IES Sustainability Awards 2024 Winners

Super Low Energy Training Centre
By Defence Science and Technology Agency

DSTA developed the first MINDEF/SAF Training Centre to achieve the BCA Green Mark Award (Platinum) (Super Low Energy), cutting annual energy consumption by 40% and water usage by 70%, resulting in utility savings of up to $340K per year. The design of this specialised training centre prioritises sustainability, modularity, maintainability, and user-centricity, while incorporating natural lighting and interaction spaces to create an optimal and conducive environment for both trainers and trainees.

Punggol Digital District
By JTC Corporation

Master planned and developed by JTC, the district is designed by WOHA Architects, and will bring 28,000 jobs, lifestyle and community amenities closer to homes. The district features state-of-the-art infrastructure, green spaces, and smart technologies, making it a vibrant environment for digital transformation. With a focus on sustainability and community engagement, Punggol Digital District aims to be a model for future urban developments

Sembcorp Cool House at the National Orchid Garden
By National Parks Board

The Sembcorp Cool House at the National Orchid Garden is a key installation that goes beyond regulatory requirements and building codes to implement an iconic architecture that is not only fit for purpose but is also a centrepiece of the Gardens' focus on environmental sustainability.
The completed Cool House is four times larger than the original facility but consumes 30% less energy. It also increases the Singapore Botanic Gardens' capacity to curate, conserve and display rare tropical montane plants, raising public awareness on this threatened ecosystem and furthering the Gardens' mission of plant conservation and outreach

Design & Construction of Stormwater Retention Pond at Integrated Bidadari Park
By Public Utilities Board

Alkaff Lake, situated in the new Bidadari estate, is a first-of-its-kind multi-functional drainage infrastructure for stormwater management, enhancing flood protection for Bidadari estate and the surrounding areas.
In dry weather, it looks like a regular lake and forms part of the recreational and aesthetic community space for the public. During heavy rainfall, it plays an important role in regulating the amount of stormwater runoff that flows into the downstream drainage system.
It is a 1.8-hectare lake, which is around the size of two football fields and can hold up to 40,000 cubic metres of water

Samwoh Smart Hub – First Positive Energy Building in Singapore
By Samwoh Corporation Pte. Ltd.

Samwoh Smart Hub is the first positive energy building that produces 25% more energy than what it consumes in Singapore. With the ultra-low Energy Use Intensity and remarkable energy surplus, its operational carbon is kept as low as reasonably practicable. Several sustainable materials such as green cement, granite fines and sedimentary rocks from Jurong Rock Caverns have been incorporated in the building construction to reduce its embodied carbon.

SJ Campus
By SJ Consultant

The SJ Campus is the global headquarters of SJ. Located at the Jurong Innovation District, the campus is a strategic centre for collaboration, learning, and a living lab for innovative solutions for the built environment. JID is a vibrant ecosystem of enterprises in smart city and urban solutions.
SJ Campus adopts regenerative design practices that contribute to a greener and healthier built environment in the tropical climate context, and demonstrates what a sustainable, maintainable, people-centric and future-ready workplace is like.
SJ Campus is triple-certified i.e., GM Platinum SLE, WELL Core Platinum, GM for healthier workplaces.

Realizing sustainable aviation fuel production from CO2
By Institute of Sustainability for Chemicals, Energy and Environment (ISCE2), A*STAR

CO2-based Sustainable Aviation Fuel (SAF) would play a crucial role in achieving 65% of the reduction in aviation emission targets by 2050 as biofuels has feedstock limitations.
Combining the expertise of catalysis and process engineering from A*STAR.ISCE2 and IHI, the team developed a breakthrough technology through innovative catalyst and reactor design to make SAF directly from CO2 with reduced reactor footprint and hence lower capital investments as well as greater energy efficiency.
The technology has great potential in enabling the decarbonisation of the aviation industry and IHI and ISCE2 are collaborating on scaling up to valid the technology under industrial relevant conditions.

Singapore Building Carbon Calculator
By JTC Corporation

Accounting for embodied carbon in Singapore remains a challenge due to the lack of robust localised material carbon database and limited guidelines as there was a lack of suitable embodied carbon calculators for local industry use, as their emission factors were more suited to other regions in the world and would result in inaccurate embodied carbon accounting.
The team developed a Building Embodied Carbon Calculator (BECC) and Mechanical & Electrical Carbon Calculator (MECC) with local contextualized emission factors via a developed classifier structure (innovation) to account for the upfront carbon of common construction materials and M&E equipment, from cradle (raw material extraction and supply) to its practical completion (construction and installation) and operational (use stage) to account for operation embodied carbon of M&E equipment (frequent maintenance/repair, refrigerant top-up, etc.) that is suitable

for local use and where transportation distances of materials from their sources were also built in taking into consideration that Singapore imports most of our building materials overseas.
The Singapore Building Carbon Calculator (SBCC), with the BECC and MECC modules, has provided our local industry with a unified, free-to-use tool to account for the upfront carbon of their projects to aid in making informed decisions regarding the selection and use of sustainable materials and products during the design stage that will be used to finalize the as-built embodied carbon at the end of construction followed by during use stage to account for operation embodied carbon associated with the maintenance of M&E equipment will result in lowering the carbon footprint to our buildings.