

Progress Group, 39042 Brixen, Italy

Taking precast to a new level in Singapore: The HL-Sunway Prefab Hub

In the bustling city-state of Singapore, the construction industry has reached a significant milestone with the inauguration of the HL-Sunway Prefab Hub in the summer of 2023. This state-of-the-art prefabrication facility supplied by Progress Group represents a groundbreaking collaboration between Hong Leong Asia and Malaysia's Sunway Construction Group. The hub aims to revolutionize the construction landscape in Singapore by boosting productivity, enhancing workplace safety, and accelerating the production of precast building components.

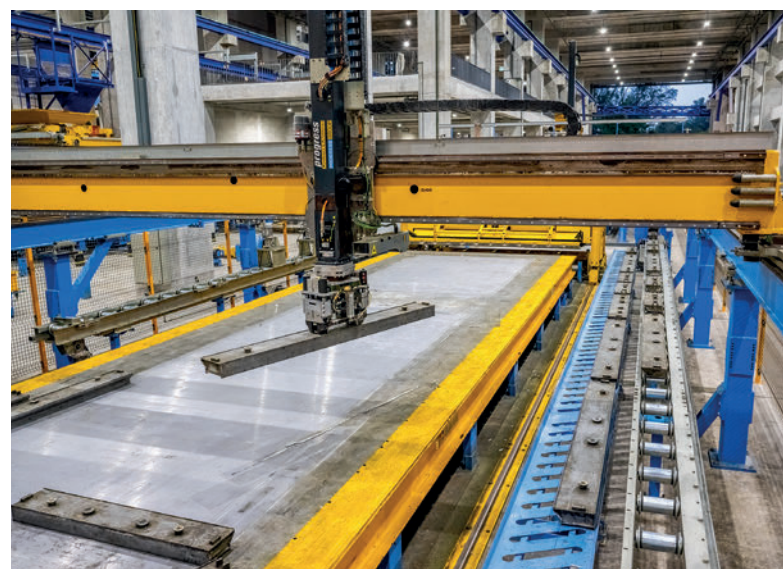
The HL-Sunway Prefab Hub is no ordinary facility. With an impressive annual production capacity of up to 100,000 cubic meters of precast components, it has the potential to support the construction of approximately 17 blocks of flats, a significant benefit to Singapore's ongoing build-to-order (BTO) projects. This hub, the largest of 6 planned for Singapore, is designed to produce a comprehensive range of components used in residential projects across the island.

Automation at its core

Automation is at the heart of this cutting-edge plant. The HL-Sunway Prefab Hub incorporates advanced features such as one automated mesh production plant for reinforced concrete production, a M-System Evolution mesh welding plant including bending features and a magnetic traverse for transport and logistics. The plant is equipped with the largest automated storage and retrieval system (ASRS) in Singapore, including an inside and outside storage as well as fully automated pallet stackers and central shifters. The hub uses a robotic warehousing system for the efficient storage and retrieval of the precast elements. With 26 production lines and two automated precast production systems including Form Master shuttering and deshuttering robots, concrete spreaders, pallet cleaning devices as well as compacting and turning equipment, the facility is poised to achieve an impressive 80% increase in overall productivity when operating at full capacity. Additionally, the hub boasts 54 loading bays for the



This enormous precast hub is the biggest of six planned to be built in Singapore over the next years.



With the Form Master shuttering and deshuttering robot the shutters are placed and removed according to the provided data.

