CIDB MALAYSIA

HEIGHTS

TAKING MALAYSIAN CONSTRUCTION TO NEW LEVELS

VOLUME 3 | 2018

GAMUDA'S IBS PUSH

Shifting Construction the Sustainable Way

Dato' Ubull Din Om,
Managing Director
of Gamuda Engineering

FEATURE

THE HUMAN TOUCH TO PRODUCTIVITY
Interview with Datuk Matthew Tee, Bina Puri

TECHNOLOGY

4TH INDUSTRIAL REVOLUTION TECHNOLOGIES HELPING RAISE PRODUCTIVITY IN CONSTRUCTION

CITP STRATEGIC THRUST 3: PRODUCTIVITY

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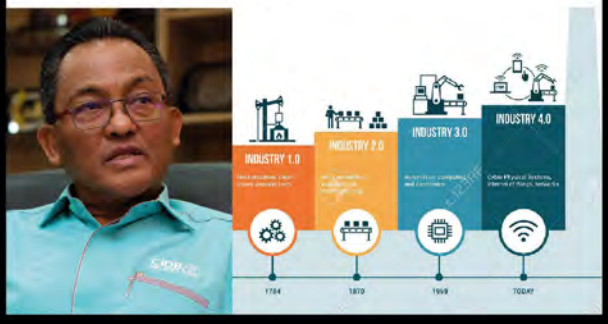

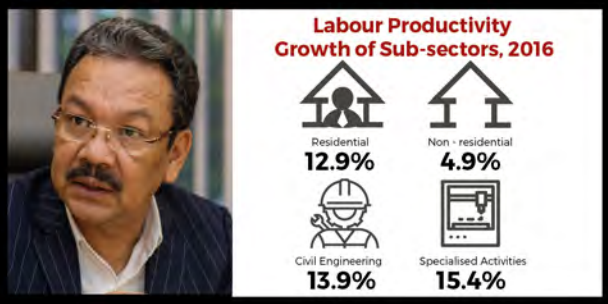

PUBLISHER: CIDB Malaysia
Corporate Communication Division
Level 25, Menara Dato' Onn, Putra World Trade Centre (PWTC)
No. 45, Jalan Tun Ismail, 50490 Kuala Lumpur

CONCEPTUALISED, PRODUCED, AND PUBLISHED FOR CIDB MALAYSIA BY

Virtual Independence Sdn Bhd (Co. No. 510085-A)
D503, 5th Floor, Block D, Kelana Square
N0.17, Jalan SS7/26, Kelana Jaya
47301 Petaling Jaya, Selangor

www.heights.my

PRINTED BY:
Percetakan SM Sdn Bhd (648060-U)
NO. 12, Jalan 12/152, Tmn Perindustrian OUG
Batu 6, Jalan Puchong, 58200 Kuala Lumpur

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Productivity, the Engine of National

In the modern world, there are many factors at play in the marketplace. Financial strength, business diversity, a well-trained labour force, visionary leadership, global competition, environmental concerns and sustainability are all components of economic health, for individual companies and for nations.

We face many challenges in Malaysia in the coming years. We have witnessed progress toward the goals that were defined by the Construction Industry Transformation Programme in 2016, and we fully expect to continue on the path that was envisioned when the Four Strategic Thrusts were defined:

Quality, Safety and Professionalism

These fundamentals are primary concerns if Malaysian construction firms are to assume a place on the world stage. There is no acceptable alternative for high quality, increased safety, and a level of knowledge and performance that demands the highest standards of performance and compliance throughout the industry.

Environmental Sustainability

Environmental consciousness has led to a new agenda designed to build an infrastructure hub in Malaysia that is resilient and sustainable. Malaysian buildings and construction industries can serve as a beacon for emerging nations, with efficient waste management systems, a low carbon footprint, and high compliance with environmental ratings standards and practices. Finally, we want to assure a high living standard for our entire population.

KLCC Property Holdings and Putrajaya Holdings are to be commended for their initiative in this effort by adopting BREEAM standards for all their projects. The science-based rating system was first developed in the UK in 1988. Using its metrics, independent auditors rate buildings for overall sustainability in numerous categories, including energy and water use, health and wellbeing, pollution, transport, materials, waste, ecology and management processes.

Internationalisation

With an increasing level of global competition, efforts must be redoubled to assure that local construction players are equipped to meet challenges not only at home, but also at the international level. We can accomplish this by encouraging Malaysian firms to improve their competitive capabilities, to adhere to higher standards, to seek out specialised and highly technical contracts, and to increase their knowledge of internationally approved materials and workmanship.

Productivity

Productivity provides the leverage that brings improvements in resource use and effectiveness of construction, thus being the driver for GDP growth as a whole.Beginning with the adoption of new technologies and modern practices by the construction industry, the goal of a highly skilled, high-paid workforce can become reality, making the other three strategic thrusts easier to achieve.

Nothing is more important, in our view, than a commitment to productivity. It is the engine of national growth, and without it little else matters. But productivity has many faces. There are numerous ways in which Malaysia's construction industries can be transformed, but as we move forward together to meet the goals set in 2016, we must also recognise that this national agenda requires ongoing commitment and focus.

The focus of this edition of Heights is productivity because it is such a vital component of growth and development. Malaysia's goals for the future depend on it, and the entire nation and all its people will reap the benefits.

Dato' Ir Ahmad 'Asri Abdul Hamid
Chief Executive of CIDB Malaysia

Commercial Building Lows Negatively Affect Construction Rates

The United States construction industry was found to be stagnant in terms of spending in January of 2018, after 2017 experienced the slowest amount of spending growth in the last six years. While single-family home construction increased at a modest rate of 0.6%, the reason for the stagnant spending in the country was due to a decrease of project spending in commercial real estate and certain other areas. The construction of office towers, apartments, power plants and other construction types fell. Spending on commercial building went down 2.7% at the beginning of this year. While the construction industry did not see overall growth in January, one sector that could help improve productivity of United States builders looking for projects is that of the public sector. Construction spending on state and federal projects has increased during this same time. January showed increases of 4.4% for road and highway construction projects and of 2.1% for schools, among increases in other public sector areas.

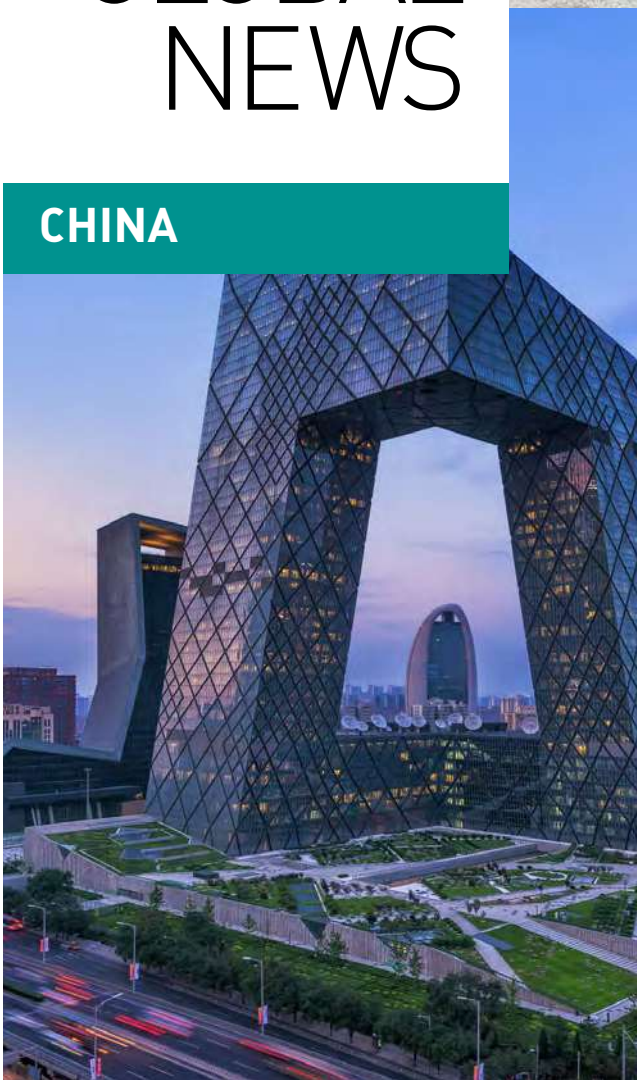
Sky Bridge Being Developed Will Become Biggest of Its Kind in World

When an aerial bridge is completed in Chongqing, China by Singaporean developer CapitaLand, it will become the largest example so far of a "horizontal skyscraper" anywhere in the world. This structure will act as a sky bridge that goes across four towers. One section is already completed of the planned 400m bridge called the Conservatory, and the anticipated completion date for the rest of the project is the middle of 2018. The Conservatory will provide a viewing deck to see the city of Chongqing, as well as places to eat and sky gardens and swimming pools to enjoy. "Some of the world's most advanced construction and engineering techniques have been deployed to install this megastructure," said the president of CapitaLand, Lim Ming Yan. The sky bridge was designed by architect Moshe Safdie from Canada, while the structural design was conducted by consulting engineer Arup from the United Kingdom.

UNITED STATES

GLOBAL NEWS

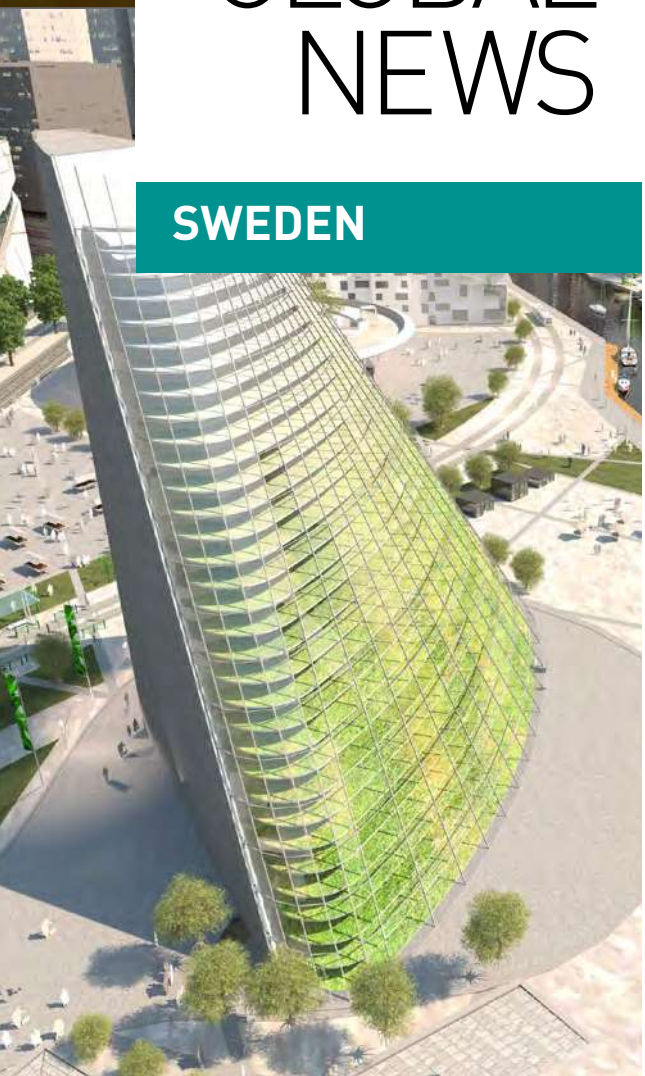
CHINA



UNITED KINGDOM

GLOBAL NEWS

SWEDEN



The United Kingdom Faces a Lack of Quality in Its Construction Industry

The United Kingdom is currently having problems with quality in the construction industry. The Chartered Institute of Building (CIOB) began a Construction Quality Commission in October 2017 after some serious construction failings came to light in the United Kingdom. The commission's research found that "more than three-quarters of construction professionals believe the industry's management of quality is inadequate." The commission questioned industry professionals, related sectors and the public. Some problems that were highlighted in the research included deficient management of quality that negatively affects workmanship and signing off work. Instead of focusing on quality management, the industry in the UK has been making price and program its main components. Research findings also noted that quality in construction is not adequately covered in educational programs. Based on this research, the CIOB will make recommendations to improve quality within UK construction. These include creating a qualification or certification that's focused on quality, developing a quality code with best practices and standards, and improving the focus on quality within education.

"Plantscrapers" Could Be Answer to Feeding an Increasing Population

A Swedish project is showing that construction can help with some of the world's pressing problems. This is the case with a recent project idea known as "plantscrapers" created by Plantagon, a Swedish food-tech company. These "plantscrapers" are office buildings that feature indoor farms taken care of hydroponically, which is a method that doesn't use soil. Plantagon offers "plantscrapers" as a solution to provide enough food to a growing population. As the world population could go up to close to 10 billion people by 2050 and create the question of how to feed this number of people, one of these buildings could contribute by feeding 5,000 people with its indoor farm. Construction is underway of Plantagon's first "plantscraper" known as The World Food Building, which started in 2012 and has an anticipated completion date of 2020. This $40 million building is located in Linkoping, Sweden, and it will make use of robot technology to create a mostly automated farm. Plantagon hopes that this idea will grow to different cities throughout the world.

Firms Named to Complete Montreal's Light Rail System Project

Canada has a planned project to connect Montreal suburbs with the city and airport through a light rail system. The firms that will conduct this project have been named, and they include firms from Canada, the United States and France. Canadian companies SNC-Lavalin, Aecon, Pomerleau and EBC will handle the engineering and construction aspects of the project. American Aecom and Dragados Canada will also provide engineering. French firms Alstom Transport and SNC-Lavalin will handle the supply of rolling stock. The $5.3 billion construction of this rail system will start in April 2018 with an expected completion date of 2021. The light rail, which is known as the Reseau Express Metropolitain (REM), is planned as a 67km electric and automated network with 26 stations that will provide improved public transportation to the Montreal area. "We're excited to soon see a brand new public transportation network built with cutting-edge technology in Greater Montreal," said Canadian pension fund CDPQ Infra's chief executive, Macky Tall.

Picture Source: ESO/L. Calçada

CANADA

GLOBAL NEWS

GLOBAL

Robots Infiltrate the Construction Industry Across the Globe

As a range of industries from technology to automotive increasingly rely on high-tech capabilities, the construction industry is keeping up with this forward movement. A main way the construction industry is using technology is through robotics. Construction firms are utilising robots for bricklaying, demolition, rescue, 3D printing and other areas. This technology is used for building, cement, mining, tunnelling and other components of construction work. This capability could help the industry as it has difficulty finding enough workers and to help it move forward in a changing world. It can also help with areas like disaster management and help the industry improve productivity. The use of robots in construction is a trend being used across the globe. Some major examples include Swedish companies Brokk AB, Husqvarna and Conjet AB; Chinese companies Giant Hydraulic Tech and Beijing Borui Intelligent Control Technology; German company TopTecSpezialmaschinen GmbH; Japanese companies Shimizu Construction and Fujita Corporation; and US companies Alpine, Construction Robotic and Cazza.

