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The challenge is that BAS are often very complex with 1000s of data points to review.

In today's environment, facilities face the constant pressure to reduce energy consumption and costs. Often immediate energy savings can be achieved with proper set points, sequencing, scheduling and fault detection of the Building Automation System. The challenge is that BAS are often very complex with 1000s of data points to review for energy saving opportunities. Analyzing and aggregating 1000s of points is time-intensive and requires significant in-house expertise.

Identify Energy Saving Opportunities through EMS Optimization

Ameresco's Building Dynamics Tier 2: Energy Management System (EMS) Optimization automates analysis and supervision of the BAS set points and data to identify faults and other savings opportunities. It can quickly review 1000s of data points for issues. It provides continuous recommendations on energy saving opportunities using a Monitoring Based Commissioning (MBCx) approach with detailed reports and alerts. The service is offered as a standalone software service or it can bundled with an energy analyst service.

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Features

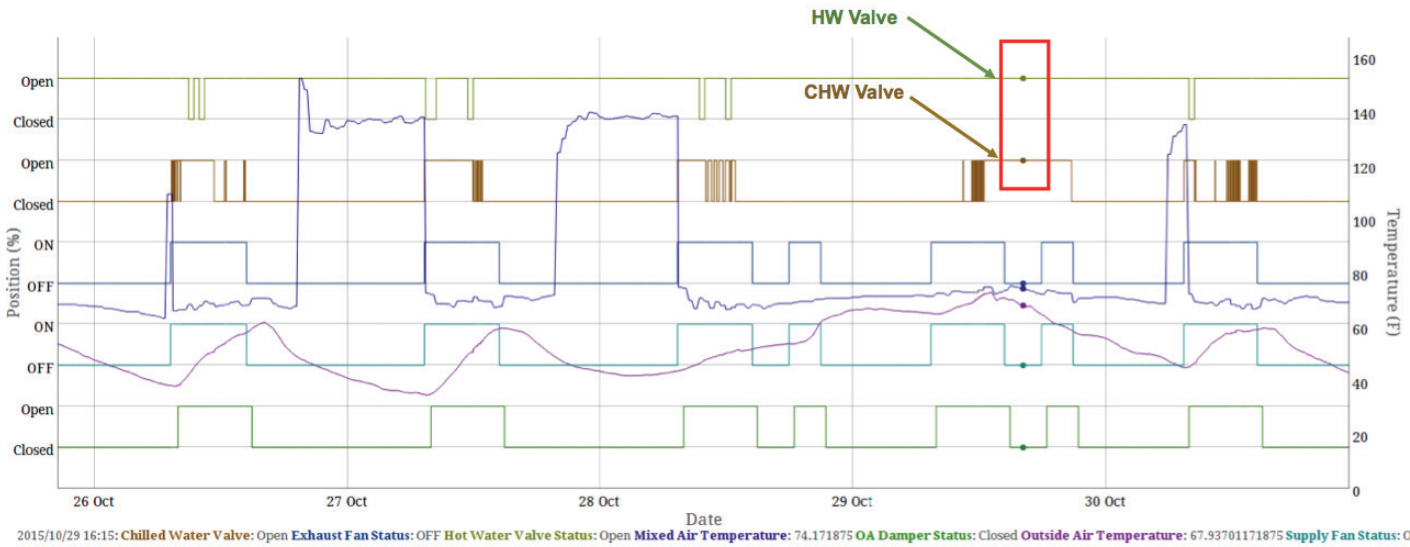
- Online monitoring of Building Automation System data points, sequences and set points
- Alerts activate when building operations drift out of the expected parameters
- Report composer that can generate reports from configurable templates. These reports include:
  - Key Performance Indicators (KPIs)
  - Periodic reports on system status
  - Detailed reports across all strategies
- Support for an extensive library of re-usable strategies
- Detailed Measurement and Verification of the savings achieved
- Software bridges to modern Building Automation Systems, making it easy to install with no additional hardware

Identifying Common Faults, Set-point and Scheduling Issues

Buildings often start to drift from optimal performance the day they are commissioned. Building Dynamics provides a set of easy-to-use interfaces for analyzing and monitoring BAS operation and building energy performance. Building Dynamics can automatically generate alerts and reports that can be emailed to the user when issues with set points, sequencing, scheduling and additional faults are detected in the building.

