurbishment**

SCHEDULED TIME OF COMPLETION
**2016**

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— **Mr C.L. Mak**
Deputy Director
- Substation Implementation,
CLP Power

BIM PARTNERS INVOLVED

**David S. K. Au & Associates Limited**
**isBIM Limited**

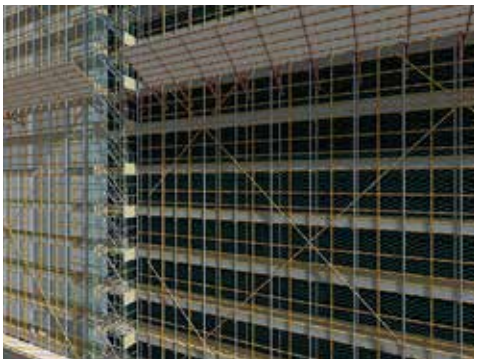
General view of CLP Shatin Centre (with Bamboo Scaffolding) in BIM
Image courtesy of CLP Power Hong Kong Limited

**CLP Power finds that BIM delivers benefits even when employing seemingly humble bamboo scaffolding to refurbish a building façade.**

To repair the external wall of a high rise building, CLP Power needed to erect scaffolding that would be around 120m high, for workers to inspect and repair the external wall of the building. They adopted BIM to tackle the many challenges.

## BIM for safety and cost management

After a survey and assessment revealed the need to improve the situation with the external wall of their Shatin Centre, CLP Power anticipated a variety of challenges - notably, ensuring safety. Rather than keeping to traditional methods for a project of this type, they opted to use BIM.



Bamboo scaffolding with metal staircase in BIM
Image courtesy of CLP Power Hong Kong Limited

"Usually when BIM is employed for a new project, it's for a mega project," observes Mr C.L. Mak, Deputy Director - Substation Implementation, CLP Power. "But we have unique business needs, and put safety as top priority. This type of work is high risk, and another priority is cost management. We wondered: could we employ BIM to address the two areas? We tried, and found it very useful."

The project team conducted an infra-red survey in advance to have a high level estimate on how many tiles needed refurbishing. However, an accurate assessment by other means is reviewed to quantify the refurbishment work and scaffolding work required.

## Surprising with safety first approach

"We used a BIM based system to optimise the scaffolding, and found which was best for the project in terms of stability, safety and cost," says Jackson S.K. Chung, Engineer I, CLP Power. "This was a hybrid system with metal and bamboo scaffolding - primarily bamboo, but for critical places and stability we employed metal."

Bottom view of CLP Shatin Centre (with Bamboo Scaffolding) in BIM
Image courtesy of CLP Power Hong Kong Limited

Both the main and subcontractors were amazed by CLP Power employing BIM to help them work safely. "We want to show the extent we care, and used this project as a chance to learn best practices," says Mak. "We used video files - with simple animations - for discussions, and found that younger workers were more accepting of new things like this."

A lot of people who were involved in the project visited the construction site, to check progress - and Mak says they were encouraged to go out onto scaffolding. Before doing so, they were given training, with the BIM model used to show what they were going to do, without which it would have been too much of a risk to walk out.

Proper access with fire escape sign inside Bamboo Scaffolding
Image courtesy of CLP Power Hong Kong Limited

Jackson was among project team members venturing onto the scaffolding, and says, "We felt more comfortable thanks to employing BIM technology."

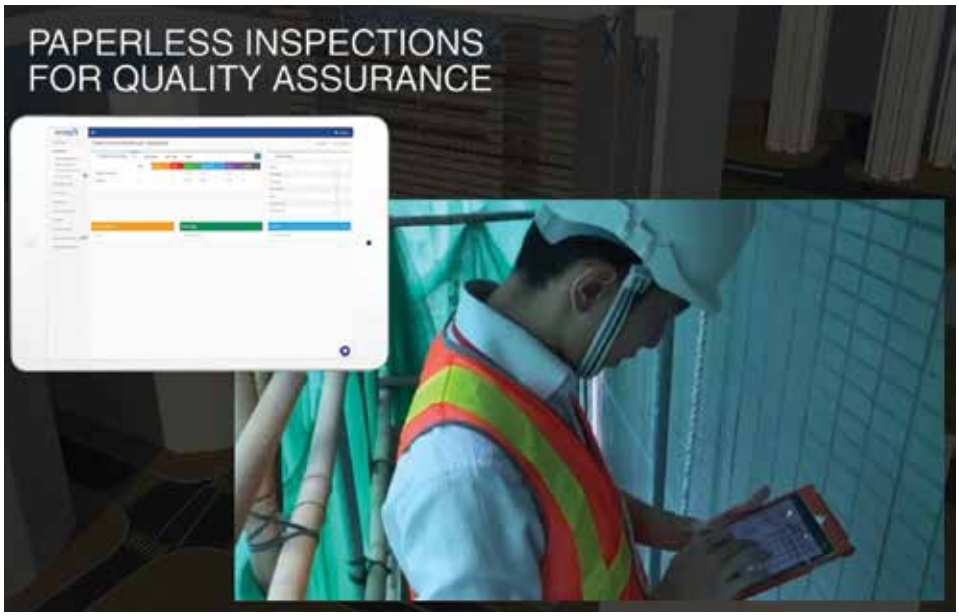
## Monitoring costs, and informing stakeholders

As work proceeded, information was added to the BIM model, allowing the project team to closely monitor refurbishment work, and use data to prioritise issues.

"When tiles were refurbished on site; we updated the BIM model for cost monitoring," says Arras Yeung, Architect, CLP Power.

Also, before the scaffolding was erected, the BIM model allowed close calculations of actual numbers of metal and bamboo poles, and couplers, that would be needed - and the quantity take off allowed peace of mind regarding the scaffolding cost.

Virtual models of the work enhanced communications within the project team, and with stakeholders - such as through a virtual model of temporary precautionary and protection measures at entrances of the building, to better inform building occupants.




Paperless Inspection by Electrical Recording System
Image courtesy of CLP Power Hong Kong Limited


Sharing of BIM with frontline staffs during Regular Progress Meetings
Image courtesy of CLP Power Hong Kong Limited

## On schedule, and a showcase for the future

As well as planning safety, the BIM model ensured the project team could keep to a tight schedule, with 3D animations clearly showing how work would progress. The project was completed within five months, ending well in advance of typhoon season.

"CLP Power is responsible for the whole asset life cycle of the Shatin Centre," says Jackson. "Now, we can build up the BIM model with more information, to cover more of the building life cycle."

CLP Power also aims to promote this project to the industry, especially showing how BIM can help with safety. "We want to challenge the belief that BIM is only for mega projects," says Mak. "It matches our values, our concern for safety. The subcontractors really appreciate our work, which has been eye opening for them."

Covered walkway to enhance safety of pedestrian in BIM
Image courtesy of CLP Power Hong Kong Limited

## About CLP Power Hong Kong Limited

CLP Power Hong Kong Limited ("CLP Power") is a Hong Kong utility subsidiary wholly owned by CLP Holdings Limited, a company listed on the Hong Kong Stock Exchange and one of the largest investor owned power businesses in Asia. CLP Power operates a vertically integrated electricity supply business in Hong Kong, and provides a highly reliable supply of electricity and excellent customer services to 6 million people in its supply area.