CIDB LAUNCHES MALAYSIA'S FIRST ONE-STOP "myBIM CENTRE" TO IMPROVE CONSTRUCTION PRODUCTIVITY

RM3 million Building Information Modelling (BIM) resource centre to promote industry adoption of modern construction technology

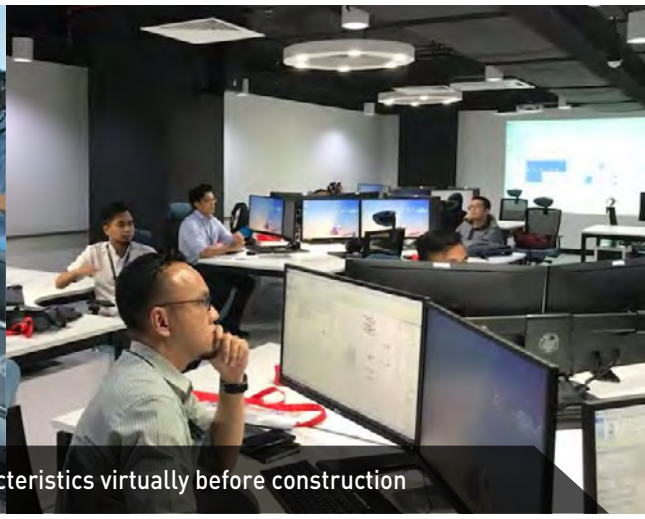
Minister of Works Dato' Sri Haji Fadillah bin Haji Yusof officially launches the myBIM Centre as CIDB Chief Executive Dato' Ahmad 'Asri Abdul Hamid looks on

The Construction Industry Development Board Malaysia (CIDB) launched Malaysia's first one-stop "myBIM Centre" on 20 November 2017 as a resource centre to promote Building Information Modelling (BIM) system usage amongst construction industry players.

Established by CIDB Malaysia for construction industry players' usage with an initial investment of RM3 million, myBIM Centre was officially launched by the **Minister of Works, Dato' Sri Haji Fadillah bin Haji Yusof.** The Centre lets industry players model and visualise building projects in a simulated environment using BIM – a modelling technology to produce, communicate and analyse digital information models throughout the construction project life-cycle.

"This is the era of Industry 4.0. The construction sector, like Malaysia's key economic drivers, must embrace the disruption resulting from technology. Building Information Modelling is how the construction industry can embrace modern, progressive change to remain competitive and dynamic," said **Dato' Ir. Ahmad 'Asri Abdul Hamid,** Chief Executive of CIDB Malaysia, at the myBIM Centre's opening.

Recognised as an advanced information and communications technology (ICT), BIM lets users design, visualise, simulate and analyse each project element's key physical and functional characteristics virtually before construction begins. This identifies and rectifies potential issues in the early stages. Its intelligent digital models that facilitate



BIM lets users design, visualise, simulate and analyse physical characteristics virtually before construction

coordination, communication, analysis, project management, and even asset management are expected to bring the industry multiple benefits.

The introduction of myBIM Centre is timely as the construction industry needs major changes to improve its productivity. According to the Malaysian Productivity Corporation (MPC), the construction industry experienced the lowest productivity level of RM40,018 per worker in 2016. By comparison, the agriculture sector experienced RM55,485 per worker, services sector experienced RM68,166 per worker, while manufacturing experienced RM106,647 per worker, the highest productivity level.

"BIM's advantages in building projects are manifold and extend throughout the entire construction value chain. Being able to virtually analyse key physical and functional characteristics even before construction works commence, helps improve the efficiency, quality, and most importantly, the productivity of the overall construction process," said Dato' Ir. Ahmad 'Asri Abdul Hamid.

The implementation of BIM is part of the initiatives to more than double the industry's productivity, in line with the Productivity strategic thrust of the Construction Industry Transformation Programme 2016-2020 (CITP). Currently, adoption of BIM in Malaysia is at 17 percent which is lower than more developed economies such as the United States at 71 percent and United Kingdom at 54 percent.

Notable projects in Malaysia constructed using BIM include the National Cancer Institute in Putrajaya, the Malaysian Anti-Corruption Commission Building in Shah Alam, the Educity Sports Complex in Nusajaya and the Ancasa Hotel in Pekan, Pahang.

With myBIM Centre's launch, BIM software and training programmes will be offered, complementing the myBIM Library portal and its BIM materials. To date, 1,300 BIM personnel have been trained by CIDB. The Centre also features state-of-the-art facilities, including a rental studio available to all BIM practitioners, a lab, seminar room and showcase area, all equipped with advanced audiovisual devices and high user capacity.

For more information, please visit:
www.mybimcentre.com.my

The implementation of BIM is part of the initiatives to more than double the industry's productivity in line with the CITP

The Minister of Works, Dato' Sri Haji Fadillah signs the plaque, officially launching the Sungai Buloh CLQ since its refurbishment

CLAB's CLQ Marks a New Beginning for Workers' Housing

On 18 January 2018, the Construction Labour Exchange Centre Berhad (CLAB), a non-profit subsidiary of CIDB, launched its first Centralised Labour Quarters (CLQ) to improve the living conditions of construction workers. Located in Shah Alam, the CLQ encompasses six blocks consisting of 144 rooms with each room fitting a total of six people. The entire facility has the capacity to house a maximum of 864 workers at any point.

Dato' Sri Haji Fadillah converses with some of the foreign workers who live at the CLAB CLQ

Dato' Sri Haji Fadillah bin Haji Yusof, the Minister of Works, officiated the opening. Also present at the launch was Dato' Sri Zohari bin Haji Akob, Secretary-General of the Ministry of Works cum CLAB Chairman, and CLAB Chief Executive, Abdul Rafik Abdul Rajis.

In his keynote speech, Dato' Sri Haji Fadillah said, "The construction industry is one of the main catalysts driving the growth of the country's economy."

According to the minister, the total value of construction in 2018 was expected to reach RM140 billion. He said that the primary aim was to provide proper accommodation for the workers as their health and safety could be compromised otherwise. In line with Construction Industry Transformation Programme, a target has been set for eight CLQs to be fully built and operational by the fourth quarter of 2020.

MRT Corp had built the Sungai Buloh CLQ along with other CLQs at a total cost of RM79.5 million in 2011 to house its workers during the construction of the MRT Sungai Buloh Kajang line. Following the completion of the MRT line, MRT Corp had permitted CLAB the use of the premises for a year as a pilot project.

The CLQ Sungai Buloh had recently undergone a RM1 million 2-month refurbishment from August 2017. A fully gated and guarded facility, it has a 24-hour CCTV surveillance and access card security system, a surau, cafeteria, kitchen, sundry shop, futsal courts, showers, common bath, self-service laundromat, and a sick bay. Each room includes 3 double-bunk beds, lockers as well as wall fans. It is expected to house construction workers from small and medium-sized construction projects within a 10- or 20-km radius of the facility.

The facility is currently being used to house workers in transit who are given training to familiarise themselves with the local environment and laws. CLAB Chief Executive Abdul Rafik also gave a presentation on the strict rules and regulations the residents had to adhere to.

The CLQ has 2 outdoor courts where residents can play futsal, sepak takraw and other sports in their downtime

The Sungai Buloh CLQ is equipped with 5 self-service washing machines

Residents are encouraged to buy their groceries and items for their cooking needs at the sundry shop

Cool, comfortable and clean living conditions are found in the quarters

At the media briefing, Dato' Sri Haji Fadillah said, "The CLQ is not only open to foreign workers. it's also open to local workers. There are many construction workers from other states here."

He added that there were ongoing talks to construct and operate two new CLQs in Batu Kawan, Penang, and Putrajaya by 2018.

"The location of the CLQs would also depend on the demand and needs of the construction industry in each state. Not every state has a need for CLQs," he continued.

One initiative taken to improve the housing conditions for construction workers is the MS2593-2015 on Construction Worker's Amenities. It had been established by CIDB in collaboration with industry stakeholders and published by the Department of Standards in 2016. Meanwhile, CIDB is working with the Ministry of Human Resource on the amendment of Act 446 (Workers' Minimum Standards of Housing and Amenities Act 1990) to include construction workers in its scope. Currently, the law only mandates housing for plantation and mining workers. The Works Minister mentioned that there are hopes that the amendment will be passed this year. When asked to provide housing for workers, many construction companies build ramshackle wooden shacks where hundreds of workers live together in squalid conditions. Under such circumstances, the occupants are vulnerable to disease and accidents.

During his address, he said, "The housing provided by unscrupulous employers who build facilities which don't follow the standards set, exposing the workers to vulnerable lifestyles. This unhealthy environment does not only endanger the workers; it may also impact the local socio-economic development, safety, and health conditions."

The Works Minister acknowledged that it was a more economical and practical option to rent a CLQ by CLAB for construction workers as employers need not shoulder the additional duties of managing the quarters.

On the rental rates, Abdul Rafik, said, "The monthly rent is currently priced at RM150 per person with an additional RM30 charge for utilities. We are open to individual negotiations with construction companies on the rates."

The Sungai Buloh CLQ is hopefully the first of many initiatives which will drive the construction industry towards higher standards of safety, sustainability, and productivity. Established in 2003 by CIDB to manage the redistribution of foreign workers for construction projects throughout the country, to date, CLAB has succeeded in redistributing as many as 174,000 workers and managing 34,800 requests from construction companies.

GAMUDA Leads the Way with First Fully Automated IBS Factory

Gamuda launches Malaysia's first fully automated robotic IBS factory

Industrialised Building System (IBS) has been heralded as a cutting edge measure that will help propel the transformation of the construction industry in Malaysia and Gamuda is spearheading the adoption of this innovative construction method through the country's first fully automated robotic IBS factory. Through IBS, components for a construction project are manufactured in a controlled environment and are then assembled and installed on-site.

The Gamuda IBS factory located in Sepang, Selangor has been operational since July 2016 and is fully integrated with Building Information Modelling (BIM) Robotics Production System. BIM is a 3D modelling software that facilitates the management of information on construction projects from conception to completion. This technology enables a more sustainable construction process that promotes efficiency and reduces wastage. The BIM Integrated Robotics Production System at Gamuda IBS translates 2D drawings into 3D models, which are then deciphered by robotics to produce the needed components. It also includes Common Data Environment, an online repository that consolidates all the information for easy access and sharing among project team members. IBS Gamuda has produced over 3,000 apartment units for the Jade Hills development project in Kajang and its residential show units have achieved a Quality Assessment System in Construction (Qlassic) score of 86%.

Minister of Works, Dato' Sri Haji Fadillah bin Haji Yusuff, made a visit to the factory recently and said that the government intends to engage with industry players to make the adoption of IBS in construction

Minister of Works Dato' Sri Haji Fadillah bin Haji Yusuff visits the factory with CIDB officials

projects compulsory in the coming year. As of May 2016, approximately 69% of government projects have adopted IBS while the private sector has an adoption rate of under 15%. "I believe we can all do much more and for that, I applaud Gamuda for taking the initiative to kick-start private sector participation in leading the adoption of IBS in construction," said Dato' Sri Haji Fadillah in the speech he gave during his visit.

He also praised the company for upskilling its employees by training them on how to use IBS and other advanced technologies used at its factory such as BIM and Common Data Environment. "

This equates to enhancing the capabilities and capacities of our workforce and is important as the country progresses towards achieving improved prosperity and higher standards of living," Dato' Sri Haji Fadillah said. "With more of such high impact development, sustainable human capital development can be achieved as we progress in our nation building journey."

The adoption of IBS is also consistent with the goals of the Construction Industry Transformation Programme (CITP), which aims to effect a holistic overhaul of the industry. The desired outcome is a construction industry that adheres to high quality and safety standards, is efficient and productive, environmentally sustainable, and globally competitive.

"The best way to achieve this is through technology, which includes robotics, mechanisation, and automation," said Dato' Ir Ahmad Asri Abdul Hamid, CEO of CIDB, adding that Gamuda IBS had demonstrated the effectiveness of technology in elevating standards of safety, efficiency, and quality in construction. He maintained that IBS can help eliminate the negative perception of the industry. "They call it the 3Ds – dirty, difficult, and dangerous–but that can be changed through IBS where people don't need to be layering bricks at sites and things like that."

Gamuda IBS has trained more than 200 students from Institut Kemahiran Belia Negara (IKBN) to date and reduced reliance on foreign labour by up to 63%, subsequently minimising outflow of funds. Construction of the second Gamuda IBS plant in Banting, Selangor is ongoing and expected to be completed by end of 2018. With the new factory, Gamuda IBS' production capacity will increase to 8,000 units a year.


Dato' Ubull Din Om, Managing Director of Gamuda Engineering, introduces the Gamuda IBS facility


The desired outcome of IBS is a construction industry that adheres to high quality and safety standards and is globally competitive


Gamuda IBS' production capacity is expected to increase to 8,000 units a year by end 2018


VIP tour of the facilities


Raw materials awaiting processing

Setting the Benchmark for Productivity

Not only will Exchange 106 transform the skyline, it's also setting new standards

The Exchange 106 is not only set on changing Kuala Lumpur's skyline; the structure is also making waves for the sheer productivity demonstrated throughout its construction.

Exchange 106 is set to redefine the Kuala Lumpur cityscape

Indonesian developer Mulia Property Development, a subsidiary of Mulia Group, and China State Construction Engineering Company are currently building the structure in the heart of Tun Razak Exchange, the 70-acre development primed to be the financial and banking district of Malaysia.

Upon its completion, the 106-storey building will stand at 452.37 metres or 1484.15 ft will overtake Petronas Twin Towers' spot (452 metres) as the tallest building in Malaysia. However, The Exchange 106's height is just its crowning glory to the team behind the project.

Commencing in February 2016, the project has been on a fast track since its inception and should be finished in September 2018. The speed at which the project is progressing is astonishing. Nevertheless, it would not be possible without the adoption of efficient construction methods, cutting-edge machinery and technology as well as a highly skilled workforce.

At an on-site presentation by several members of the project management team on 15 November, CIDB representatives were briefed on the project's use of these methods and technologies.

According to the project's deputy construction manager, Jeff Yap, a state-of-the-art concrete pump was used. Brought in from China, it is able to carry concrete up to 500 metres. If a concrete pump had not been adopted, the team would have had to use a tower crane or other conventional methods. Another piece of technology that proved highly useful in keeping the project well within its planned duration was a 4D building information modelling (BIM) system. Currently used by 5% of construction firms in Malaysia, the software enables architects and contractors to build 4-dimensional digital models and simulate construction, thus streamlining various processes.

Mulia Group also purchased two new Zoomlion L500-32 internal climbing tower cranes for the project. These highly impressive tower cranes' electronic display systems come with a speed changing mode which ensures steady movement, especially when hoisting steel structures. This allows the team to complete each floor within three days.

Project director Roland Suckling shares the philosophy behind the design

According to project safety officer Krishnasamy A/L Arumugam, the management conducts monthly safety inductions and training sessions

Exchange 106 will stand at 452.37 metres as the tallest building in Malaysia

Yet another example of the staff's commitment to efficiency is their adoption of a self-climbing placing boom. Mounted to the core wall system, it is able to climb the building as construction upon each floor is completed.

The Exchange 106's practices are perfectly aligned with the Construction Industry Transformation Programme's aims of achieving productivity through modern practices, increased mechanisation, and a highly skilled workforce. In fact, 58 of the Chinese management staff members are university graduates.

Key to the project's development is an aggressive momentum. Roland Suckling, the project director for Mulia Property Development, said, "We developed a very specific strategy to fast-track the building. We started off with a 4-day cycle, then we moved to a 3-day cycle. At the top of the building, we're on a 2-day cycle."

Besides the usage of these modern machines, the 22/7 schedule the workers are on also contributes to the structure's lightning-fast progress. Concern for their safety and health would not be amiss under such stringent working conditions. How does one prioritise speed and efficiency without compromising on the workers' emotional and physical health?

As the project's safety officer, Krishnasamy A/L Arumugam shared during the presentation, the management conducts monthly safety inductions and training sessions for all workers.

For some perspective, safety manager Ying Yue Min shared, "Most construction companies in China spend 2% of each project's total expenditure on safety measures." For The Exchange 106, he revealed that the spending on safety amounted to approximately 3-4% of the total expenditures.

After the presentation, the representatives were also given a site tour and taken up to Level 49. Previous news reports have all commented on the structure's record-breaking height. Upon nightfall, however, the LED-lit facade will truly be a sight to behold. As CIDB representatives viewed a model of the completed building, Suckling shared the philosophy behind the design.

