

PAN-UNITED BOOSTS DECARBONISATION AS SINGAPORE'S LARGEST SUPPLIER OF CO2 MINERALISED CONCRETE FOR TUAS PORT

- The Tuas Port Phase One project will use 360,000m³ of low-carbon CO₂ mineralised concrete, coupled with green cement¹, from Pan-United
- In total, over 113.8 million kg of CO₂ will be prevented from entering the atmosphere, equivalent to planting 1.9 million trees or removing 24,500 cars



An artist's impression of Tuas Port after it is fully completed. Photo credit: PSA Singapore

SINGAPORE, 21 FEBRUARY 2023 – Pan-United Corporation Ltd (泛联集团, “Pan-United”) is driving sustainable change in Singapore’s built environment with the use of 360,000m³ of carbon dioxide (CO₂) mineralised concrete over a 2.5-year period for Tuas Port. This specialised low-carbon concrete is a building material for the berths and stacking yards at the Phase One container berth project by PSA Corporation Ltd (“PSA”).

Upon completion in early 2024, Tuas Port Phase One will effectively become a man-made carbon sink that prevents the emission of over 113.8 million kg of CO₂ from entering the atmosphere. This is equivalent to planting 1.9 million tree seedlings or removing 24,500 cars from the road². When fully completed in the 2040s, Tuas Port will be the world’s largest fully automated port capable of handling 65 million TEUs (20-ft equivalent units) annually.

Ms May Ng (黄美美), CEO of Pan-United, said: “We are delighted at PSA’s commitment to the use of our CO₂ mineralised concrete for its Tuas Port Phase One project. It will contribute to PSA’s efforts to achieve net-zero carbon emissions by 2050. We will continue to champion sustainability in Singapore and globally, and work alongside fellow industry leaders in our journey to reach new frontiers in decarbonising Singapore’s built environment.”

CO₂ mineralised concrete: lower embodied carbon emissions and higher strength

Unlike operational carbon emitted from buildings in use, embodied carbon is emitted throughout the construction process before a building is completed, i.e. from the manufacture of building materials right up to onsite work on a new building project. This fact makes it possible, during the design stage,

¹ Green cement is a low-clinker cementitious material

² United States Environmental Protection Agency [Greenhouse Gas Equivalencies Calculator](#)

to choose building materials and methods that can lower embodied carbon. Once a building is operational, carbon emissions can only be reduced from energy used in lighting, power and air-conditioning.

Ms Ng added: “So far, greening initiatives have focused largely on reducing operational carbon *after* the building is completed. Yet the best results can be achieved as early as the design stage if builders opt for low-carbon materials such as CO2 mineralised concrete, to incur the lowest possible embodied carbon footprint for a building even before it comes in use.”

The production of CO2 mineralised concrete is a carbon capture and utilisation (CCU) technology that permanently embeds industrial waste CO2 as a mineral in concrete, making it a carbon sink for embodied carbon emissions.

Pan-United’s CO2 mineralised concrete is the first and only such concrete to be inducted into the Singapore Green Building Council’s new Ready-Mix Concrete (Carbon Capture & Utilisation) category. In the Green Mark 2021, CO2 mineralisation technology is listed in a newly-created “Whole Life Carbon” category under an “Innovation” section.

Beyond Tuas Port, other notable developments in Singapore like the JTC semiconSpace, Avenue South Residence, Linde’s gasification complex at Jurong Island and CapitaLand’s 15-storey building at 3 Science Park Drive, have also used CO2 mineralised concrete.

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ABOUT PAN-UNITED CORPORATION

panunited.com.sg

Pan-United Corporation Ltd (Pan-United) is a listed Asia-based technology company (SGX:P52) catalysing change in the ready-mix concrete and logistics space. Through concrete innovation, it has advanced to the global forefront of low-carbon footprint concrete technology. As a believer in sustainability for over two decades, Pan-United has developed in-house more than 300 highly specialised concrete solutions, half of them low-carbon solutions, for all urban built environment needs. Many of these solutions were created in partnership with customers to address present and future specifications.

Pan-United’s circular economy model of product and process innovation, combined with waste reduction, provides a comprehensive approach to long-term sustainability of the ready-mix concrete industry. Its circular model is underlined by extensive digitalisation towards industry transformation. Pan-United takes pride in making concrete greener and stronger to decarbonise cities, working towards lowering the world’s carbon footprint and creating a safer world for future generations.

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