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FOUNDATIONS FOR THE FUTURE

Built environment sector shaping up for exciting time with new tech, opportunities

Derek Wong

For the first time in three years, things are finally looking up for the built environment sector. Besides encouraging figures in growth and employment, new technology and opportunities in the industry are also ushering in an exciting time for shaping Singapore's skyline. Drones, machine-learning, predictive maintenance and prefabrication are not just fancy buzzwords to

manpower involved. It is a perception that Building and Construction Authority (BCA) chief Hugh Lim is keen to shed. The BCA is the regulatory body of the construction industry. "Actually our sector is a creative industry, because you really create something from nothing," he said to The Straits Times in an interview. "It is one of the original creative industries and it will need to continue to have creative people." He also pointed to the importance of environmentally friendly buildings in an age when climate change is a serious threat. Calling sustainable buildings the "gift that keeps on giving" beyond their unveiling, Mr Lim said the con-

other sectors. It is a challenge Mr Lim recognises and one that he hopes BCA and built environment firms will meet head-on. "In today's war for talent with other industries, we remind our employers that they are not just competing with one another for talent," he said, adding that the BCA works with many companies to sustain a continued stream of manpower. The statutory board's latest initiative, the iBuildSG LEAD framework, is meant to support leadership development by, for instance, developing networks and collaboration. Recent statistics point to an upward trend for the sector as it posted its first employment gain in almost three years, while the Monetary Au-

thority of Singapore estimated the industry will grow 3.5 per cent this year, up from the 2.1 per cent forecast in March. But no celebrations are in store yet for Mr Lim, who believes his work is far from done. For him, talent attraction remains the top priority for the survival of the built environment industry. "It is not something that is going to be an issue overnight," he said. "But if we don't keep our eye on the ball, we will find ourselves one day - and maybe it's not that far away - not having enough people to do what we need to do." "It's a never-ending battle." wderek@sp.com.sg

Staying ahead of the curve

For Greyform boss Bob Chan, it is difficult to attract young local talent to his company, which specialises in offering precast and prefabricated solutions to the construction industry. "In general, the younger folks see construction and precasting as not as glamorous an industry to be involved in," he said, adding that Greyform holds recruitment drives at institutes of higher learning and offers internships. However, what makes it worse for Mr Chan, 54, is that after bringing in someone and painstakingly training him in new software, a competitor may poach the new recruit. "Being a first mover is sometimes not an advantage. You end up training people and the next (company) that comes along says, 'Hey, thank you very much,'" he said, referring to five or six instances where rival companies have lured his staff from the Building Information Modelling (BIM) team with higher pay. BIM software is able to plan construction to reflect both architectural and engineering aspects. Mr Chan was speaking to The Straits Times at his office at the Greyform Building in Kaki Bukit, an integrated construction and prefabrication hub opened in October 2017 - akin to a factory for building components such as bathrooms and walls. When Greyform, a member of local construction giant Straits Construction Group, first started in De-

ember 2015, it took six to eight months to smooth the process of its automated production belt for making building components such as walls and bathroom units, said Mr Chan. Much planning was needed to ensure precision and efficiency as the machines could be producing different parts for three projects simultaneously, for example. Previously, many of these pieces had to be built on-site. It not only meant more labour was required at the site, there was also less quality control compared with manufacturing the units in a factory. The most challenging part about introducing new construction technology, however, may be getting buy-in from experienced workers. The first reaction Mr Chan said he got from some staff was: "Will I lose my job?" "There are people who have been here 40, 50 years, they will tell you, 'I don't know how to read, how to write,'" said Mr Chan. "But it's whether they have the attitude to adopt the change, so we try to engage them. It is definitely difficult because construction is still very traditional in doing things. But we need to adopt it (new technology) because we cannot rely on foreign workers and we have an ageing workforce." He said of Greyform's technological drive: "There's no choice. If you continue the same way you are, you are just going to be left behind." Derek Wong



Mr Bob Chan, chief executive of Greyform, which specialises in offering precast and prefabricated solutions to the construction industry, says the sector must work on attracting young local talent and adopting new technology because "we cannot rely on foreign workers and we have an ageing workforce". ST PHOTO: GIN TAY

Making waves with scanner



Dr Kush Agarwal and his team have invented a handheld device that uses electromagnetic waves to check a building's facade for defects, which helps to save time and money.

