Accenture and JTC bring together the latest in building management and advanced analytics for energy efficiency and cost savings.

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Overview

As home to some of the country's leading innovators, JTC's Fusionopolis in One North serves as a fitting venue for JTC and Accenture to pilot the Integrated Estate Management System (iEMS), a solution that brings together the latest in building management systems and digital technologies such as advanced analytics.

Easily layered onto the existing building management system, iEMS provides precise real-time data on building functions from air-conditioning to security, allowing JTC to operate more efficiently or spot anomalies, among other things.

Since energy cost is a large part of a building's operating expenses, and air conditioning systems account for about 50 percent of that, it is a focus of the three-year pilot, which will go on until 2016.

Just six months into the pilot, JTC has realized monthly savings of 15 percent on addressable electricity usage, as well as a 13 percent reduction in addressable chilled water use. Partnering with Accenture, JTC has also shifted its building management approach towards one that is easy to monitor and control, proactive rather than reactive, and more energy efficient.

Significantly, this has been achieved without cumbersome and expensive retrofits.

The Fusionopolis iEMS pilot is a showcase for Singapore and the region. Accenture successfully brought to bear its capabilities in marrying digital technology and operational strategy, while JTC was able to bring together IT, engineering and facilities management to realize business value and greater efficiency.

Client profile

JTC is the lead government agency responsible for the development of industrial infrastructure to support and catalyse the growth of industries and enterprises in Singapore. JTC manages 43 industrial estates that cover some 3.2 million square meters (34.4 million sq ft) of ready-built space in the city state.

The three-year pilot project spans the three towers of the Fusionopolis complex, which cover 120,000 sq m (1.3 million sq ft), and include offices, retail space, laboratories and serviced residences. JTC owns and manages the building with the support of its contractors.

Through this pilot, JTC is seeking to improve its operational efficiency, in terms of both energy use and manpower, and to do so sustainably. This is very much in line with national energy efficiency objectives, and Singapore’s Smart Nation initiative. The pilot’s success will be measured through quantifiable savings on energy bills, and demonstrating a more intelligent operation.
Business Challenge

Buildings, tenants and building equipment represent a complex, interdependent system, and while they are rich sources of data, the data must be made sense of if it is to help reduce energy consumption or costs.

Case in point: At Fusionopolis, the existing air-conditioning system had 18,000 data points on its 2,500 pieces of equipment providing data such as temperature and air flow rates. While that data was available, it was rarely used, at least not until something went wrong.

JTC was keen to draw on the data mine it had to make its operations more efficient and sustainable, while saving on its energy cost.

How Accenture Helped

Accenture’s solution for iEMS laid advanced information technology tools over existing building management systems, allowing data generated from the air-conditioning system’s 18,000 sensors to be tracked.

A series of algorithms, applied in real time, compares the data against known thresholds for similar equipment.

Where equipment or system inefficiencies are identified, alerts are sent through a control panel to a central coordinator, listing the specific issues with specific pieces of equipment. Coordinators are directed to the most critical issues first, and when an issue is resolved, it is reflected on the dashboard.

Predictive analytics also allows for the coordinator to be forewarned when a piece of equipment is functioning sub-optimally.

This way, iEMS ensures that each part is functioning optimally at any given moment.

This translates into tangible benefits—lower energy bills and reduced downtime—without cumbersome and expensive retrofits.

Since iEMS was being deployed for the first time, Accenture worked closely with JTC’s engineering, IT and facilities management teams over two months to gain deep understanding of the existing operating model, including roles, responsibilities and reporting structures.

All three teams were then brought together and given a thorough grounding on how iEMS worked, how to use it, and how to interpret the data being generated. This ensured the teams were equipped to get the best out of the system.

The building’s existing sensors were then connected to a web-based portal, with a homepage that presents, at a glance, everything from fault detection data and graph tools, to storage monitors in the cloud.

An energy consumption baseline, based on each individual building’s energy model, and taking into consideration factors such as prevailing temperatures, usual occupancy, and average energy consumption was established, so that improvements could be measured.

Efficiency Delivered

Just six months into the three-year iEMS pilot, JTC is chalking up monthly savings of over 15 per cent as reflected in its electricity bill, as a result of ensuring that each individual component—and therefore the air conditioning system as a whole—is performing optimally.

Addressable chilled water use has also gone down by an average of 13 percent, and equipment downtime has been reduced.

The proactive approach to equipment maintenance could also lead to other types of cost savings, better deployment of manpower and fewer operational disruptions. The system could further be scaled to any of JTC’s buildings, and customized to their specific needs, taking into account location, size and occupancy.

For instant and mobile access, iEMS could also be accessible on tablets and smartphones.

Eventually, other data sources could be incorporated into the iEMS. For instance, weather information could prompt a change in set temperatures, and video analytics could be used with security footage to raise the alarm on anything suspicious.

Embark on this journey and:

• Employ industry-leading analytics to understand energy performance
• Identify, collect and aggregate relevant energy data
• Allow for improvements without the need for disruptive change
• Identify and realize opportunities for potential savings; raise productivity
• Measure and verify results from energy efficiency initiatives
• Scale and centralize monitoring operations, allowing effective monitoring across a campus or multi-site portfolio