"There are LED lights in the facade. We integrated them right into the curtain wall. There are about 100 metres of LED lights in the facade [where] we can do a big show. For festivals or other events, there will be LED light shows. There are lights that shoot up the corners of the building right up to the crown."

Sirius Lighting, a Japanese lighting consultant firm from Hong Kong, chose the colours of the Malaysian currency for the colour scheme of the LED lights.

The crown itself is another stunning wonder. 65 metres tall, it is shaped like a perfectly cut diamond and made of extremely clear, non-ion laminated glass. Suckling said, "There are lights in the glass and there are lights inside the crown which shine onto a lantern." The crown is expected to display colourful swirls of lights during major events and special occasions.

Rawang Bypass: A model construction with a heart

Federal Route 37

- called the Rawang Bypass - is set to become Malaysia's foremost elevated highway project, with its highest pier reaching 60 metres above ground.

Connecting the ever busy Rawang to Serendah, this 8.25km marvel of elevated construction reduces peak travel time from two hours to a mere thirty minutes.

According to JKR Director-General Datuk Seri Ir Dr Roslan Md Taha, the public was engaged to understand their concerns and get their thoughts toward the project

The scope of work looked into upgrading the existing 12.1 km Federal Road 1 (FT1), widening a single-lane dual carriageway road to two lanes and constructing a 9 km two-lane dual carriageway from the Sungai Kanching Bridge along the fringe of the Kanching Forest Reserve to Sungai Choh, Serendah.

According to JKR Director-General Datuk Seri Ir. Dr. Roslan Md Taha, the proposed road met with resistance from the surrounding residents. The public was engaged several times to understand their concerns as well as get their thoughts and ideas moving forward with the project.

Today, with the completion of the road, this toll-free journey glides past, through and over the hilly and densely forested Kanching Eco-Forest Park and Lagong Forest Reserve, both part of Taman Warisan Selangor (Selangor Heritage Parks).

These forests harbour beautiful waterfalls, rivers and catchment areas, exotic wildlife, and unique flora and fauna, including the celebrated Giam Kanching (Hopea Subalata) found only in this part of the world.

Fear of the Giam Kanching tree's extinction due to the highway project was one of the biggest motivating factors for the Works Ministry (JKR) to abandon the original design alignment and use of the conventional cut and fill construction method.

The cut and fill method would have led to extensive felling of trees, as well as cutting and filling of slopes. It would have also disrupted the free flow of wildlife, if not destroyed many species altogether, in addition to other impacts on the eco-system.

To protect and preserve the environment and eco-system, the Works Ministry and the Selangor State Government adopted the viaduct solution instead of the conventional cut and fill method to traverse through this environmentally sensitive area. The viaduct solution offers very minimal and localised cutting of slopes, causing minimal disturbance of the vegetation and eco-system.

Due to this decision, the project's original completion date of 2008 was delayed. This was largely due to using the hand dug caissons method for the construction of the foundation, which avoided the need for mobilization and usage of heavy bore piling machineries.

Double column piers with immediate tie beams for tall piers were selected to act effectively as a frame structure for economy of the substructure works, allowing for minimal use of pilecaps.

Other new environmentally friendly methods were introduced, such as geo-grid and precast interlocking slab. The construction of silt traps and silt fences in specific locations controlled heavy runoffs.

Approximately 1,200 workers from six different nations (Malaysia, Vietnam, Bangladesh, India, Pakistan and China) worked strenuous three hour shifts round the clock to manage the feat.

JKR Civil Project Engineer Abdul Rahim Mokhtar, fondly called Rahim King Kong by his colleagues, recalled an amusing yet painful moment in the project. He had to scout out the area with his team, which was a dense jungle at that time. "By the time we finished, my shoes didn't resemble shoes and all my toenails had come off!"

He explained that on the job site, JKR took health and safety matters seriously. They conducted daily tool box talks with the workforce, focusing on safety related to the specific job, including workplace hazards and safe work practices.

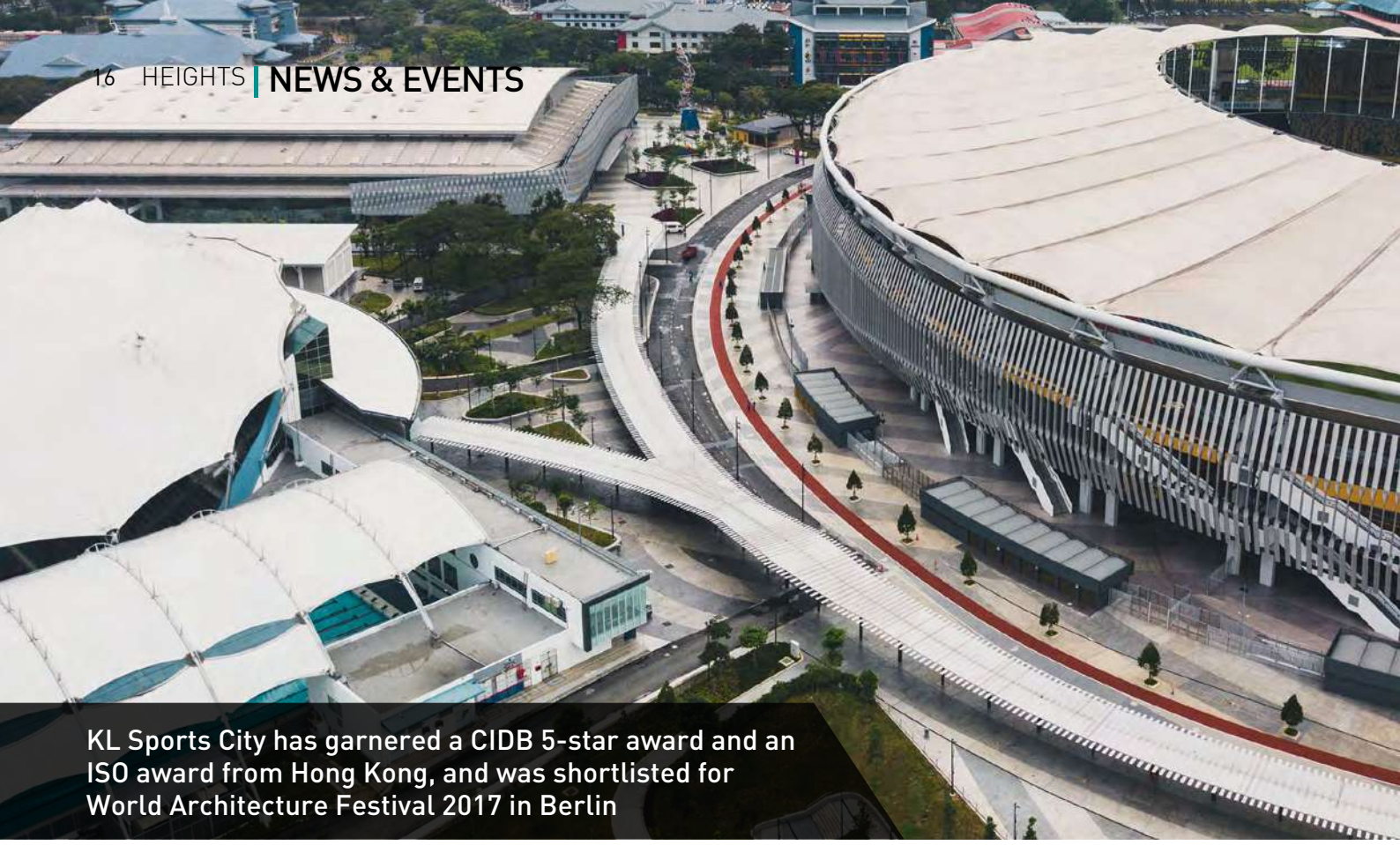
As a result, the project has managed a zero fatality rate despite the challenging work conditions.

Rawang Bypass is also Malaysia's first construction project to use the Movable Scaffolding System (MSS) - travelling steel structures supporting the formwork that give shape to the bridge. The MSS is self-launching and does not require any supporting cranes for handling the support brackets, and was considered feasible for this project considering the minimal impact it had on the forest reserve along its alignment.

The project's Level of Service (LOS) is expected to improve from level F to level C, producing smoother traffic flow from Bandar Rawang. This bypass is also expected to boost development in neighbouring towns in Serendah, Batang Kali and Tanjung Malim.

Today, Rawang Bypass stands proud as a model construction with a heart. By saving almost 40 hectares of forest, the Works Ministry has proven that it can still provide excellent infrastructure for the public by choosing preservation over destruction. As for Rahim King Kong, the project goes down as a personal badge of honour in his eventful career.

To protect and preserve the environment and ecosystem, the Works Ministry and the Selangor State Government adopted the viaduct solution instead of the conventional cut and fill method



KL Sports City has garnered a CIDB 5-star award and an ISO award from Hong Kong, and was shortlisted for World Architecture Festival 2017 in Berlin

MRCB comes with a winner with world-class KL Sports City

Construction giant Malaysian Resources Corp. Berhad (MRCB has received praise from industry stakeholders for their redevelopment of the former Bukit Jalil Sports Complex into KL Sports City (KLSC). It has garnered a CIDB 5-star award for safety and an ISO award from Hong Kong, and was shortlisted for World Architecture Festival 2017 in Berlin.

The massive, multi-million redevelopment project spearheaded by MRCB and international architectural firm Populous saw comprehensively upgraded facilities, infrastructure and systems at KLSC in preparation for the 2017 KL SEA Games. These were centred on the National Stadium, the refurbished National Aquatic Centre, the Axiata Arena, the National Hockey Stadium and a sprawling plaza.

The stadiums received major facility and capacity improvements and meet international standards. These improvements included greater seating capacity such as the National Stadium's 85,000 seats and the Axiata Arena's 15,000 seats, state-of-the-art audiovisual displays and speakers, comprehensive safety systems, and improved tracks and pools.

According to MRCB General Manager Datuk S Nalgunalingam, KLSC was designed to create a co-ordinated and liveable sports city by adapting, updating and linking the existing facilities, giving the community a sustainable sporting precinct year-round.

New cycling and running tracks have been installed outside the stadium, alongside new shower rooms so people can use the new facilities. 800 security cameras and better lighting also heighten public safety. KLSC also has ample green space and pedestrian-centred layouts with public

MRCB General Manager Datuk S. Nalgunalingam explains that KLSC was designed to create a co-ordinated and liveable sports city

The works undertaken by MRCB at KLSC is a fine example of transforming Malaysia's national construction into a responsible and developed industry

transportation and canopy walkways encouraging community activity at all times.

The project as a whole completed ahead of schedule in 15 months on a tight budget, thanks to the detailed planning stage, strict time management, and sound communication to tackle any issues arising. Additionally, Nalgunalingam stated the Safety aspect was stressed at every stage.

"Building Information Modeling (BIM) was used from day one of design, project planning and modeling," he said.

"We went on a benchmarking tour together with Populous to see stadiums around Europe and neighbouring Asian countries. We talked to stadium operators on challenges and improvements that can be made," he added.

The project achieved a zero fatality rating. Separate safety briefings and workshops were held for the workers, management, and contractor representatives to ensure Safety drove decisions and was everybody's responsibility. Risk elements were assessed prior to the start of the project to avert danger and during the project. Work was ordered to be stopped in the event of unsafe occurrences.

In Nalgunalingam's point of view, conscious efforts must be taken by individual project owners to drive Safety. As early as tender processing, the Safety element must be factored in so that contractors can be held liable and penalised to emphasise the Safety factor's importance.

"Safety has always been our topmost priority. We do not compromise on safety. Everybody has to go home safe," said Nalgunalingam.

The works undertaken by MRCB at KLSC is a fine example of transforming Malaysia's national construction into a responsible and developed industry.

Its high quality construction, adhering to primary prerequisites of quality, safety and professionalism, makes it a model project to emulate.

Gamuda Engineering Managing Director Dato' Ubull Din Om (second from right) receiving the QLASSIC Certification for the Gamuda IBS show unit from CIDB Malaysia's Chief Executive, Dato' Ir Ahmad Asri Abd Hamid. With them are Works Minister Dato' Sri Fadillah Yusof and Gamuda Group Managing Director Dato' Lin Yun Ling (centre)

Gamuda's IBS Push

Shifting Construction the Sustainable Way

IN a bid to heed the Government's call for transformation, Gamuda embarked on what was to be a game changer for the construction industry. Having delivered iconic road and rail projects, the infrastructure development Group has become a reliable household name that promises to deliver projects of any scale on time and on cost as evidenced by their over four-decade track record.

One of the more efficient and productivity-driven method of construction uses the Industrialised Building System (IBS). The IBS Strategic Plan by Construction Industry Development Board (CIDB) and IBS Roadmap (2003-2010) was first approved by the Cabinet in 2003. This was followed by the IBS Roadmap 2011-2015 and the Construction Industry Transformation Programme (CITP) 2016-2020, which further asserts the Government's aspiration to fully implement the use of IBS in the construction sector by 2020 for a cleaner, efficient and more productive building industry.

Gamuda Engineering Managing Director Dato' Ubull Din Om speaks to Heights on how the Government's aspiration pushed Gamuda to invest into the nation's first Digital Industrialised Building System (IBS).

Shifting Perception

Innovation is key to industry transformation, particularly in this digital age which thrives on speed, seamless data and efficiency.

With this focus in mind, Gamuda pioneered the development of Gamuda Digital IBS factory, which started operations in July 2016 in Sepang. A second plant in Banting will be ready in the third quarter of this year and together, the facilities boast a combined output capacity of 8,000 property units annually.

"This was our idea of expansion, transformation and productivity enhancement as the government began pushing for a more productive, efficient and cleaner construction ecosystem. The call was clearly aimed at replacing the existing 3D (dangerous, dirty and difficult) image by the sector," explains Dato' Ubull.

With an improved overall image, it would be easier to train and retain a skilled workforce locally which in turn contributes to the local economic growth.

Increasing Productivity with IBS

The existing representation of the construction industry has been steering local talent away from the sector contributing to an increase in foreign labour. To put things into perspective, the construction sector utilises 9.5% of the labour workforce despite contributing only 4.5% to the GDP.

As the industry became more foreign labour intensive, so did a host of other economic, social and health issues. In addition, poor housekeeping methods and low quality, safety, health and environmental protection painted a grim picture.

"We were dedicated to growing our business and leading the construction industry by introducing best industry practices. Gamuda IBS became an industrial solution as it promoted sustainable construction methods," says the Managing Director.

Today's technology enables the Group to design, customise and produce a wide range of precast products according to client's specifications. For the time being, Gamuda IBS offers solid wall, double wall, half slab, prestressed slab, prefabricated bathroom units, and unique wall facades.

Gamuda's indoor facility in Sepang and soon, Banting, manufacture all precast panels in a safe, and controlled environment. This way, they are able to eliminate error, optimise cost, reduce wastages, guarantee better quality, and reduce construction time.

With digitalisation, managing multiple projects simultaneously is now viable.

Automating the Process

IBS has a long history. But here, for the first time ever, Gamuda brings to the nation Malaysia's first automated robotic factory. It combines Building Information Modelling (BIM) with robotics and automated production on a digitally integrated platform. This is in line with the Fourth Industrial Revolution (IR 4.0) wave which is transforming business landscapes globally.

Automation certainly cuts down production time. Investing in this technology also reduces labour dependency by 65% at the site. Automation also enhances accuracy and more importantly, improves output.

Today, it takes Gamuda 12 months instead of 18 months to build landed homes and just 24 months instead of 36 months to construct high-rise buildings. There are more convincing numbers – their factory in Sepang currently produces one housing unit per hour and it takes them only one week to complete installation of each floor on-site, which includes fully fitted out bathroom units.

The ones who benefit the most are end users as investors get the keys to their properties earlier, allowing savings on interest payments as well as rental for first-time buyers.

