BCA Challenge Call

Republic Plaza
Commercial Office Building

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Current Green Mark Certification Platinum

Building Information (Office)
Building Name: Republic Plaza
Building Address: 9 Raffles Place, Singapore (048619)
Tower 1 – 66 Storey
Tower 2 – 23 Storey
Gross Floor Area total:102,897.79

Existing System

- Age of chiller plant - 25 years
- Number of Chillers and Installed Capacity
  760RT – 4 nos. HCFC 123,
  350RT – 1 no. R134A,
  900RT – 1 no. (Faulty) HCFC 123
- Condenser Water Treatment System - 3D Trasar water treatment system
- Building Cooling Load (RT) - Office Hours: Max 2400RT, After Office hours: Max 945 RT

Innovation

- <u>Existing usage - MERV 14 filter</u>
- A significant pressure drop of MERV 14 results in energy wastage, especially by the end of the filter life
- Short filter life means that more filters are required to the same job and to be disposed of at the end of the life cycle
- Low energy efficiency and short filter life increase building's carbon footprint
- Current filters are less effective in deactivating microorganisms

- <u>Proposed Solution for Disinfecting Filtration System (DFS) system</u>
- Prevention of microbial growth in the filter
- Improvement of Filtration efficiency
- Less frequent service = better manpower allocation
- Air filtration energy use reduction
- Healthier IAQ for better tenants and visitors' experience

Challenge statement

- Target to achieve SLEB certification for Republic Plaza and aim for the building to be the first brown field for high-rise office building in Singapore.

- To convert a 25-year-old building into the most efficient and technological advanced building through the use of innovative and smart building systems to meet the required certification for low energy consumption.

- The result is to aim for lower maintenance cost, lesser manpower deployment, OPEX cost.

Current Situation	The current building EUI approximately is 190/kWh/m2/yr. To enhance building ACMV system, etc and aim for super low energy green mark certification To implement and review technologies and solutions.
Challenge Statement	To develop energy-efficient technologies and solutions to push and achieve SLEB of energy performance. Participate in this BCA Challenge to reach out local and global technology firms, environmental sustainability design (ESD) consultants and local research institutes with the relevant technology or innovative solutions for Energy Utilisation Index (EUI) targets:) < 72 kWh/m2/yr.
Gaps to be addressed	To improve the energy efficiency of the building system so as to meet the requirement for SLEB certification.