DESIGN

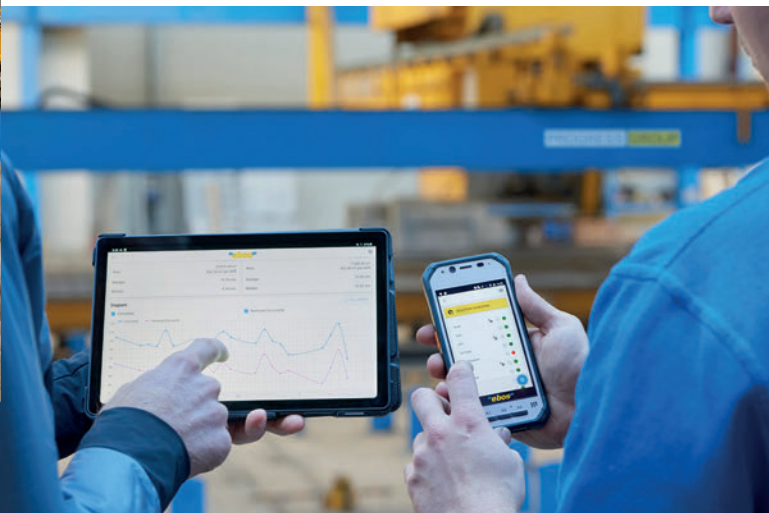
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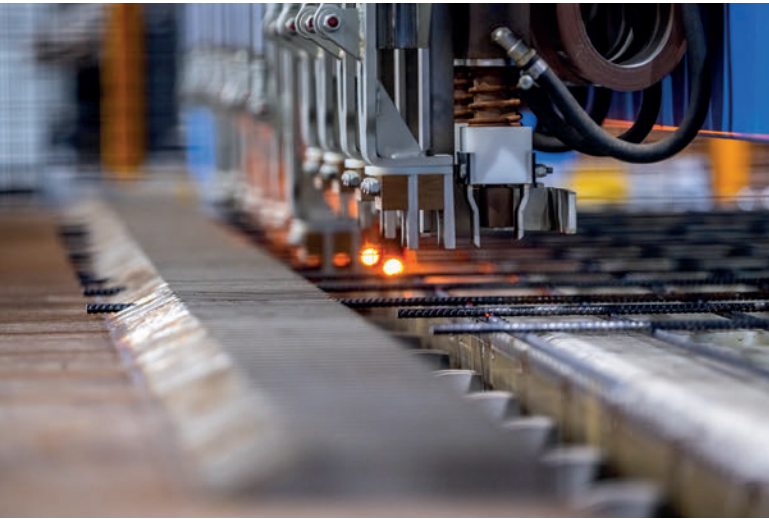
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The automated mesh welding plant produces mesh and cages, which function as reinforcement in the precast elements.

seamless discharge of goods, enabling it to supply 100,000 cubic meters of precast elements annually – enough to build approximately 2,500 flat units.

Singapore’s Minister for National Development, Desmond Lee, has emphasized the significance of localizing precast production capabilities: “This move toward automation and innovation is expected to create job opportunities for Singaporeans, allowing them to transition from physically demanding roles to higher-skilled jobs with better pay.”*

Sustainable practices for a greener future

The hub is committed to reducing its carbon footprint and promoting environmental sustainability. It has implemented



With automated machinery hard human labour is reduced and safety increased.

energy-saving practices, including wastewater recycling, and is equipped with over 1,700 solar panels to harness renewable energy. These initiatives reflect a commitment to environmental stewardship and align with Singapore’s broader goals of reducing carbon emissions.

Standardization for efficiency

One of the notable features of the HL-Sunway Prefab Hub is its emphasis on standardization. The facility offers standardized dimensions and connection details for precast components. This standardization translates into increased efficiency, reduced downtime, and lower production costs for the construction industry, and it is one of the most important features provided by automated production.



The concrete spreader is providing the exact amount of concrete needed for the element according to plan, which reduces waste.



The pallet stacker is ensuring a safer and faster working environment.



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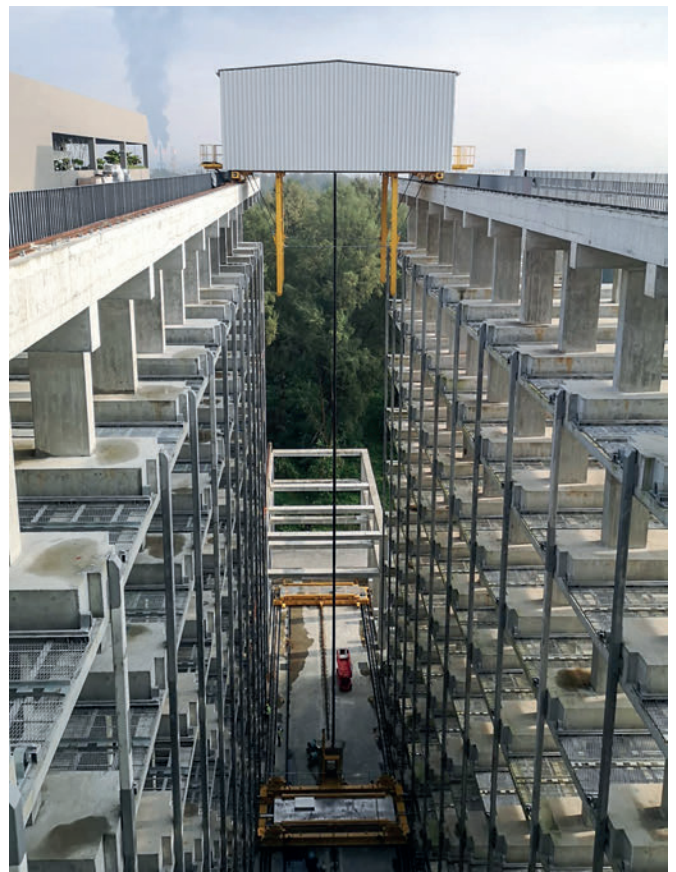
The big inside storage is equipped with an efficient storage and retrieval system - the standardized products can be stored easily.