The structural installation works for the Rumah Selangorku (RSKU) affordable home project in Jade Hills, Kajang – consisting of over 700 units, shop lots and car park facility – was completed within 393 days. This track record is fast when compared with conventional construction methods, which would have taken 540 days.

Gamuda is currently doing the same for another RSKU project in Kundang Estates, Rawang. This low-density development project comprises 230 units of modern apartments ranging from 750sqft to 1,000sqft, community hall, car park facilities and a playground.

Gamuda Gardens, an integrated low-density development which includes interconnected parks and

community-friendly features, will house Gamuda IBS's first landed homes, expanding their capacity to build contemporary landed properties. In future, homes built by Gamuda Land such as twentyfive.7 and Gamuda Cove will optimise Gamuda IBS.

Gamuda IBS, whose engineering, manufacturing and supply of reinforced precast concrete products are ISO certified by SIRIM QAS International (ISO9001:2015), has been successful in their external tenders, securing more than 1,000 units of external Order Book for high-rise residential apartments. Looking ahead, more than half of Gamuda IBS orders will be from external sources.

A Digital Construction Ecosystem

BIM (Building Information Modelling) is touted as the 'central intelligence' of the IBS operations - synchronising the inputs from various functions across different business units as it acts as a single source of information available on a digital platform. BIM allows the builders to pre-plan and rectify errors at the design and planning stage. Integrated with an Enterprise Resource Planning (ERP) and automated control system, the completed BIM model is seamlessly put into production at their factories.

"Since we are the first to adapt such an initiative locally, the onus is on us to train the workforce with necessary skills and knowledge as training and development contributes to an increased and quality output. To support this agenda, we started the BIM Academy in 2017 to train our workforce on proper technology usage and management. To date, we have trained some 700 employees with relevant skills and knowledge, moving them up the industry value chain," Dato' Ubull explains.

As manual labour reduces with automation and digitalisation, skilled manpower increases, meeting the government's agenda to have 35% skilled workforce by 2020. To give a simple example, Gamuda now require only one quantity surveyor (QS) to finalise cost assessment for 10 KVMRT stations within three weeks as opposed to 10 QS taking two months to do the same, previously.

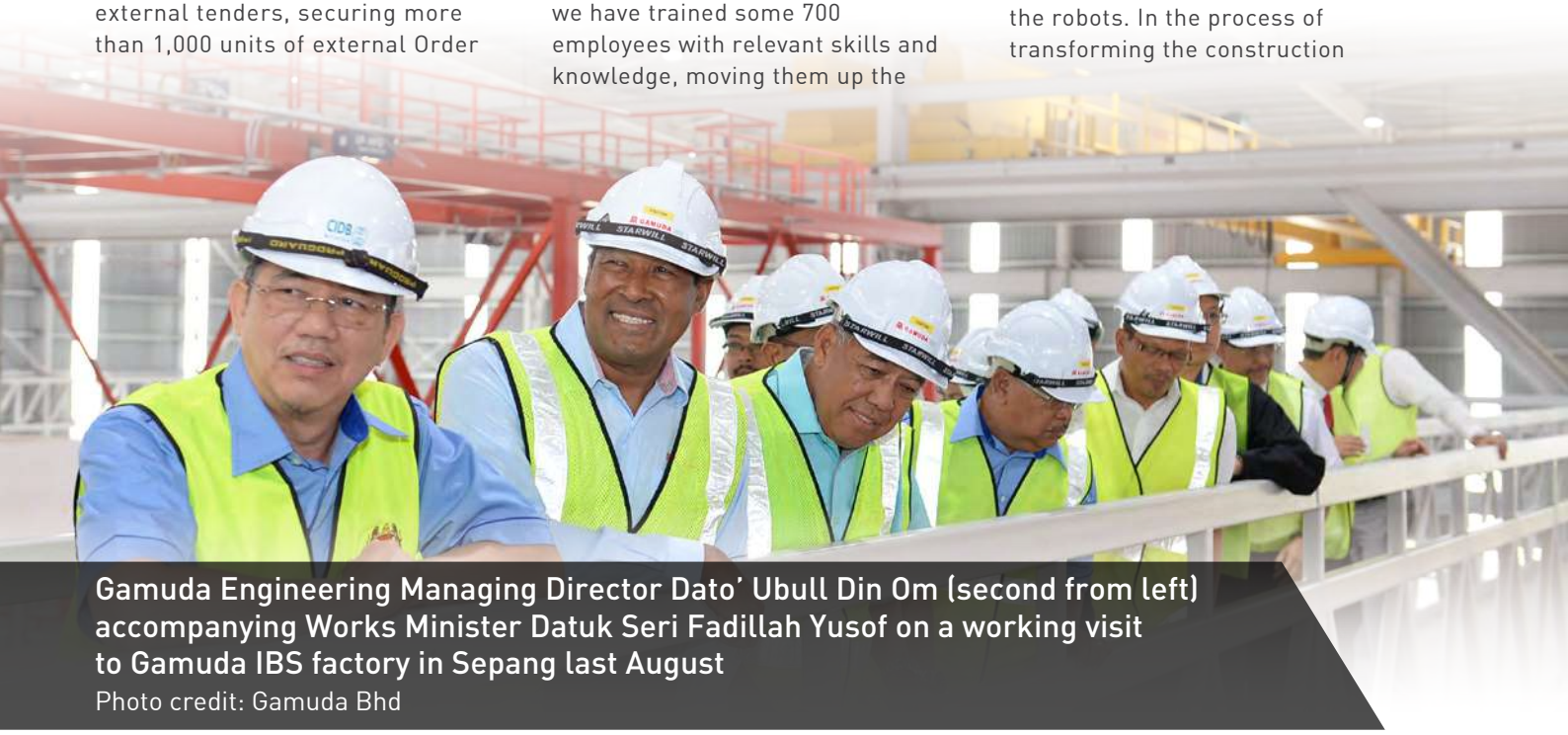
"Since we have made it a point to use IBS for all our infrastructure projects, we envision the creation of a fresh pool of skilled talent with enhanced earning power and marketability. This, in turn, spurs a renewed image for the building sector," Dato' Ubull stresses.

Flexible Design and Safe Construction

The key differentiator that places Gamuda IBS products a step above is customisation over standardisation as every single cast can be made differently on a flexible mould, formed by the robots. In the process of transforming the construction practices, they are also shifting perceptions that IBS products are boring and confines designers' creativity due to standardisation of precast products.

They are able to produce solid, high quality and stylish products all within a controlled environment. Off-site manufacturing has great advantages because the process is simpler, faster and safer. This makes it easier to design, develop, produce, transport and assemble the products at site.

A major plus point that elevates construction standards is a cleaner and greener site which contributes



Gamuda Engineering Managing Director Dato' Ubull Din Om (second from left) accompanying Works Minister Datuk Seri Fadillah Yusof on a working visit to Gamuda IBS factory in Sepang last August
Photo credit: Gamuda Bhd

Using advanced robotic functions, Gamuda IBS increases productivity, optimises resource allocation and reduces wastage

Photo credit: Gamuda Bhd

Artist's impression of a building with precast concrete beams. Gamuda IBS has the capacity to produce a variety of designs and products
Photo credit: Gamuda Bhd

A prefabricated bathroom unit designed, produced and completely assembled inside Gamuda IBS factory
Photo credit: Gamuda Bhd

Malaysia's first digital IBS by Gamuda in Sepang has a yearly output capacity of 3,000 units
Photo credit: Gamuda Bhd

RSKU Jade Hills in Kajang is Gamuda's first affordable housing project that's IBS-optimised. Structural completion on-site just took 393 days
Photo credit: Gamuda Bhd

towards sustainable building practices. Take a visit to an IBS-optimised construction area and compare them with a conventional construction zone to see the difference.

There are far lesser waste, bigger space for movement and a healthier working environment because workers deal with less noise, heat, dusts and chemical fumes. Fewer workers on-site also means better safety aspects.

Product Development - Leading the Change

Gamuda's team heavily invests into product research and development and this was a major learning ground for them. Through continuous product development, they realised that the possibilities are limitless.

"We learnt that it is possible to optimise IBS for an entire township. We also learnt that we have the ability to build beyond 40-storeys; infrastructure such as toll plazas; commercial and industrial lots; and enhance the aesthetical appeal of an IBS-optimised product.

"Indeed, every technology has its strengths and limitations. We discovered our strengths and mitigated the machineries' limitations through new design methodology. Today, we can claim that our IBS products have more pros than cons.

For instance, our products have superior resistance to fire and rot compared to timber or steel construction. As opposed to brick walls, the factory finish quality for Gamuda IBS panel is superior.

Excellent heat and sound insulation gives investors the added advantage of owning a quality property that was built sustainably," Dato' Ubull reveals.

Currently, their facility in Sepang is operating at full capacity to cater to Gamuda Land projects. Their capacity will be further boosted when their Banting factory is ready as they can better serve external clients who are major developers in town. Clients who engage Gamuda to build for them can be assured of higher quality standards for their developments as they focus on marketing strategies to build their business.

At a macro level, Gamuda is forming good industrial collaborations whilst encouraging efficient time and cost utilisation that will raise the standards of the local construction sector, an effect that will benefit all interested parties in the industry.

The Human Touch to PRODUCTIVITY

As Malaysia presses on towards its 11th Malaysia Plan goal of becoming a high-income nation by 2020, there's a buzzword being bandied about. It's "productivity." Investing in human capital might seem a foregone conclusion at this point, but it is precisely what's needed to drive productivity.

Datuk Matthew Tee, Group Executive Director, Bina Puri

Simply put, productivity is the efficiency by which a producer converts inputs into outputs. Without a specific context, productivity usually means labour productivity, which can be calculated by the amount of output per hour worked or workers employed.

Key goals for 2020 include increasing productivity by 2.5 times up to an output of USD16,500 per worker and paying out higher wages based on increased efficiency.

There is no question that productivity is the key to unlocking Malaysia's path as a high-income nation. Greater productivity, in turn, leads to an enhanced sense of competition across the sector, giving both the economy a boost and leading to higher incomes for all.

In the debate on improving productivity in construction, questions about the factors driving productivity and solutions rise to the fore. Seeking insight on these matters, HEIGHTS spoke to Datuk Matthew Tee, the president of International Federation of Asian and Western Pacific Contractors' Association (IFAWPCA) and group executive director of Bina Puri.

On the Tech Track

Technological progress brings a whole slew of promises. One major technological marvel, Building Information Modelling (BIM), enables architects, engineers, contractors and their collaborators to generate 3D models of a building over its lifecycle. Decades ago, they would have been completely reliant on hand-drawn illustrations and computer-aided design.

"Last time, we used to have all our draughting team use AutoCAD. Each respective drawing is separated one by one. It was just a 2D view," Datuk Matthew recalled. "Now with BIM, we can visualise 3D buildings from start to end, incorporating all segments such as M&E, C&S, architectural and others. If one of the segments clashes, the team will immediately rectify to integrate them."

And if a contractor wishes to change one element of the design, the modification and its ripple effects (costs, building performance, construction time, etc.) would be updated in real time and every member of the team would be able to see the updates.

Using a fully digital design-and-documentation system such as BIM reduces construction costs – 2% by conservative estimates. In a rare case where all designers and contractors used BIM to work on the Collaborative Life Sciences Building in Portland, Oregon, they saved USD10 million on a project which was budgeted for USD295 million.

Speaking to the news website Fast Company, Alene Davis of SERA Architects, one of the lead firms involved in the CLSB project said, "It's hard to determine just how much more time the project would have taken if these processes hadn't been as streamlined, but it's safe to say we saved many months."

Industrialised Building System (IBS) is another innovation that heightens productivity rates. It involves manufacturing building components in a controlled environment such as a factory or plant before they're transported to the construction site for assembly.

Impressively, in 2015, Mini Sky City, a 57-storey skyscraper was assembled in 19 working days in Changsha, China. Locally, the administrative block of a primary school in Sarawak, SK Siniawan, was built within 49 days, earlier this year. If conventional building methods had been used, the same project would have taken at least six months.

It might seem like a recent development, but IBS was introduced to Malaysia in the 1960s with the Pekeliling Flats project. Other notable projects that have seen the use of IBS since then are the Petronas Twin Towers and the Kuala Lumpur International Airport.

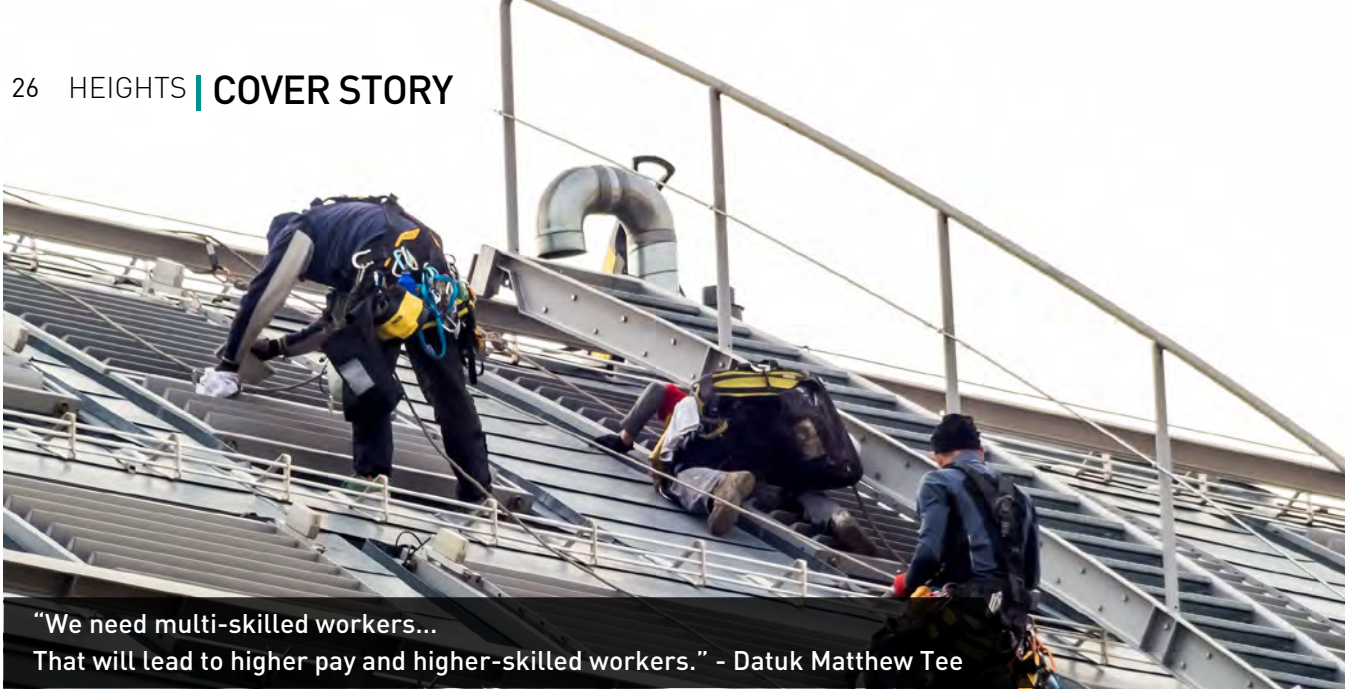
A Little Behind

Despite their benefits, both BIM and IBS haven't been as well-received as hoped. In line with the productivity thrust under the Construction Industry Transformation Programme, CIDB has been driving the adoption of both technologies in the public and private sector.

High investment costs could be deterring some industry players from adopting BIM and IBS. "Depending on the vendor, the BIM software could cost hundreds of thousands," Datuk Matthew explained.