Inspecting a building's facade is usually a laborious process, and it may take days or weeks for an inspector on a gondola to manually examine a building. Dr Kush Agarwal, 33, and his team have set out to simplify this with their invention, a handheld scanner that uses electromagnetic waves to detect building defects. The device can even be mounted on drones, and initial trials have proven promising, said Dr Agarwal, chief executive of WaveScan, a spin-off company of the Agency for Science, Technology and Research that was started last August. With enough data and through machine-learning, facade maintenance can even be predictive rather than reacting to when defects occur or accidents happen. For instance, a defect can be tagged as a crack or corrosion based on past information, and the correct building material, such as ceramic or metal, can be identified too. "With this technology, people will do inspections more frequently and save more money and time by doing it at an earlier stage," said Dr Agarwal. "It's similar to disease in a human body - the earlier you know, the better." The technology has interested government agencies such as JTC Corporation as well as developers like CapitaLand. Dr Agarwal senses more to come in terms of technology for the built environment sector, which he said has been more laid-back in adopting new innovations than other industries. A big market driver, in his opinion, was the Building and Construction Authority (BCA) instituting new rules for compulsory facade inspection. There has been good reception from the industry for WaveScan, added Dr Agarwal. "The wave of innovation has already started. The Government has initiated the process and, now that the regulation is coming up from BCA, people will be forced to move in that direction also (to conduct facade inspections)." Derek Wong

Facilitating smart tech shift



Ms Dong Wenjuan says the facilities management industry is seeing more technology being adopted as well as more women joining the field.

When Ms Dong Wenjuan joined the facilities management (FM) industry, the Singaporean knew it was not going to be the most glamorous profession. "I joined because I didn't want construction and I didn't want to be (indoors) in the office, I just wanted to try it," said the project and facilities management graduate from the National University of Singapore. Facilities managers are involved in maintaining and servicing the built environment. "Maybe people think I'm just managing a group of aunties or technicians, but no - it's more than that. We talk about Smart FM now," said Ms Dong, a manager in JTC Corporation's building management division, referring to a drive towards greater adoption of technology in facilities management. Besides overseeing FM operations for JTC industrial estates in the west, she is also steering innovative FM projects that enable the work to be safer and more productive. For example, she has been testing the use of drones for building inspections, as well as looking at how a new kind of bendable concrete can be used for roads and footpaths to reduce damage by heavy vehicles and tree root growth. The 28-year-old also notices a shift in the industry towards employing more women. "FM nowadays is no longer as tedious, not the kind of job where you must have a lot of muscles or sweat a lot," she said. "Women can do well, it's not just a man's job." The most exciting thing to Ms Dong now is seeing new technologies deployed in the FM space, as she feels it is at a crossroads in terms of innovation. One such initiative is the J-ops Command Centre by JTC, a one-stop command centre in Jurong that manages dozens of JTC's buildings islandwide. It can remotely predict if an air-conditioning unit is about to break down or send out an alert if there are trespassers in buildings. Ms Dong hopes perceptions of the industry will change. She said: "When I tell my friends what I do, they are also surprised. They were just expecting me to manage a property and make sure there are no complaints." Derek Wong

Leading on the ground



Mr Scott Ho has to deal with problems at the work site in his role as a project manager at construction firm Samwoh. He is currently leading a team of more than 30 people in building a flyover at one-north.

Mr Scott Ho, 36, thrives on challenges, especially as a project manager at construction firm Samwoh, where he is often found at the work site. The company started in 1975 and is responsible for many of Singapore's roads and even airport runways. "We are all problem-solvers in this industry," the civil engineer said. "If there are no problems on the site, we needn't be around, we can just hire sub-contractors and coordinate (the work)." The Singaporean is currently leading a team of more than 30 foreigners and permanent residents in building a flyover at one-north. While he is often bombarded with technical issues on-site or demands from clients, Mr Ho's greatest challenge yet may be in leading the digitalisation charge at his company. Besides being a project manager, he is also a senior manager at Samwoh, handling procurement and administration. His latest endeavour is digitalising the workflow process for projects, which currently is a meandering paper trail involving many forms for different parties to check and approve. "It's all manual now, with papers everywhere," said Mr Ho. "We are trying to streamline it into a single platform. It is a colossal effort." Mr Ho said he appreciates some of the Government's efforts in transforming the industry, especially by giving grants to companies to adopt new technology. But he believes the authorities "can do even more", such as being more receptive to the ground. For example, Mr Ho suggested that more intimate forums and discussions be held. "We want to speak to someone who can make decisions, not just someone who comes to gather feedback. It is a bit stifling sometimes," he said. Acknowledging that the industry is a tough one, Mr Ho, who works between 11 and 12 hours a day, said perseverance and tolerance are important traits in order to succeed, especially when pressed from all sides by different stakeholders. Derek Wong