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Labrador Tower set to showcase SP Group's green, digital energy prowess

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The thermal storage tank will be in the basement of the office tower of the Labrador Tower development. PHOTO: SP GROUP

THE air-conditioning system in SP Group's Labrador Tower, an office-and-retail project, is expected to be about 50 per cent more energy-efficient than a conventional air-con system.

The energy savings will be achieved through the use of underground thermal-energy storage, a microclimate control system and hybrid active chilled beams.

SP Group expects to complete Labrador Tower in mid-2024. It will be near Labrador Park MRT station and a nature reserve.

The thermal storage tank will be in the basement of the office tower. Installing such a system optimises energy efficiency for commercial buildings because they are used heavily in the day and are vacant overnight.

Cold water generated by the chiller plant at night is stored in the thermal tank and re-used to cool the building in the day, noted Surbana Jurong Group, the architect for the Labrador Tower project.

Surbana Jurong also undertook the mechanical, civil and structural engineering works for the project; among other roles, it worked closely with SP Group to develop Labrador Tower's sustainability goals.

"Re-using the cold water from the storage tank allows asset owners to right-size the chiller plant and cooling towers and run the air-conditioning consistently, at optimal load for better efficiency. The space is then freed up for other commercial uses for a higher rental yield," Surbana Jurong said.

It added that a thermal storage tank is most suitable for commercial buildings. It will not benefit residential buildings, which have a higher load at night.

The microclimate control system for Labrador Tower will use SP Group's Green Energy Tech digital-energy solution. This self-learning building-intelligence system utilises artificial intelligence and Internet of Things (IoT) to optimise and regulate air-conditioning and maximise energy efficiency.

The technology's predictive intelligence works together with sensors and smart dampers to take into account, for example, the number of people in the building and the weather, to optimise air-flow to cool areas evenly. The system therefore enhances occupants' comfort while maximising energy and operational efficiency.

The hybrid active system of chilled beams to be incorporated into Labrador Tower does away with the motors or fans of conventional air-conditioning systems. Chilled water produced by SP Group's design-patented chillers is delivered directly to the ceilings of the office space, cooling the air there by induction and forced convection, thus saving energy.

Stanley Huang, group chief executive officer of SP Group, said: "Leveraging our established suite of sustainable and digital-energy solutions, Labrador Tower has achieved the Green Mark Platinum Super-Low Energy certification from the Building and Construction Authority. This serves as a blueprint for similar mixed-use developments seeking higher energy efficiency."

Under this certification, the project targets to deliver energy savings of at least 60 per cent, compared with 2005 Green Mark benchmarks.