Main Place is one of Bina Puri's popular residential-commercial developments
Photo credit: StarProperty.my

Using a fully digital design-and-documentation system such as BIM reduces construction costs



"We need multi-skilled workers...
That will lead to higher pay and higher-skilled workers." - Datuk Matthew Tee

In the long term, as the adoption of BIM and IBS grows more widespread, the need for low-skilled migrant workers will drop sharply. This would increase the productivity rate by 2.5 times to USD 16,500.

"We need multi-skilled workers. Not only can you do brick-laying, you can also do plastering. That will lead to higher pay and higher skilled workers," Datuk Matthew added.

Another challenge lies in the logistics cost. Contractors would need to invest in the proper equipment that can transport these heavy components for assembly to the building site.

Also, some things just can't be replaced by robotics and AI.

Datuk Matthew shared, "If you ask me, drones are good for taking pictures of the site, but they can't monitor wastage and other things. You still need humans to supervise."

Smooth Flows

An efficient flow of information is also necessary for productivity in construction projects. If one person in the chain delays delivering information, the rest of the chain gets affected. Sometimes, contractors are waiting for information. Datuk Matthew segues into an example about a room:

"I'm ready. I've got 6 fellows here. But what about the carpet? What colour? How do you want the lighting? Your wall? What paint colour? Plastered or not plastered? A lot of info for one simple room."
When clients change their requirements or demands, this may prevent contractors from completing the project at the rate they desire or planned for.

Among other factors, cashflows or the lack thereof could also lead to project delays.

"For example, you're supposed to pay me within 45 days. Sometimes, you pay me after 60 days. Or sometimes you only pay me 60-70% of what I'm owed. A lot of times, contractors have to bear the burden on behalf of their clients."

Does the Chicken or the Egg Come First?

Do high wages lead to high productivity rates or is it the other way around?

Taking ownership of your work and your responsibilities plays a huge influence in productivity, stresses Datuk Matthew.

"It comes back to ownership. A lot of people want high wages but the things that you're supposed to be doing, you're not doing. Lots of times, the bosses have to push and push."

Inspired by a simulation during a workshop training several Bina Puri staff went to, he gave an example: "Let's say on a normal day, we sweep

the corridor. But with a certain push factor, we can sweep 7 times faster. It shows that the general human being can work 7 times faster."

According to a Wages and Salaries Report released by the Department of Statistics in 2013, Malaysia's construction sector's average monthly salaries were recorded at RM1,708 and RM1,932 for men and women respectively.

From his perspective, high wages do not necessarily lead to a stronger performance. In fact, it could result in a waste of money if the increased salary does not result in rising productivity.

"High pay is not necessarily commensurate with high productivity. I think ownership comes first. You have to love what you do. It's always ownership first, self-motivation first. High pay can only get you so far. Eventually, you'll be found out."

However, he does think that it's possible that low wages could contribute to low productivity rates and vice versa.

"It's possible. There's a motivation effect as well. All of a sudden, I give

this person an increment. Naturally, he will be more motivated, but I'm not sure how long the motivating effect will last."

According to some research, a higher wage does raise productivity. In early 2015, Walmart announced that it was going to start paying its employees more. Sales increased and the rate of stores meeting their customer service targets rose to 75% by early 2016. A 2005 study found that boosting the wages of low wage, low-skilled workers in American hospitals led to less turnover and fewer days taken off by the staff.

The Human Touch

Wages only form a part of the puzzle. What drives productivity or undermines it is the environment at work. When people feel respected and valued by the people they work for, it goes a long way towards creating a sense of warmth and belonging at work. Empowering employees plays a major role in driving performance and motivation levels up.

When Surati Sujor, an assistant general manager, was asked what kept her motivated to work at Bina Puri, she mentioned, "Most of our loyal staff mentioned that the most effective thing is the personal touch from the boss. With a good boss, you can talk with him; you can fight with him. No problem. He can admonish us anytime. But the next day when we come to work, he'll ask, 'Are you better?' A good boss is somebody who listens to us."

Aside from having leaders who empower their staff, the organisation works hard to ensure that each employee feels they're a part of the family. Funded partly by employees and partly by the company, the Sports Club organises activities for the benefit and enjoyment of the staff.

"From that pool of money, we have weekly badminton activities. We had treasure hunts. We organise trips. Last year, we went to Turkey," Datuk Matthew explains. "We've had trips to Singapore, to China. Once you join Bina Puri, you simply must join the Sports Club."

Each employee only had to pay RM2,400 for the 7-day trip in Turkey, as the club subsidised the costs, contributing RM1,800 per pax for that trip.

Another avenue through which the company fosters a warm environment is the General Assembly. "Every 2 months, we gather in the hall downstairs from the headquarters and sing 'Negaraku'. We celebrate the staff's birthdays. And we mingle with other employees."

The level of care doesn't stop with the employees. Bina Puri also gives out undergraduate scholarships to the children of staff members annually, with the total amount capped at RM250,000.

At Bina Puri, the mental, emotional, and physical welfare of employees is clearly a priority. Aside from a competitive salary package and other benefits, proper welfare facilities and activities provide employees with outlets to manage and release their stress.

Datuk Matthew shared, "We have massage chairs on the mezzanine floor and we also have a gym. We don't have counselling for the staff yet. That's quite out of the norm, but maybe we can be the first to do it."

Acknowledging solid and consistent performances is crucial in deepening the sense of ownership they have over work. "Based on some consultants' advice, we're thinking, why not have more regular reviews? Currently, it's annually. Maybe we can do it every six months instead of once a year. We also have Best Employee awards."

In a Nutshell

As it stands, the current productivity thrust progress stands at 96%. While the progress looks highly promising, there are still many growing pains to overcome before the industry reaches peak productivity. Uptake of BIM and IBS in the private sector needs to be increased. High investment costs and the lack of economies of scale remain strong concerns for contractors.

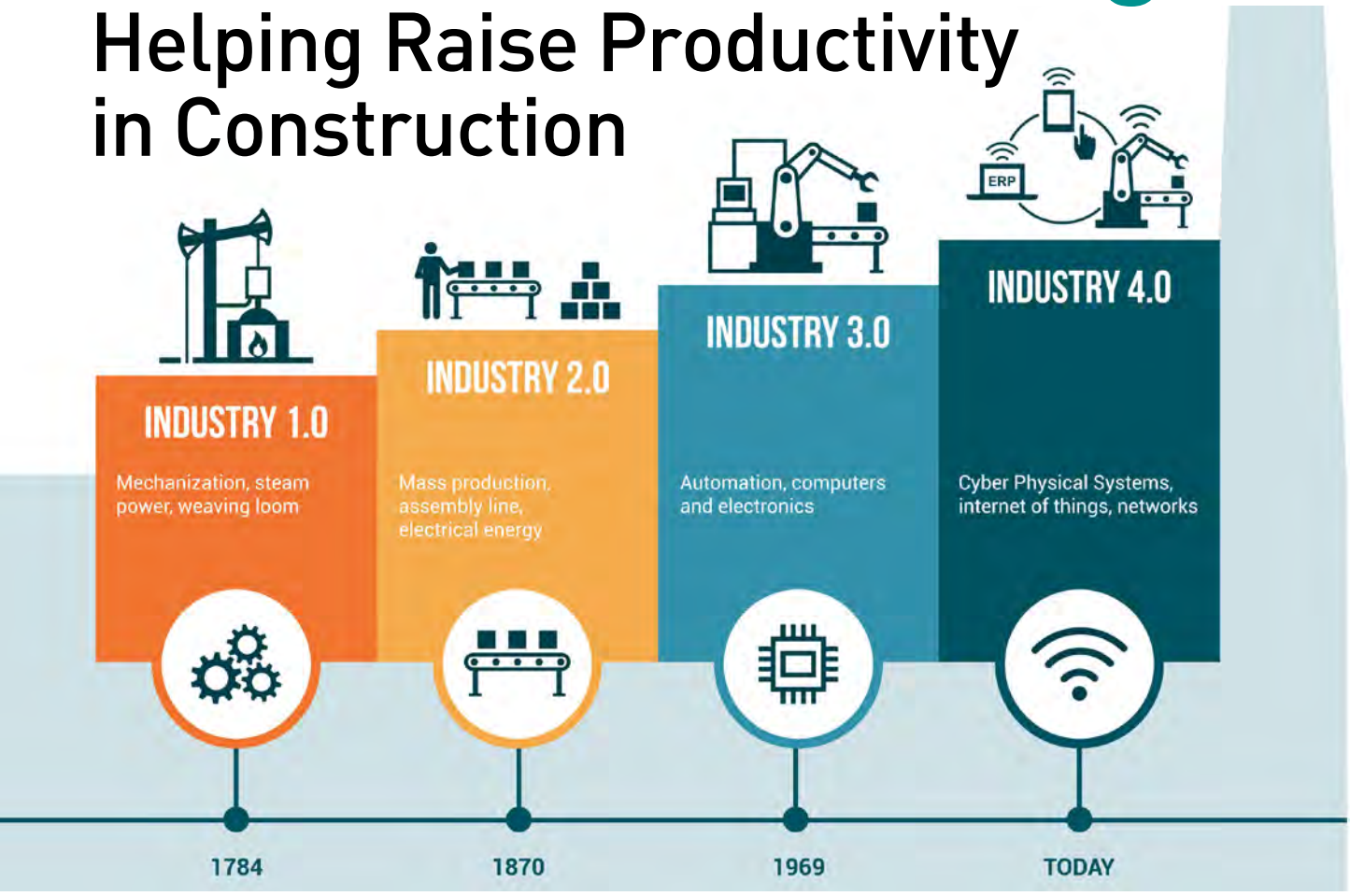
Adoption of modern technology and mechanisation may be instrumental in driving productivity, but it is not the sole factor behind increased efficiency. A host of other factors contribute to a greater quality or quantity of output and some of them lie in the human touch. Positive shocks in wages have been shown to boost motivation levels. Having a holistic working environment and an employer who listens and values your input, work wonders for performance.

As employers invest in the human capital that makes up their workforce, be it through technological training and upskilling or simple encouragement and acknowledgement, that will shape employees into people who enjoy their work and work more efficiently with the same resources. In the long run, the benefits will translate into more highly skilled workers who can command higher wages, allowing our nation to realise its aspiration of becoming a high-income nation.

Productivity is the key to unlocking Malaysia's path as a high-income nation

4th Industrial Revolution Technologies

Helping Raise Productivity in Construction



The construction industry is an important sector of the economy supporting the growth of many other industries. Through an infusion of funds, the construction industry functions like a jump-starter, galvanising the economy during periods of economic decline. Given its crucial role in stabilising the economy, it is vital that the construction industry in Malaysia maintains not just steady but also rapid growth. However it is hampered in this regard by an adherence to what can be described as archaic methods and practices, particularly in the current age of the fourth industrial revolution where digital technology and innovations are already causing disruptions in a wide range of industries.

"In the last 20 to 30 years, not just in Malaysia but many other countries as well, the practices of the construction industry has not changed," admits Dato' Ir Ahmad 'Asri Abdul Hamid, Chief Executive of CIDB. "For example, the process and products for constructing a building have remained practically the same over that period. Because of that, while there has been growth in the construction sector, it has not been significant."

CIDB conducted a study that revealed construction of a project using IBS can be done in half the time it would take using traditional methods

As the construction industry plays a vital role in supporting the economic development of the country, the need to accelerate its growth has become a priority for CIDB.

"The department of statistics figures show the correlation between productivity and economic growth of the country. The construction industry's productivity growth in 2014 was 13.2% against the growth of 3.8% in 2013," says Dato' Ahmad 'Asri. "In turn, you can see the contribution to the country's GDP surged by 11.6% to RM33 billion in 2014 compared to RM29.5 billion in 2013. Overall that is 3.9% of the GDP. When productivity registers good growth, the contribution to the economy is also significant."

To facilitate the growth of the industry, CIDB introduced the Construction Industry Transformation Programme (CITP), a comprehensive blueprint that details plans and initiatives to create a significant change in the industry with the aim of stronger growth and long term stability. Productivity is one of the guiding thrusts of the CITP and it is addressed through three main areas: technology, process, and manpower. These three components will contribute to the increase in productivity, stresses Dato' Ahmad 'Asri.

The productivity baseline level is set from 2011, which is RM22,464 per capita worker per year. Under the CITP, the aim is to increase the productivity level by 2.5 times to RM62,000 per capita worker per year.

"It is a big target," the Chief Executive points out. "We monitored the figures from 2011 to 2017 and we have only managed to increase by 1.8 times. In 2017, we were only at RM40,105 so we still have a long way to go. We have increased productivity but not significantly enough so we have to step up our effort in the three areas. It's a good achievement to date but our target is big so there is a lot more to go."

Encouraging the Adoption of Technology

Under technology, CIDB aims to encourage mechanisation and the use of Industrialised Building Systems (IBS).

"Through IBS, manufacturing of the components for a construction project is done in a controlled environment so ideally it should be in the factory. It's just like manufacturing a car. If you don't mechanise car manufacturing, imagine the length of time it takes to build a single car and the issues that may arise such as quality and all that. So the best is to automate it, manufacture in the factory, and then deliver it to the distributors," says Dato' Ahmad 'Asri.

According to the Chief Executive, CIDB conducted a study that revealed that construction of a project using IBS can be done in half the time it would take using traditional methods of construction.

"What is supposed to be completed in 36 months is completed in 18 months. Additionally, when you use machines to develop components and all that and then transfer them to the site, the number of workers that you need will be greatly reduced. Because the characteristic of construction as it is involves a lot of workers on-site," he adds.

The combination of speed and reduction in number of workers will increase productivity, says Dato' Ahmad 'Asri, who also points out that because the components are manufactured in a controlled environment, quality control and safety can be better managed. Furthermore, IBS facilitates proper planning of a project, which will reduce the amount of construction waste.

"Construction waste is one of the major issues in the country now because the construction industry produces 40 percent of the waste in the country. So, if you improve the practice by using IBS for example, then you can reduce a lot of waste," he says.

While IBS clearly offers many benefits to the industry, Dato' Ahmad 'Asri laments its slow uptake among local developers.

"We are still grappling with idea of using IBS, but other countries are already ahead of us. China has gone even further, taking it to another level by printing homes. They use 3D printers to build homes. So the progress we see in the construction industry is from building to manufacturing to assembly–where the entire unit itself is built in the factory–and eventually to printing homes. Yet here we are still doing manufacturing of components. So we are still very far behind but hopefully, once IBS is adopted, it will accelerate the process of adopting all these new technologies," says Dato' Ahmad 'Asri.

The government has actually made it compulsory since 2008 for public construction projects worth RM10 million and above to use the IBS method.

"The difference between then and now is the lack of enforcement. So adoption of IBS for government projects is on the increasing trend," Dato' Ahmad 'Asri says, while pointing out that CIDB records indicate that the share of private sector projects are increasing compared to government projects. "In 2016, about 78% of the projects are from the private sector, only 22% were from the government sector. So if you only push it to the government sector, you still cannot get the scale to make IBS viable or cheaper. Therefore the government has decided to make IBS mandatory for private sector projects. The plan is to impose it in 2020 for private sector projects exceeding RM50 million, they have to reach an IBS score of 50. That's a start so hopefully after that, they will be volume and more demand for IBS. When you have the volume, the price will come down," Dato' Ahmad 'Asri reveals.