Simultaneous Heating and Cooling

In this view, operation of the chiller and hot water are displayed. The view shows that the chiller and hot water are sometimes running simultaneously, wasting energy and costs. The chiller and boiler never enter into unoccupied mode. By identifying this fault, the facility can quickly make changes to set points and scheduling that will result in significant energy savings.

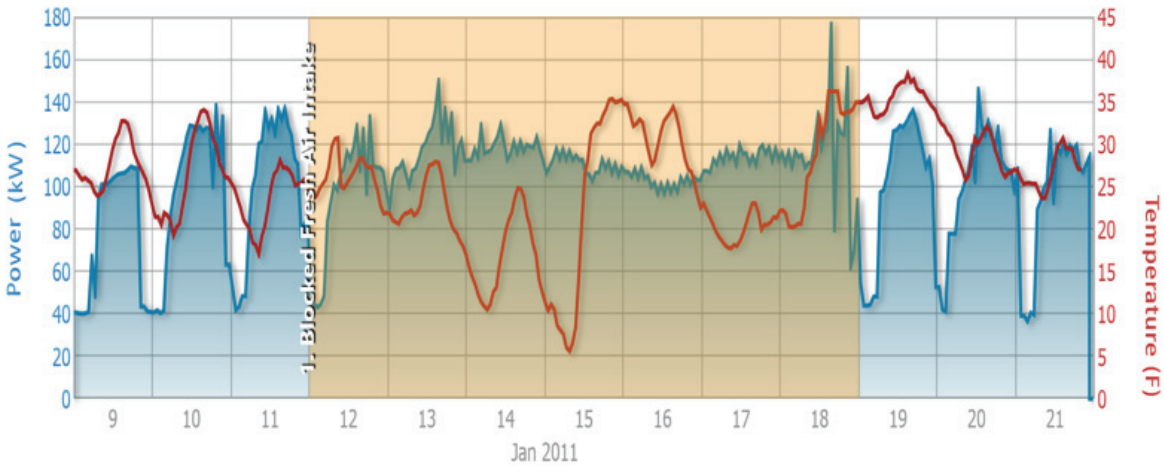


Benefits

- Automated checks to ensure proper operation of building systems
- The analysis and automated reports provide actionable information, proven to generate immediate energy savings. Example issues detected include:
  - Equipment running during the unoccupied period
  - AHU return fan running when supply fan is off
  - Requests for simultaneous heating and cooling (e.g., adjacent VAV boxes, AHU heating and cooling coils ON at the same time)
  - Miscalibration or faulty sensors (e.g., broken CO2 or OTA sensors that prevent the economizer mode, miscalibrated temperature sensor on the heat exchanger)
  - Equipment (e.g., boilers) cycles frequently
  - Chiller operating when outside air temperature is low
  - Pumps and exhaust fans operate significantly longer than the equipment
  - VSDs never slow down
  - Economizer does not functioning optimally, or excessive outside air causes increased heating and/or mechanical cooling and air quality issues

