Republic Polytechnic is set to equip students with green building knowledge from within an innovative, sustainable facility.
Advancing Sustainability Research

Republic Polytechnic (RP), a Founding Member of SGBC, has always been a strong driver of green building and sustainability. Its iconic campus at Woodlands is a standing testament to RP’s strong onus on sustainability, with the “Campus in the Park” awarded the BCA Green Mark Platinum award in 2006.

Over the years, RP has worked with other like-minded organisations to advance the sustainability knowledge and expertise of both students and industry alike. One of the learning journey partners for SGBC’s Green Schools Initiative (GSI) student outreach programme, RP’s School of Engineering (SEG) regularly hosts Green Campus tours for GSI student groups, taking them on a walk through the sprawling green campus and showcasing some of the educational implements used to impart a working knowledge of green building and energy management.

RP SEG has identified green building research as a potential niche area of growth. To equip students with a better understanding of modern green building developments, the Sustainable Built Environment Laboratory (SBEL) was completed in November 2019. Sited on the rooftop of an academic building within the RP campus, the 80 sqm facility provides a conducive space for staff and students from the Diploma in Green Building Energy Management (DGEM) to carry out learning and research activities in green building technologies in an outdoor setting. The lab helps to support industry project collaborations and create research opportunities in the area of Energy Efficient Building Envelope & Façade System, one of the key areas of focus under the Singapore Building Energy Efficiency R&D Roadmap.
The SBEL has a number of innovative features. The main feature is a plug-and-play wall and window system integrated into the east and west facades of the facility. This modular system is able to support performance analysis of a variety of wall and window materials at maximum solar radiation unobstructed. Testing materials can be easily mounted onto one or more of the modular panels to assess their performance based on one or more parameters, with unused panels available on the same side to serve as control groups.

The second feature is the use of mass engineered timber (MET), a construction material for the built environment sector that is seeing growth in adoption, for the north and south facades. Showcasing the utility of MET, it also serves to expose students to the merits of using MET, such as increased construction productivity, design flexibility as well as lower environmental impact.
Lastly, the facility's skylight roof structure is constructed with building integrated photovoltaic (BIPV) panels that generate enough electricity to independently power the equipment within the SBEL. Excess electricity generated is stored in a battery system housed within which can then be used to run testing equipment or research apparatus. The translucent panels also provide overhead shelter but still allow for generous natural daylight penetration, reducing the need for artificial lighting throughout most of the day.

Going forward, RP students will work closely with industry partners on research projects, giving them a hands-on working experience with contemporary green building materials and products. The SBEL will also allow both staff and students to hone their expertise and technical knowledge, advancing sustainability in the built environment.