ARTIFICIAL INTELLIGENCE-DRIVEN CHILLER FAULT DETECTION AND DIAGNOSTICS FOR EFFICIENT BUILDING MANAGEMENT

Background

More than 20 per cent of Singapore's energy needs go toward cooling non-residential buildings. This can include air conditioning for people working in the building, the refrigeration of goods, and cooling systems for specialised areas such server rooms, laboratories and fabrication plants.

Accordingly, a failure in a building's chiller plant can disrupt operations and result in significant costs including reputational impact. As there is no cost-effective solutions for chiller fault detection in the tropics, building managers typically take up regular maintenance contracts to service the chillers, to ensure both energy efficiency and support their business needs.

Chiller Doctor @ SLEB Smart Hub –AI-driven Chiller Fault Detection & Diagnostics

In tandem with the launch of BCA's Super Low Energy Building (SLEB) Smart Hub portal (www.sleb.sg), IMDA is collaborating with SLEB Smart Hub to develop an artificial intelligence (AI)-driven chiller fault detector, the Chiller Doctor. The Chiller Doctor will collect sensor data from the Building Management System (BMS) and other sources. Through the use of machine learning techniques, the Chiller Doctor will be able to detect faults in the chiller system and classify them according to various categories including the nature of the fault as well as the severity of the problem. In this way, Chiller Doctor can help building operators identify chiller faults, diagnose them and recommend fixes in a more effective way.

Benefits of the Chiller Doctor

The Chiller Doctor is expected to provide the following benefits to building operators:

- Predictive detection of faults to reduce risk of failure
- Minimise the reliance on resource-intensive scheduled regular system maintenance
- Optimise energy conservation in buildings

Early Pilot Phase

An early pilot is currently being conducted to bring building operators onboard to test the capabilities of the Chiller Doctor solution. IMDA is working with BCA for developing and validating the AI-based chiller doctor with more buildings. Interested local building operators can contact IMDA for more information at digital_services@imda.gov.sg.