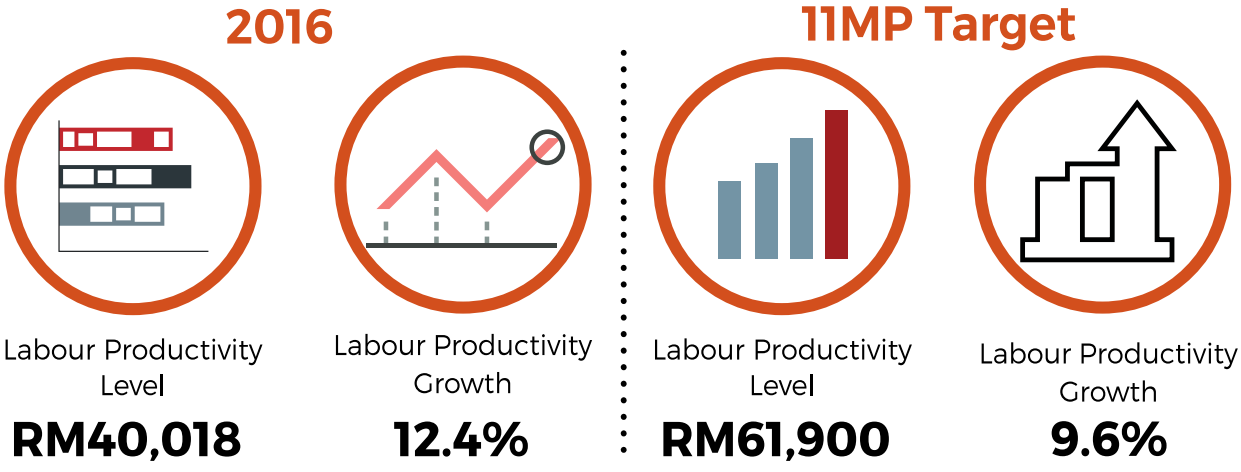
Making Processes Smoother with BIM

Process is another area under the productivity thrust that is closely related to technology. In this area, CIDB is promoting the use of Building Information Modelling (BIM) in the construction industry. BIM is a modelling technology to produce, communicate, and analyse digital information models throughout the construction project life cycle.

"What BIM does is it allows you to spend more time in planning, but you reduce your time in construction," says Dato' Ahmad 'Asri.

BIM helps reduce problems and issues during the construction period such as improper sizing of beams and incorrect positioning of ceilings. The combination of BIM and IBS

Construction Sector Productivity **At a Glance**



Credit: MPC Productivity Report 2016/2017

increases the chances of successfully completing a construction project with minimal problems and helps ensure a better-quality end product.

"Using BIM, you can also standardise your components and transfer the information to IBS manufacturers who will produce the components. After that, it's just installation, everything is there."

To promote and increase the use of BIM in the Malaysia construction industry, CIDB established a centre of excellence for BIM, which was launched in 2017. Known as the myBIM Centre, it features state-of-the-art facilities including a studio which is available for rental to all BIM practitioners, a lab, seminar room, and showcase area. The centre enables construction industry players to model and visualise building projects in a simulated environment by using BIM.

"We had a speaker from the UK who came to visit last year and he said this is a lot better than what they have in the UK," maintains Dato' Ahmad 'Asri. The two major challenges of BIM is the high cost of the software and the limited number of competent personnel with the expertise to use the system.

"There is a lot of staff pinching happening at the moment. What happens is people go through BIM training and then they are offered jobs in other companies because those companies want to use BIM. Our strategy is to train as many people as possible so we are able to flood the market," he reveals.

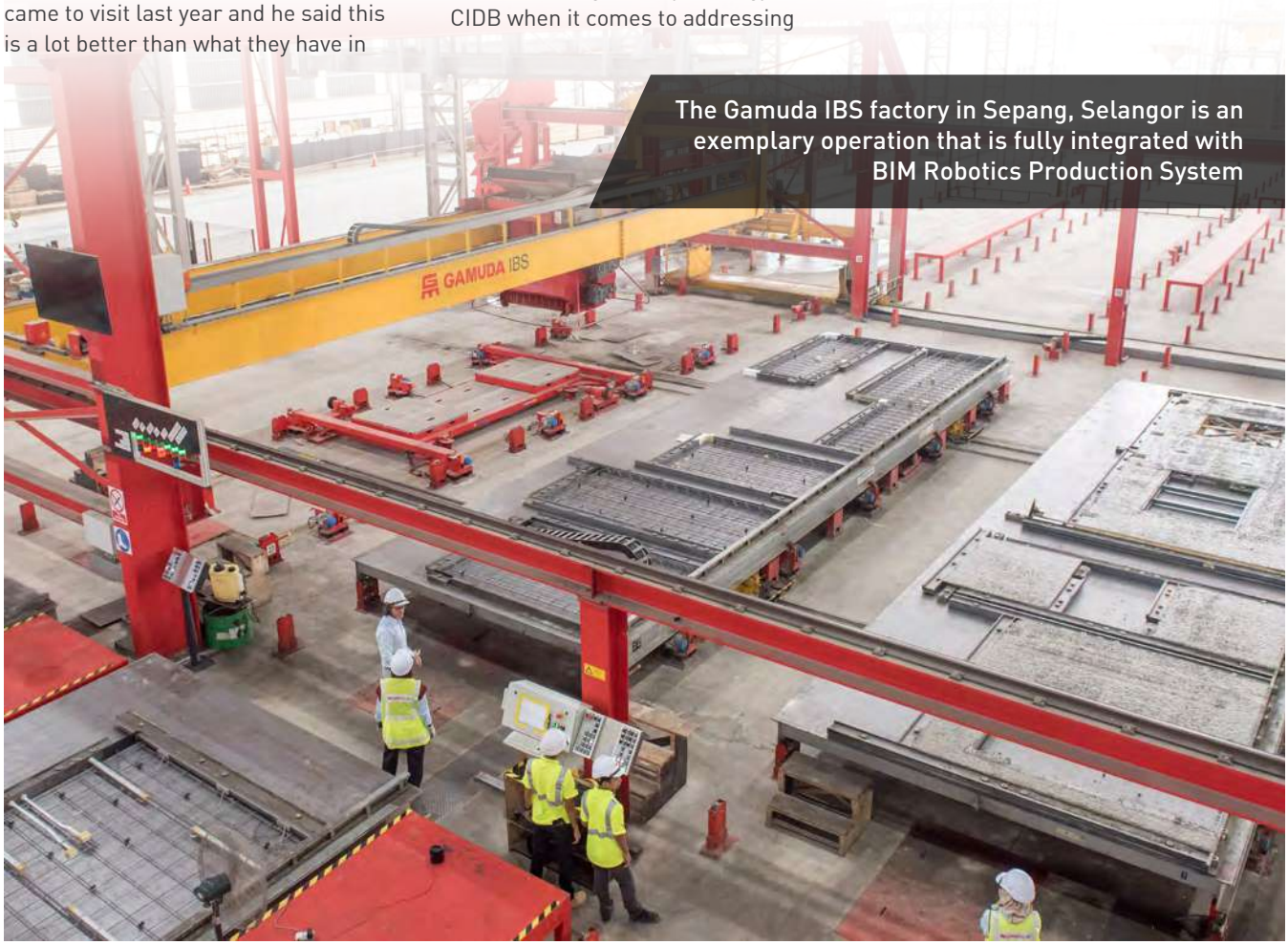
To date, CIDB has trained about 1,300 personnel on BIM. The organisation has also formed collaborations with universities to train university students so that they are BIM ready by the time they graduate.

High Impact Training to Attract Workers

In fact, training is a key strategy for CIDB when it comes to addressing the third area under the productivity thrust, which is manpower. Through its Akademi Binaan Malaysia (ABM), of which there are six throughout the country including Sabah and Sarawak, CIDB has trained over 300,000 youth and personnel from the construction sector combined.

"The youth category are for people who maybe failed their SPM. They have nowhere to go. We provide free training using CIDB funds. Up to now, we have trained about 100,000 youth," says Dato' Ahmad 'Asri.

Personnel undergo shorter training periods of about a week or so to improve their skills before returning to the industry. Successful participants of the training programme receive a certificate of accreditation recognising them as skilled workers. CIDB spends approximately RM100 million a year for its training programmes under ABM.



The Gamuda IBS factory in Sepang, Selangor is an exemplary operation that is fully integrated with BIM Robotics Production System

Embrace Industry 4.0 Technologies to Accelerate Growth and Promote Efficiency

The first industrial revolution back in the 18th century not only created a seismic shift in the process of manufacturing – propelling large-scale production of goods through mechanisation and heralding the advent of the factory system – it also inspired the world to create and embrace technology and innovation as a means of improving lives and promoting progress. It created a ripple effect that led to the second industrial revolution which centred on the use of electric power, as well as the electronics and information technology–driven third industrial revolution.

The next phase in this storied tradition of human innovation is the fourth industrial revolution, which the Chief Executive Officer of the Malaysian Industry-Government Group for High Technology (MiGHT), Datuk Dr Mohd Yusoff Sulaiman, explains, is characterised by the convergence of digital, virtual, and biological technologies. Another distinct feature of the fourth industrial revolution is the emergence of disruptive technologies that challenge outmoded business practices and propel significant changes in the industrial landscape.

"The emergence of new technologies such as the Internet of Things (IoT), big data, systems integration, and blockchain technology are altering the manufacturing terrain and creating new opportunities," he says, adding that it is incumbent on industry players to seize the opportunities arising out of industry 4.0. "In order to do this, people will have to break the barrier of current thinking and be open to accepting new business models and implementing new approaches to doing things."

However, many industry players are still grappling with the way disruptive technologies have upended the status quo and are finding it hard to take advantage of the benefits they afford. The construction industry, in particular, is widely acknowledged to be lagging behind other industries when it comes to adopting the latest technological innovations. Ida Semurni Abdullah Ali, programme director at MiGHT, cites a report by McKinsey and Company, which states that the construction industry is one of the lowest digitised sectors.

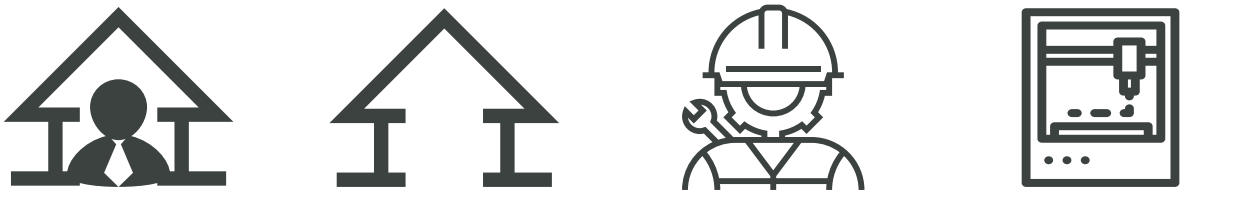
Slow IBS Uptake

In Malaysia, for example, while Industrialised Building Systems were introduced in the country decades ago, construction companies have been slow to adopt its use in their projects.
"IBS is like building a house with Legos. The components are manufactured in a controlled environment and then delivered to the site for installation," says Datuk Dr Mohd Yusoff. "However, construction companies were content to carry on as usual, because labour in the country is cheap."

He also noted that architects were resistant to IBS because they did not see its aesthetic value.

"However, IBS creates the potential for a new kind of employment with

Labour Productivity Growth of Sub-sectors, 2016



Residential	Non - residential	Civil Engineering	Specialised Activities
12.9%	4.9%	13.9%	15.4%

Credit: MPC Productivity Report 2016/2017

"IBS creates the potential for a new kind of employment with qualified workers trained to work in clean environments, dispelling the image of the 3 Ds (dangerous, dirty, and difficult) associated with the construction industry."
- Datuk Dr Mohd Yusoff Sulaiman

qualified workers trained to work in clean environments, dispelling the image of the 3 Ds (dangerous, dirty, and difficult) associated with the construction industry," says Datuk Dr Mohd Yusoff. "A McDonalds was built in one week using IBS."

Addressing Social and Environmental Concerns

New technology should also be explored for its potential to benefit society. In the case of IBS, the system would be useful for providing construction solutions during disasters like the tsunami, points out the CEO of MiGHT.

"IBS can be utilised for the quick rebuilding of homes that were destroyed," he points out.
In fact, the technological innovations of the fourth industrial revolution can be used to address a wide range of societal and environmental concerns that the world is dealing with today. Due to the precise planning required in the use of IBS, for instance, the technology can go a long way in helping the country deal with its longstanding construction waste problem.

"Smart is the new green. Companies that are championing sustainability are developing materials based on renewable and biodegradable resources," say Datuk Dr Mohd Yusoff.

"For example, MiGHT is working with companies like the Sunway Group and Ikhmas Jaya to use agricultural wastes like paddy straws and husks to make bricks," adds Ida Semurni.

Pick Up the Pace

However, if other companies in the construction industry do not want to be left behind, they will need to move faster in embracing technologies that can help them function more effectively.
"As they deal with a lot of suppliers, for instance, companies in the construction industry can use blockchain technology to streamline their payment systems," explains Datuk Dr Mohd Yusoff. "The construction industry will need to motivate themselves and pick up the pace to access the benefits and value of 4.0 technologies."

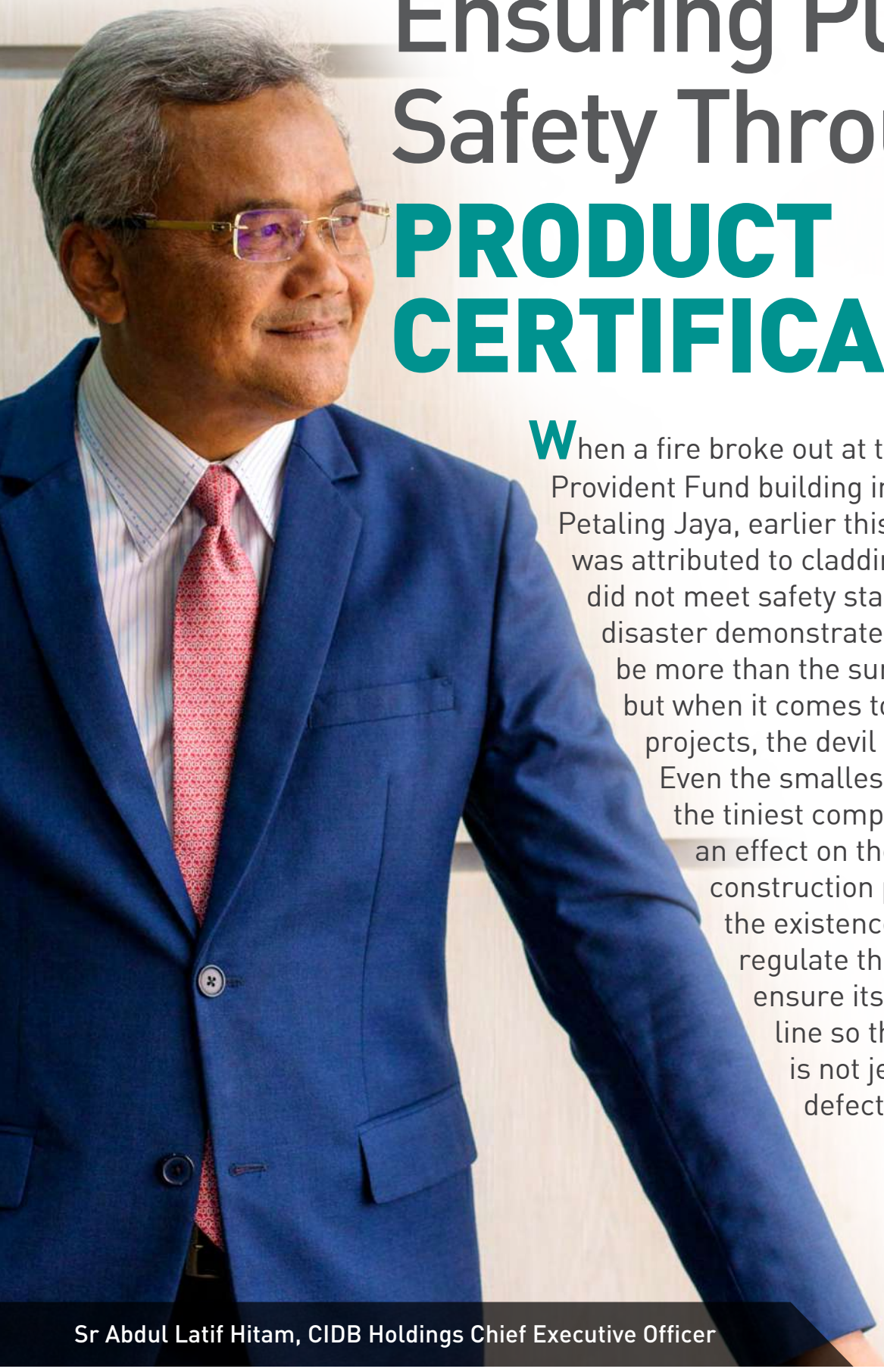
Countries like Dubai are way ahead as they are already using 3D printing for their construction projects.

