Fault Detection, diagnostics and optimization using BIG data analytics

Presenter: IFCS Inc., Quebec, CANADA

The past decade has seen an explosion of data from the Internet of things to smart sensors and building control systems; hidden within this data are countless possibilities and even opportunities for savings energy, reducing capital and operational expenditure. The key to harvesting this data is the correct Big Data analytics software platform and the right people to put this data into context.

Today's energy management systems serves as a Human Machine Interface (HMI) for building operators to monitor and manually modify set-point conditions for AHUs, chillers, thermostats etc. based on weather conditions or price changes; while trying to maintain occupant comfort. This presentation explores a real-time framework for multi-vector correlation, self-correcting incident response procedures (algorithms) for fault detection, diagnostics, energy optimization and active commissioning (ACx). We look at two specific use cases, one where an AFDD rules based system can be augmented by using multi-vector correlation for testing and optimizing control schedules. In the second case we look at weather forecasts and internal condition trends to drive a predictive analytics model that dynamically modifies a buildings set points to minimize the heating/cooling loads in the AHU.

ICEBO Objectives

- Review the data collection points and why it's important for continuous commissioning.
- Review of a stream based real-time big data analytic engine and AFDD tool that maximize building performance and energy savings.
- Lessons learned and best practices for deploying an AFDD tool.
- Explore the possibilities to enhance and collaborate on closed loop HVAC systems to improve fault detection, energy savings and occupant comfort.