

**Technical Visit To GAMUDA IBS Sepang Engineering**

by Ms. Wong Ai Ming

Ms. Wong Ai Ming is currently a committee member in Civil and Structural Engineering Technical Division (CSETD).

CSETD organized a technical visit to GAMUDA Industrial Building System, Sepang on 15 March. Total participants are 15 pax. The delegates when arrived, were greeted by En Mohamad Hafiz, Senior Engineer - Production, who ushered us to the meeting room. En Abang Ibrahim, Manager – Production, gave the introduction and welcomed the participants.

Gamuda IBS Sepang, located at 7ha plot in Sepang's Tanjung Industrial Park, commenced in 2016, is the country's first fully automated robotic IBS factory. The Sepang factory produces 3,000 apartment units/year or 1,000,000m²/year. Gamuda IBS new factory at Banting, produces 5,000 apartment units/year or 1,500,000m²/yr. Total production is 8,000 apartment units per year, but Gamuda is aiming at 10,000 units/yr. Materials wastage is less than 1%. Foreign labour input is reduced up to 70%. The Sepang factory produces mainly solid wall and half slab of G40, 100mm to 150mm thick. .

Gamuda Jade Hills Kajang, a project with 714 units, 3 blocks, unit size ranges from 650 – 1,100 ft², the project was completed with 25% shorter construction duration, using the units produced from Sepang factory. The project is certified CIDB IBS score of 80.2%. Generally Gamuda projects go for CONQUAS and QLASSIC.

The factory uses modern IBS technology, such as Building Information Modelling (BIM), Common Data Environment (CDE), and Robotic Machine Operations, insulation of panels and construction using robotic IBS. This method, allows customized designs without having to invest in new set of moulds for every project. Also, there is no minimum quantity. This enabled the roll out from design to construction quickly as each cast is formed individually by the robots.

Gamuda gave a guided tour of the factory and precast showhouse to the delegates. The factory is generally divided into sections, such as control room, next to a section of robotic arms that prepare the "moulds" according to BIM design input, a section for coil cutting and reinforcements preparation, automatic robotic reinforcements placement onto the "moulds", a concrete plant that produces grade 40 concrete, a steam chamber with operating temperature of about 60degC, a "demoulding" section, a section on installing door and window frame. The "moulds" are not fixed form moulds. It is a fixed bottom form, with customized side forms from BIM design input, height ranged between 100mm to 150mm. built by computerized robotic arms, and secured to the bottom form using magnets. Every casting, ie setting up a new form, takes about 12min. Concreting is done by flying bucket, no poker vibrator is used. Minimum demoulding strength is 12MPa. Currently the factory is running on 2 shifts.

The showhouse is to showcase the capability of Gamuda IBS. Construction time is reduced by 30%.

There is a session on Q & A after the visit. The Chairman of CSETD, Ir Chong Chee Meng, presented a token of appreciation to En Abang Ibrahim, Manager - Production.

The visit ended at about 12.30pm.



Group photo