"Dubai's target is to have 25% of their houses built using 3D printing by 2030," says Ida Semurni.

Furthermore, as Malaysia strives towards its target of becoming a developed nation, the development of smart and sustainable cities are becoming imperative.

"The construction industry will have to look at the bigger picture as they have an important role to play in the ecosystem of these cities," concludes Datuk Dr Mohd Yusoff Sulaiman.

Ensuring Public Safety Through PRODUCT CERTIFICATION



Sr Abdul Latif Hitam, CIDB Holdings Chief Executive Officer

When a fire broke out at the Employees Provident Fund building in Jalan Gasing, Petaling Jaya, earlier this year, the cause was attributed to cladding panels that did not meet safety standards. As the disaster demonstrates, the whole may be more than the sum of its parts but when it comes to construction projects, the devil is the details. Even the smallest materials and the tiniest components can have an effect on the success of a construction project. Hence, the existence of laws to regulate the industry and ensure its players toe the line so that public safety is not jeopardised by defective products.

In Malaysia, the CIDB Act 520 was passed in 1994, which established the Construction Industry Development Board (CIDB) and enabled its role as an enforcer of law on matters pertaining to the construction industry. The Act was further amended in 2011 to strengthen its focus on construction quality and safety. Schedule 4 of the Act lists all of the materials that have to be certified before they can be used in the construction of buildings and infrastructures in the country. In order to receive certification, the materials will have to be tested and verified by a certification body that is accredited by CIDB and the Department of Standards.

"All the materials in Schedule 4 are part and parcel of the structural integrity of a building, so if these materials are substandard, you are comprising the structural integrity and safety of the building," says Nor Shah Shoib, general manager of the Industry Training and Quality Assurance Division of CIDB Holdings.

A subsidiary of CIDB, CIDB Holdings provides certification services, which includes verification and testing, for products such as ceramics, sanitary ware, glass, tap fittings, as well as iron and steel.

Auditing for Quality

"We are in the business of selling confidence," says its Chief Executive Officer, Sr Abdul Latif Hitam. "We give confidence to people that something that is undertaken by this organisation and the product being certified is of good quality."

To receive the stamp of approval that certification provides, the entire production cycle of a product will have to be evaluated. This stage of the certification process is known as the factory audit. During a factory audit, an auditor will review a company's operational procedure including its quality control plan, as well as its process flow for inspecting incoming and outgoing materials. The auditor will also test the equipment used for daily quality inspections.

"We will check the suitability of the equipment and how well it is maintained. There must be some consistency in the calibration of the equipment," explains Mohd Zahari Shariffuddin, manager of the Industry Training and Quality Assurance Division of CIDB Holdings.

A company undergoing factory audit will also be evaluated for how it handles non-conformances. "How they grade the product itself is important," Mohd Zahari continues. "They must establish some process where they can separate defective products from the high-quality ones. And they must adhere to very strict ISO standards because only the highest quality products can be sold in Malaysian markets."

Additionally, the handling of customer complaints will also be reviewed to ensure that the product manufacturer has a process in place to resolve disputes that are brought up by their customers. The audit will also take into account the final presentation of the product, which should include all the relevant markings on its packaging. The entire factory audit process usually takes one to two months.

"You must indicate the brand and country of origin, what kind of standards it follows, model number and the certification number," says Mohd Zahari. "Our logo is certified by the Department of Standards, so if the product is certified by us, the logo must be placed on the packaging."

The next stage in the certification process is testing the product, which is conducted by an accredited testing body. CIDB Holdings is equipped with a lab that is able to provide the full spectrum of testing services for the type of materials it certifies.

"We have the facilities to conduct the many different tests. As an example, a single ceramic tile would need to undergo 14 different types of tests to comply with the requirements of the standard MS ISO 13006:2014," Mohd Zahari elaborates. "This includes the dimensional test, water absorption test, performance of the tiles, chemical test, staining, abrasion, and so on. All of these tests are conducted to ensure quality, which would ensure the safety of the tiles."

Based on the results of the tests, a recommendation will be provided

Even the smallest materials and the tiniest components can have an effect on the success of a construction project

detailing whether the product is able to meet all the standard requirements. Products that are fully compliant will be provided with the certificate. While its labs are equipped for certain products under Schedule 4, CIDB Holdings also works with partners to certify other types of products.

"We have partnerships with other labs, which means we can expand any time to include other products," Mohd Zahari explains.

"And we only work with labs that are accredited by the Department of Standards," adds Sr Abdul Latif. "For international partners, there are mutual recognition labs."

The company has collaborations with international labs, particularly in China, which is a major importer of products for the construction industry.

"We have a few partners from China for the lab testing that we are doing. So, we are testing the materials at the source before it comes in," says Sr Abdul Latif.

According to him, initially only products from overseas were subjected to the process of certification but after complaints were raise at the World Trade Organisation, local products also had to be certified.

"With that, CIDB revised its laws so that local companies would also have to comply with the standards so that everybody can compete on a level playing ground," adds Sr Abdul Latif.

Eye on Expansion

CIDB Holdings provides its services for both local and imported products. Foreign manufacturers from countries such as China, Thailand, Vietnam, Indonesia, Italy, Spain, and Turkey have applied for the company's product certification. CIDB Holdings has a total of more than 1,000 active clients since it began providing verification services in 2008. As Nor Shah points out, each client may bring in five to ten products for verification. Additionally, the company has an active clientele of over 40 companies for its testing services, and about 150 clients for its certification services.

"These numbers keep on growing. We hope we can expand it into whatever the industry wants us to be because there are a lot of products under Schedule 4 that need to be in compliance with the industry," maintains Sr Abdul Latif. "It's about safety and health. The list is not exhaustive and will be expanded accordingly, depending on the level of safety and health required for the public."

CIDB Holdings also harbours plans to broaden its services for the international market.

"We are experts on Malaysian standards, but we are looking into partners for customers who want Australian standards for example, so their products can be tested here," the CEO continues. "These are areas of strategic direction that we are looking at. If manufacturers are bringing their products to Malaysia, they have to comply with local standards. But there are companies that want to comply with other standards as well. It all depends on what the client needs."

Product certification is a niche field that requires individuals with a very specific level of expertise

Qualified Personnel

One of the main challenges in expanding its operations is finding the right people for the job as product certification is a niche field that requires individuals with a very specific level of expertise and the appropriate amount of experience.

"Before becoming an auditor, you have to fulfil all the criteria which include the right educational background, product knowledge, and experience

CIDB Holdings provides its services for both local and imported products

of not less than 5 years. You will have to take and pass exams, and your competency will be assessed by experts from the Department of Standards, who will observe what you are doing," Mohd Zahari explains.

"And it's not just about the knowledge, it's also about the attitude because that also speaks to the integrity of the work," adds Sr Abdul Latif. "We could be challenged in a court of law if a dispute was to arise. The vendor and even the customer can come back to you. And we would have to go back and see the source of the issue. This industry is small. If your integrity is called into question, everybody would know."

CIDB Holdings has a staff of 22 in its certification department including five certified auditors. The team has to keep abreast of the constant change in technology for its annual accreditation.

"Within a year or two, the Department of Standards will revise their standards. There will be new testing and requirements and we have to comply with those," says Nor Shah.

"We are monitored closely year-on-year, so we strive to avoid any glitches in our process. We have to measure our customers' satisfaction and if we fall short of 80 percent, we will be questioned on the quality of our compliance," Sr Abdul Latif explains.

Its loyal client base is indication that the company is responding to their needs and requirements, says the CEO. In order to further improve its services, CIDB Holdings will be relocating its testing lab from its current location in Jalan Chan Sow Lin, Kuala Lumpur to Shah Alam, Selangor where the facilities are more enhanced. The company sets itself apart from other certification bodies through its value proposition of reasonable fees and prompt service. Due to its sole focus on the construction industry, it is able to provide certification services within a comparatively shorter timeframe. Furthermore, through its association with its parent company, CIDB Holdings has an insider perspective and solid understanding of the policies, rules, and requirements of the construction industry. Its CEO believes this gives the company an advantage when it comes to serving their clients.

"We want to be seen as a premier provider of these kinds of services for the construction industry. It is important for the public as well, as it ensures them that the products in the market are of high quality," he concludes.

Product certification is important for the public, as it ensures that constructions are built with materials of high quality

Employee Remuneration as a Tool for Improving Productivity

In high-income countries, remuneration encompasses the basic salary along with any and all fringe benefits

According to the 2016 OECD Economic Assessment of Malaysia, growth in productivity is the essential standard to consider if Malaysia is to provide sustainable increases in the country's living standards. Simply aggregating more labour inputs or capital is a strategy that has hit its limits for the time being.

This has been officially recognised in the stated goals of the 11th Malaysia Plan, which set a labour productivity growth metric that is well above the 2% average growth recorded under the auspices of the previous Plan. The target between 2016 and 2020 has been set at 3.7%. Experts say that in order to achieve the same status as high-income countries, productivity improvements must be driven by coordinated structural reforms.

Well-Placed Reforms

Productivity will respond most positively to changes in skills training and education, rewarding innovation, mainstream adoption of a more sophisticated IT infrastructure, improving labour market functioning, raising the productivity of the public sector, integrating regional initiatives and improving the regulatory framework within the SMB market.
The underlying strain between all of these reforms is productivity, especially the productivity of the front line employees who are responsible for implementing all of the plans and strategies laid out in studies, surveys, white papers and government policy. Remuneration for these employees is essential to improving their productivity.

A Clearly Defined Pay System

The concept of a clearly defined pay system as a catalyst for improved productivity is an idea that has been widely accepted since the early 1980s. From an Addison-Wesley study in the early 1980s to Yermack and Stajkovic & Luthans in the 2000s, the link between remuneration and motivation has been strongly correlated, at the very least.

Widely accepted game theory and other studies such as McGregor's theory X and theory Y, Achievement Theory, Maslow's Need Hierarchy, Herzberg's Two Factor Theory and Taylor's Motivational Theory basically come to the same solution - money is one of the vital sources that employers and organisations use to persuade and motivate individuals. However, there must be as little confusion as possible about the system of remuneration.

According to management theory and many of the theories mentioned above, one of the main reasons that employees join an organisation is to outsource the processing of gaining resources. Most people are confused about how to attract an adequate amount of resources to themselves for survival, and the most successful companies in terms of HR and morale, regardless of industry, are the ones that simplify this process as much as possible.

The Definition of Remuneration

It is essentially important for construction executives to properly define remuneration. Traditionally, the connotation of remuneration is the basic pay of an employee. However, high-income societies have a much more sophisticated view of the concept. Many experts believe that if Malaysia is to meet its goal of becoming a high-income country, it must take on the characteristics of a high-income country in all aspects of the professional structure.

In high-income countries, remuneration encompasses the basic salary along with any and all fringe benefits, employee stock options, ancillary compensation, commissions and other bonuses. There are also many other forms of compensation that are less direct but just as important to consider, such as the concept of education as an investment in individuals and the system as a whole.

Education

Investing in a more widespread education for individuals and in a more robust educational system is not usually considered remuneration, but it is the backbone of all future efforts to improve productivity. The service that society pays for through education is the service that future employees provide when they come to employers with a modern skill set. Education saves the employer onboarding and training time and costs, which could not be adopted at scale for individuals.

Education also sets up an individual to receive more direct remuneration

from future employment, which is a defining point of morale for high achievers in high-income countries. With this in mind, the first concept that future employees must be educated on is the link between higher forms of education and the potential for greater direct remuneration down the line.

Statistics show that Malaysia is doing a relatively good job about spreading the need for higher education. Its Millennium Development goals have shown promise, producing secondary education enrolment at 89% of the total population. This statistic comes from the Ministry of Education, which also showcased great improvements in the participation of young women in the educational system. Also, the District Transformation Programme has begun to narrow the education gap between urban centres and rural areas in the country. Although the gap is closing, areas with higher socioeconomic status still enjoy better education outcomes.

Malaysia's Productivity Performance

Malaysia owes the majority of its productivity growth in the early 2000s to the manufacturing sector. However, this sector of the economy has suffered from slower capital expenditures since that time. This coincided with a reduced share of skilled workers in the sector, with the number dropping from 27.6% in 2010 to 25.7% in 2015. These statistics come from the latest Labour Force Survey report. At the same time, migrant workers with an average lower set of skills increased their total employment percentage from 9.5% to 15%.

Companies within Malaysia with the ability to hire at scale suffered from a lower level of innovation. There were many reasons for this phenomenon, including less access to adequate resources, underdeveloped institutional mechanisms for commercial exploitation of innovation, and a technology infrastructure that was falling behind high-income countries around the world.

The government did adopt a National Broadband Initiative in 2010 to attempt to recognise broadband access as an essential component of business innovation. However, in 2014, Internet subscriptions were only at 10.1% of the total population, which placed Malaysia 80th out of 189 surveyed countries. Malaysia continues to be a country with relatively high broadband subscription costs when compared to its peers in the region. The monopoly that the public private Telekom Malaysia company has over the fibre infrastructure of the company keeps prices high, as competition is kept out of the market.

Business Innovation and Sophisticated Remuneration

As stated before, there are many ways to provide remuneration to employees in the construction sector. The Construction Industry Transformation Programme highlights a very innovative structure for motivating employees through more sophisticated remuneration that includes investments in technology and process.

Investments in technology improve the productivity of workers by improving morale through the opportunity for more creative work. Along with a rise in educational standards, this structure has the potential to create a more highly skilled worker who agrees more with his job than the traditionally standard assembly line employee. If workers no longer have to worry about repeated, rote tasks on the job, they will be more mentally engaged with the processes they are asked to accomplish. Productivity will rise simply because employees are being challenged to accomplish new tasks every day.

With these new challenges comes a responsibility for companies to invest in the technological and processing structure of a construction company that will accommodate employee creativity. All of these things must happen in tandem – it is useless to educate employees to a more sophisticated, technologically-driven environment only to leave them abandoned in an employment environment without the tools they have learned to use during their schooling.

The new generation of construction employees can be immediately challenged through the implementation of new green environmental standards that are soon to be imposed by MyCREST, its parent organisation and the ancillary initiatives that helped to spawn it. Concepts such as lean management, just-in-time production and sustainable development mean nothing if the front-line employees do not actually employee the concepts to projects on a day-to-day basis. Statistics show that although awareness of green construction concepts is rising, implementation remains low. This is a great opportunity to use the remuneration of education to translate into higher individual remuneration for skilled workers employing concepts that will improve the productivity and profitability of projects throughout the country.

It is highly likely that Malaysia will not be able to compete with the rest of the world on labour costs, especially not against other high-income countries. In order to improve productivity, synchronisation between the public and private sectors is required to move remuneration forward on all fronts.

Investments in technology improve the productivity of workers by improving morale through the opportunity for more creative work

INDUSTRY TRENDS

Prefab Construction on the Uptick

Modular, also known as prefab or off-site, construction isn't anything that's particularly new or revolutionary to the construction field. However, many see this as something that is going to explode as a trend in 2018 and beyond, mainly due to factors such as time savings and labour concerns. Perhaps most importantly, prefab construction has the potential to accelerate project timelines. To date, prefab construction is mainly utilised for things like HVAC assembly building, but with the time savings benefits and process improvements that off-site construction permits, many more assemblies could follow suit.