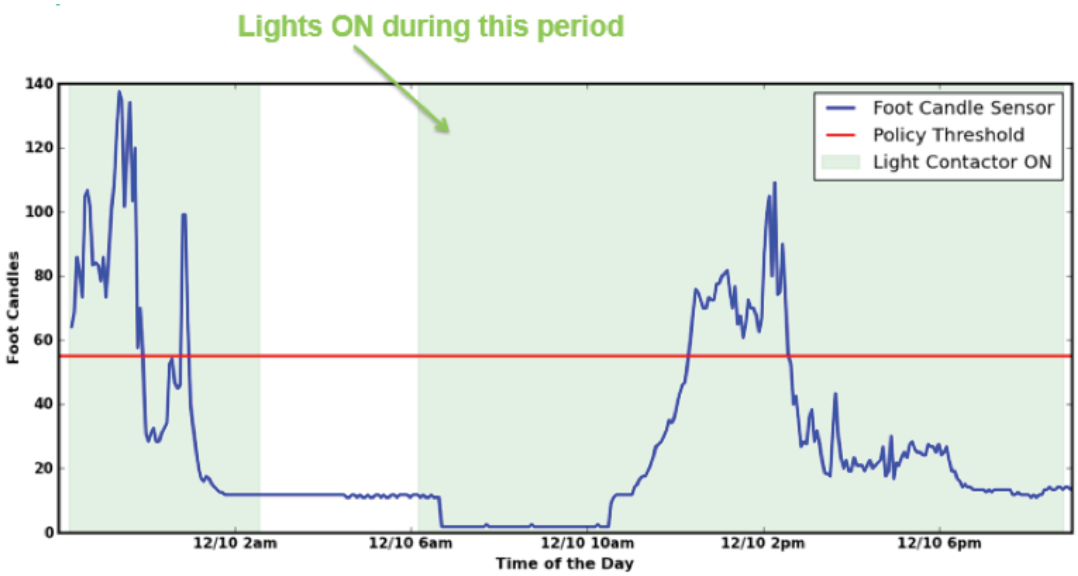
Identifying Blocked Air Intake

This view shows a blocked outside air intake detected through using internal data. The CO2 sensor is calling for air but the intake is blocked so the air handler stays on.



Detection of an Improper Operation of Lighting System

This view shows a configuration issue by monitoring the sensors and control points.



FAQs

What do I need to get started?

All that is necessary to start is an existing BAS that Building Dynamics can interface via a local gateway. Building Dynamics works with most modern BAS. The gateway will be installed in the customer's building automation network and after an initial configuration will start recording key BAS parameters. Building Dynamics is also supported by a versatile sensing and metering infrastructure that simplifies the collection of additional data when needed.

Using these key parameters, Ameresco can configure a number of monitoring strategies and diagnostic rules for detecting problems with the BAS configuration, equipment faults and deviations from desired set-points and schedules. The monitoring strategies and alarms will be accessible to the customer's personnel via the Building Dynamics portal.

Do I need to have my building(s) online before analysis can begin?

No, analysis can begin using the historical information available in the billing data and the interval data provided by your utility. Most utilities can provide 12 months of 15 minute interval data upon customer request. The first analysis of your buildings can start using this interval data.

What does the typical process look like?

1. Historical data analysis and baseline formation: This uses the historical information provided by the customer together the current occupancy and schedule conditions in the building to form a weather-normalized baseline of the building. This is used as a frame of reference for tracking future building energy performance.

2. BAS connection & data recording: The Building Dynamics software connects to the building BAS using a software bridge to retrieve settings and sensor data. For older systems or some proprietary systems a small gateway device has to be installed on the customer's network to collect that data.

3. Initial analysis results and adjustments: After an initial trace has been recorded, the data is analyzed and the first set of recommendations is reported through a detailed report. This is followed by a meeting session that includes a discussion on how the savings should be implemented.

4. Tracking the savings: The savings are tracked online via the Measurement and Verification (M&V) module that performs weather-normalization and comparisons to the baseline.

5. M&V Reporting and consulting: Customers have the option of receiving reviewed M&V reports by an analyst on a monthly, quarterly or annual basis.

6. Ongoing monitoring and adjustments: Building Dynamics will automatically supervise the set of strategies entered into the system. These are reported through a variety of options depending on the level of service purchased.

How does Building Dynamics track the actions taking and the savings achieved?
Building Dynamics includes an online Measurement and Verification module that tracks goals and generates a weather-normalized analysis of consumption and achieved savings. Any actions or measure taken in the building can also be tagged in the interval data so any changes in consumption after a measure or action can be precisely quantified.

Can I make my own strategies?
Yes, the software supports the development of new strategies.

What if I need a different kind of report than the ones supported in the system?
Custom reporting is supported in the software.

How does the energy analyst option complement the EMS Optimization software?
The add-on analyst service helps to interpret the results and investigate the issues.

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Contact us today.
Let us help you reach your energy saving goals.
For more information, please call 866-263-7372 or email info@ameresco.com.