Software integration

The integration of advanced software systems has been a substantial part of the hub's operations. R3 and Sunway of the facility, has adopted robotic technology with CAD-CAM capabilities, including BIM to PXML from Progress Group and supported by Tekla and Trimble. This integration enhances the precision and efficiency of the precast manufacturing process and makes it easy to extract data from the system by generating a daily production report, finance report and quantities for billing. With the industry specific ERP-system e^{pbos}® from Progress Group an overview of all business processes is guaranteed. The project life cycle is constantly updated, allowing to make decisions in real-time and keep costs & time under control. The openness of the solutions makes it possible to integrate the system with existing ones. To operate these systems effectively, R3 and Sunway have invested in training its workforce. BIM modelers, CAD-CAM specialists, technicians, and operators have received training to operate



The integrated ERP System e^{pbos}® is a tool for planning and controlling all business and production processes.



This state-of-the-art automated system to store and organize the elements before sending them to the construction sites is the largest in Singapore.

software, robots, and machinery, resulting in a highly skilled and knowledgeable workforce.

Collaboration with Progress Group

The collaboration with Progress Group, a key partner in the development of the HL-Sunway Prefab Hub, has been instrumental in the project's success. Progress Group served as a turnkey solution specialist, working closely with Hong Leong Asia and Sunway from the tender stage to the opening ceremony. The collaboration extended across various phases, including sales, project management, installation, testing, commissioning, and operation. Despite differences in time zones the collaboration has been marked by a positive relationship and effective communication. Progress Group's presence in Kuala Lumpur further facilitated timely interactions with customers, enabling responsive solutions to challenges encountered during the project.

"It was a fantastic experience working with Progress Group and its local partner in Singapore. Their effectiveness in addressing issues during machinery installation and commissioning, along with their quick response and problem-solving skills, is certainly commendable." says Mr. Kwong Tzyy En from HL Sunway Prefab Hub and adds: "We believe such experience can greatly contribute the success of the projects and organizations."

The collaboration behind the hub

The development of the HL-Sunway Prefab Hub is the result of a fruitful collaboration between two prominent entities, Hong Leong Asia and Sunway Construction Group Berhad. Hong Leong Asia's wholly owned subsidiary, HL Building Materials Pte Ltd, holds a 51% equity stake, while Sunway Concrete holds 49% in the joint venture. Stephen Ho Kiam Kong, CEO of Hong Leong Asia and Tan Sri Dato' (Dr) Chew Chee Kin, President of Sunway Group, have expressed their commitment to integrating construction processes with a lower carbon footprint and achieving high throughput and productivity. Their shared vision emphasizes sustainability and innovation in the building environment.

Tan Sri Dato' (Dr) Chew Chee Kin, President of Sunway Group, said "Sunway and Hong Leong Asia share a common vision and aspiration in our journey towards innovation, efficiency and sustainable development for the built environment. This hub represents the seamless integration of cutting-edge technology, intelligent design, and the expertise of our skilled workforce. It signifies a paradigm shift in the built environment sector today by harnessing the use of prefabrication and modular construction methods."**

*Source: <https://www.channelnewsasia.com/watch/new-precast-facility-can-support-upcoming-bto-projects-desmond-lee-video-3645741>, 21 Jul 2023 11:19pm
 ** Source : Official Press release : Media-Release-Hong-Leong-Asia-and-Sunway-Construction-Open-Largest-Integrated-Construction-and-Prefabrication-Hub-in-Singapore



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FURTHER INFORMATION



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