Industry Optimistic About Commercial Growth

According to the 2018 Construction Industry Forecast, there's a high level of optimism regarding non-residential construction projects in 2018 and beyond. According to the report, it's the most optimistic professionals have been about the potential of the commercial project market in the past 20 years, which is significant. In fact, the Optimism Quotient was 133, and anything over 100 is considered to be "strong optimism." Professionals are unsure if this same optimism will continue down the road into the latter part of the decade, but for now professionals report plans to purchase new equipment, rent fleets of vehicles and more.

U.S. Steel and Aluminium Tariffs

In perhaps some not so great news for the construction industry, one of the big stories recently has been about U.S. President Donald Trump's plan to impose hefty tariffs on steel and aluminium imports. Specifically, the tariffs are 25% on imported steel and 10% on imported aluminium - two materials that are crucial to commercial construction projects - and the fear is that this could set off a trade war with other countries and significantly increase the price of such products. It's expected that the tariffs will apply to all countries. As of the time of this writing, the tariffs have yet to be officially enacted, but it's expected that will occur soon.

Construction and the Internet of Things (IoT)

The Internet of Things, or IoT, has been a major buzz phrase for years in many industries, mainly manufacturing. But now the construction site could soon benefit from becoming more connected. Construction sites are going to need workers to carry out tasks, but the IoT can help make sites smarter and more efficient. For instance, one aspect that's projected to grow is the use of wearables on job sites. These worn wearables will help track workers on-site to ensure that they're avoiding hazards and minimising waste, as well as track equipment that might need maintenance, among other things.

Essentially, the goal of a more connected site is to streamline operations and reduce overall costs. To date, the construction industry has been a bit hesitant to embrace new technologies, but if there's proof that wearables and the IoT can help the bottom line, it's going to warrant consideration.

3D Modelling Continues to Make Strides

Digital technology, like 3D modelling in pre-construction processes, continues to significantly enhance the way firms do business, leading to greater collaboration between parties and a better overall end product. When you consider other factors, such as cloud computing, this ensures that everyone on the job - contractors, sub contractors, engineers, etc. - has the potential to quickly and easily see the parts of the job that are most relevant to their duties. 3D modelling helps minimise mistakes, streamline efficiency and, above all, help contractors earn more jobs. It's a trend that many are continuing to jump on moving forward.

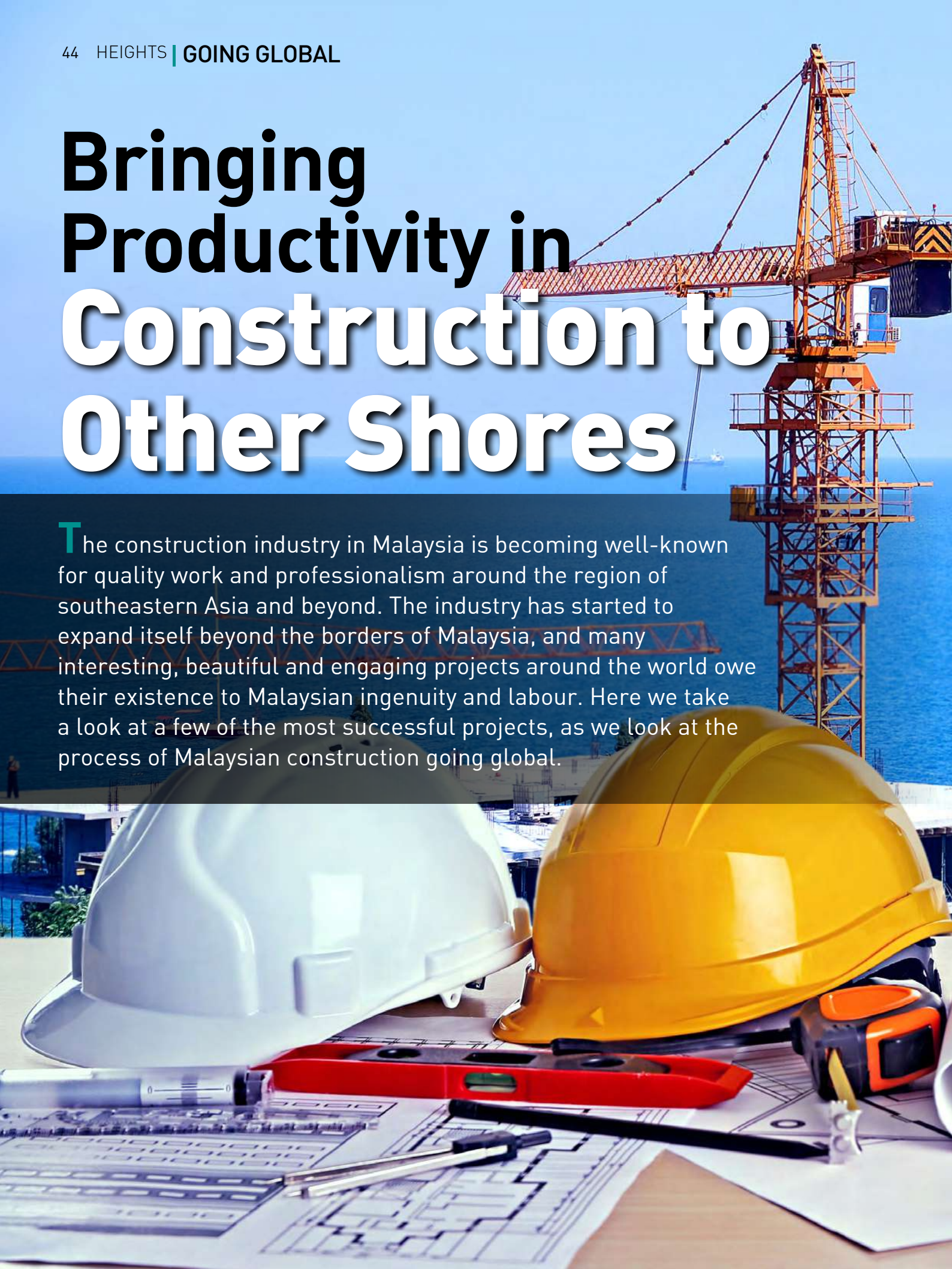
INDUSTRY ▪ TRENDS

Sustainable Materials: Foamed Glass Aggregate

Sustainable construction is expected to continue its rise in 2018 and beyond, and new materials are helping to pave the way. Take one innovative material from a U.S.-based firm, which is taking glass and creating a foam aggregate with it. It's compared to hard rock, yet it weighs about 85% less than it. What's more is that it has insulating qualities, which make it an attractive material for roofs and walls. Europe has been using a similar material, but mainly in road construction projects. With an increase in sustainable building and some of the benefits that this particular material exhibits, it's a material to watch moving forward.

Bringing Productivity in Construction to Other Shores

The construction industry in Malaysia is becoming well-known for quality work and professionalism around the region of southeastern Asia and beyond. The industry has started to expand itself beyond the borders of Malaysia, and many interesting, beautiful and engaging projects around the world owe their existence to Malaysian ingenuity and labour. Here we take a look at a few of the most successful projects, as we look at the process of Malaysian construction going global.



The Mayfair Development in Melbourne

Malaysian influenced high end luxury comes to Australia in the form of a 158-unit residential property with units from one to five beds. The starting price for one of these units will come in at $823,000 and span from a size of 70 square metres all the way up to 556 square metres. Residential amenities within the project will include garage space, private lift lobbies, custom designed Zaha Hadid furniture and a 24-hour concierge. The project is overseen by Malaysian construction firm UEM Sunrise and represents an ongoing relationship between the company and the city. UEM Sunrise is conducting the project in conjunction with renowned Australian architecture firm Elenberg Fraser.

Aurora Melbourne Central

This towering, beautiful residential skyscraper is also designed by UEM Sunrise in conjunction with Elenberg Fraser. First approved in 2014, the structure is set for completion sometime in 2019. The entire site stretches 3,197 square miles and will reach 269 metres into the sky. It will be the second tallest building in all of Melbourne when it is completed, just behind the Eureka Tower. The entire project was a $730 million undertaking, and it is also one of the largest residential structures on the entire continent of Australia. The Aurora Melbourne Central project will end up having 941 residential apartments along with 208 serviced apartments. These apartments will stretch across 88 storeys.

The Melbourne Conservatory

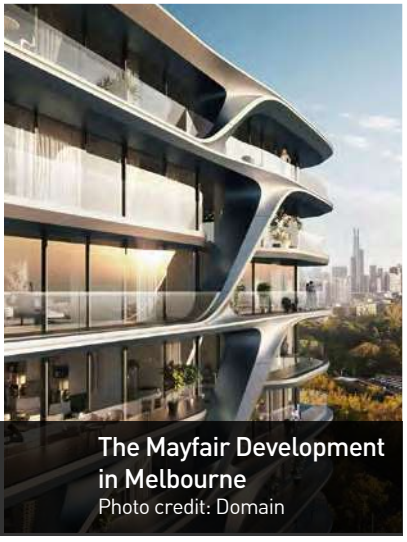
The third project we mention from UEM Sunrise in Australia, the Melbourne Conservatory, is actually the first in terms of conception. This project represents the first development that UEM Sunrise collaborated on with an Australian firm. The Melbourne Conservatory and the Aurora Melbourne Central are only blocks from each other, with the Conservatory resting on 9-23 Mackenzie Street.

The Conservatory is a residential tower that is currently comprised of 446 residential units that are stretched across 42 storeys. The total floor plan comprises 3,658 square metres. This includes 310 square metres of retail space within the structure. The Melbourne Conservatory is considered one of the most well-placed residential structures in Melbourne, with the sprawling, beautiful Carlton Gardens right on the corner. The Conservatory is also very close to the Royal Exhibition Building and the Melbourne Central Business District.

Eco World International in London

Top Malaysian developer Eco World London has recently partnered with Willmott Dixon, a development partner based out of the United Kingdom, for a 12-site project that will take place in the South East of England and Greater London. This undertaking will expand the reach that Eco World has in the United Kingdom by a factor of four. The land bank that Eco World will have access to in the UK now includes 6,700 residential units that have an approximate $3.4 billion gross development value.

As part of the agreement, there is also a framework set up for Eco World to take over the development of another 1,500 unit land bank. The total amount of gross development value for this part of the project has yet to be determined. Overall, the Malaysian company will have a grand total of around 10,700 residential units based upon this deal and the previous deal that it negotiated with Ballymore, another firm centred in the United Kingdom.



The Mayfair Development in Melbourne
Photo credit: Domain

Aurora Melbourne Central
Photo credit: iBuyNew

The Melbourne Conservatory

Eco World International in London
Photo credit: londradavivere.com

Eco World International in Sydney
Photo credit: Frasers Property

The Durban Point Waterfront
Photo credit: www.durbanpoint.co.za

The Battersea Power Station

IOI Properties in Xiamen, China
Photo credit: ioipg.cn

Sunway Property in Cambodia
Photo credit: Rouydadnews.info

Sunway Property in Cambodia
Photo credit: PropTiger

Eco World will also be taking over a 70% stake in the development management arm of Willmott Dixon, giving the Malaysian company the majority of the equity in the project once it is developed.

Eco World International in Sydney

Eco World International is also expanding its reach into Sydney, Australia, with a land grab that has a total gross development value of around $111 million. The address of the well-positioned project is 1-3 Lachlan Avenue, Macquarie Park, Sydney, directly adjacent from Macquarie University. The University Precinct plays host to a top 10 Australian University that brings in thousands of international students on an annual basis.

Within this development, Eco World has plans to build residential apartments with 125 units and a small retail component. The project is expected to complete in the second quarter of 2022 or 2023. Eco World is also in agreements to purchase the residential units that are already within the development for around $30 million.

The Durban Point Waterfront

UEM Sunrise stands at the helm of the Durban Point Waterfront in Durban, South Africa. The Waterfront is a mix of entertainment facilities, retail stores, hotels and residential units. There are also road amenities that will be developed for the public as the promenade is extended all the way to the mouth of the harbour.

Experts in South Africa expect the continued development of the Durban Point Waterfront will bring positive impact to the area that will culminate in its economic growth. South African officials expect a significant amount of job creation and rising property values around the area of the development.

The Battersea Power Station

The Sime Darby Property Company of Malaysia took on the challenge of reinvigorating the Battersea Power Station, one of the iconic mixed-use neighbourhoods around the central London area. With its advantageous location right on the River Thames, this development represents one of the most accessible and coveted locations in all of London. Sime Darby was brought in to re-envision the entire vision of the city district into a global tourist and business powerhouse.

IOI Properties in Xiamen, China

The close and storied relationship between the People's Republic of China and Malaysia is perhaps represented best in the relationship between the IOI Properties Group and the business district of Xiamen, China. The company is currently on its third project within the region, with the first two being the successful developments in the Jimei district, the IOI Park Bay, and the mixed-use development in Jimei known as IOI Palm City.

The new development is expected to expand the functionality of the IOI land bank in China as well as the gross development value. This third wave of development will add a hospital in Xiang An, a Xiamen international airport to be put into use in 2020, and the development of schools.

Sunway Properties in India and Cambodia

As one of the top domestic developers in Malaysia, Sunway Properties is more well-known for its residential developments around Malaysia. However, the company has an impressive array of international investments in India, Cambodia and Vietnam. Aside from its expansive domestic activities, the company has also undertaken an investment property development effort across 18 different locations with a total development value of around $156 million.

These mixed-use projects will be conducted in tandem with each other and will include investments in hospitality, healthcare, commercial properties, education and other investment assets across the integrated townships of the developer and its major cadre of developments. The overall goal of the initiative is to provide Sunway residences with an expanded portfolio of activities in and around currently developed Sunway properties. The company expects its property values to rise because of the investment that it is putting into amenities surrounding the already successful ventures. The company also hopes to create a network of properties that will appeal to international travellers and tourists.

The examples mentioned above are only a few of the many construction projects that include Malaysian management and labour among them. They serve as inspiration for the industry as well as hard proof that the MyCREST initiative and the Construction Industry Development Board of Malaysia are gaining positive attention as standards across the world.

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MALAYSIA IBS INTERNATIONAL EXHIBITION

CIDB MALAYSIA

IBS CHALLENGE

MARCH 27-29

THE IBS CHALLENGE

Available in three (3) sessions daily from 09.00am to 05.00pm.
Each session will take 2 hours.

Activities:

1) BIG IDEAS : IBS ENDURANCE CHALLENGES
   - What & Why IBS?
   - Construction housing (3D)
   - Component challenges
   - Quality, why testing?
2) HEAVY MACHINERIES
   - Let's fun with heavy machine
3) PERMAINAN PINTAR :
   - Lego Builder
   - Jenga
   - Straw Tower Challenge
   - Wheel Of Fortune

27 MARCH 2018 (Tuesday)

- 08.30am-9.00am : Arrival of Participants
- 09.30am-11.30am : 1st Session
- 12.30am-02.30pm : 2nd Session
- 03.00pm-05.00pm : 3rd Session

28 MARCH 2018 (Wednesday)

- 08.30am-9.00am : Arrival of Participants
- 09.30am-11.30am : 1st Session
- 12.30am-02.30pm : 2nd Session
- 03.00pm-05.00pm : 3rd Session

29 MARCH 2018 (Thursday)

- 08.30am-9.00am : Arrival of Participants
- 09.30am-11.30am : 1st Session
- 12.30am-02.30pm : 2nd Session
- 03.00pm-05.00pm : 3rd Session

CIDB CONVENTION CENTRE

9.00AM-5.00PM

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