BAT vs High End BMS

The Question

What does Building & Asset Tuner (BAT) offer that a high-end Building Automation System (BAS) can't?

The Answer

1. Unlike a BAS, BAT looks for patterns in historical data to uncover anomalies or deficiencies in operations. While the response to real-time information is similar to a BAS/BMS, the actions taken are informed by a comprehensive view of historical performance – not a static sequence of operation or setpoint.

2. A BAS tends to operate according to a prescribed sequence of operation specified during initial configuration. Our system can maintain a much more dynamic sequence of operation based on live weather, demand or other data sources.

3. Unlike a BAS, BAT uses advanced analytics to identify Energy Conservation Measures (ECMs) not "alarms". Again, based on a comprehensive view of historical and live data, our system identifies performance deficiencies and takes action or makes recommendations to improve performance.

4. As part of the BAT solution, we provide ongoing improvements to analytics and control sequences. Month-after-month, BAT endeavors to improve the ECM identification and control parameters.

5. Unlike a BAS, BAT identifies degradation in performance based on historical information not a static setpoint. For example, our system can identify when a coil is cooling less efficiently this month compared to last month. The setpoint may still be met, but the efficiency of the coil has declined and should be investigated.

6. As part of the BAT solution, we provide continuous training and support for our system. Beyond standard technical support, we welcome feedback for improving the system and reports to fit our customer's needs.

7. BAT provides applications that suit various end-users. Instead of requiring in depth knowledge of our system, we generate apps and reports tailored to the end-user available from a single click from the user's login page.

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Further Details

Conventional BAS alarms vs. Sophisticated Analytics: BAS alarms were introduced in the 1980's and still maintain an important role in identifying issues with the buildings mechanical equipment. There are some fundamental differences as well as advantages between BAS alarms and the sophisticated analytics that BAT provides:

- Limited data scope – Typically, BAS alarms are set up during the initial configuration of a system and rely on a value versus limit and possibly a time delay (temperature sensor has read -100°C for the past 15 minutes indicating a sensor failure). Additionally, external data typically can't be used, even in highly advanced BAS that allows low levels of logic-based alarms; data from other controllers, energy meters, local weather stations etc. can't be used.

  - BAT platform is capable of developing rules using any and all data that we bring into the system. Energy data, local weather station data, time of use metering, holidays, load profiles, occupancy, etc. can all be analyzed in conjunction with mechanical equipment data. We set the scope or time and data sources to nearly anything we want it to be.

- Time range – In general BAS alarms look at the present time, and are typically incapable of evaluating date spans. If a new alarm is generated in BAS the system is likely incapable of going back and identifying historical time periods when the condition took place.

  - BAT software allows rules to be defined and ran against all historical data, and is even capable of using the historical data to identify degradation of equipment over time.

- Alarm creation - Adding new alarms to a BAS system generally requires a BAS contractor to go to the site and create or modify existing alarm parameters and control logic. This becomes costly and time consuming, and is an inefficient way of looking for optimization opportunities.

  - At BAT we have an extensive rule library for a wide variety of mechanical equipment. We develop rules specifically for each site according to the type of equipment and sequence of operations. We gladly accept all recommendations for writing rules and will add anything the customer request within a couple of business days.

- Details of alarms – Alarms on BAS sensors generally allow current condition alarms, with a low level of sophistication. For example, if the zone temperature is above a maximum value of 27°C.

  - Whereas a BAT sophisticated analytics algorithm might be – Show me all of the times the zone temperature was above a maximum value of 27°C, during occupied mode, for more than 15 minutes, when the AHU fan was on, and sum the hours this condition existed based on the type of equipment over the past year. This level of analysis enables the user to identify actual issues in the mechanical equipment and not have the facilities team chasing down alarms (or ignoring them) if a zone spiked above a maximum value momentarily during unoccupied mode

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Our Ongoing Support: BAT provides all ongoing support, training and upgrades as part of our product offering. This ongoing support includes: ECM identification, monthly reviews with site personnel and ad-hoc support via the “Notes” application within the BAT portal. As well as a monthly scorecard to show how the building has performed over the past month.

Our Data Visualization: Building automation systems do a great job at showing the current conditions of the building. However, it becomes increasingly difficult to analyze historical data for a piece of equipment. Additionally if you want to grab points from another piece of equipment (Chiller, Boiler, other AHU, or VAVs fed by a particular AHU) this is almost impossible. With BAT platform you can view any piece of equipment for any date range, you can also pull in other data points with ease, as well as perform transformations on the data (average, max, min, sum) with ease. Being able to view historical data efficiently and intuitively is a fantastic way to identify optimization opportunities for the individual piece of equipment as well as site wide.

Our Analytics: The algorithms endeavor to identify: faults, performance degradation, energy conservation measures and other operational anomalies. In portfolio views, outliers are easily identified and ranked by performance. All analytics are available via the BAT dashboards and notifications can be sent via email or SMS. In addition, the detailed analytics are summarized and prioritized by our energy analysts to provide a simple, plain English list of recommendations to improve building or portfolio performance.

Our Tuning: The tuning endeavors to minimize energy demand charges and reduce normal operating energy consumption. This control requires real-time data from site electric meters as well as a “live” connection to the BAS. With a “live” connection to the BAS, BAT can monitor demand in real time and activate strategies to reduce peak demand charges at various curtailment thresholds. Additionally zone temperature set points can be set in real time based on current outside air temperature conditions – this will ensure set points aren’t dramatically changed for an extreme weather day and forgot about, as well as reducing the conditioning requirement on mild temperature days. Finally, these sequences can be improved over time as past performance data is accrued.

Variety of Apps for each End User: BAT software platform contains a wide variety of applications for systems and users of all types. Its not tied to any one manufacturer’s products or devices. From continuous commissions of equipment through fault detection algorithms, energy analysis, load profiling, facility benchmarking, asset performance tracking, and carbon emissions reporting. BAT software solution provides fast, powerful and extremely flexible analytical capabilities that cannot be found with conventional BAS systems. Any of these analyses can be easily stored as a live-dashboard for single-click access from the login screen.

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