



SkySpark

Find What Matters™

Case Study

**BWI Hilton:
Using Analytics to Support
a Guaranteed Energy
Savings Program**

August 1, 2015

SkyFoundry

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PM Hospitality Strategies – BWI Hilton Using Analytics to Support a Guaranteed Energy Savings Program

Overview

PM Hospitality Strategies recently partnered with Seiberlich Trane Energy Services to complete \$1,031,500 in green, energy-saving improvements at its BWI Hilton facility. The improvements were designed to enhance the comfort of the hotel's guests and staff, while increasing the operational efficiencies and reducing the environmental impact of the hotel.



Seiberlich Trane Energy Services implemented energy conservation measures including a lighting retrofit, engineering common area controls and guest room occupancy controls, and the implementation of SkySpark analytics for continuous trend analysis, detection of faults and opportunities for savings.

The installed solutions are projected to save \$158,400+ annually in utility costs.

Case Study: BWI Hilton

The Facility

PM Hospitality Strategies – BWI Hilton, a 280 room hotel.

Location: 1739 W Nursery Rd., Linthicum Heights, MD 21090 (Baltimore International Airport)

Equipment Systems

- 1 - 140 ton Packaged AHU's
- 1 - 120 ton Packaged AHU's
- 1 - 25 ton Packaged AHU's
- 1 - 30 ton Packaged AHU's
- 1 – 25 ton Packaged RTU's
- 1 – 70 ton Packaged RTU's
- 1 – 30 ton Packaged RTU's
- 2 – 20 ton Packaged RTU's
- 1 – 5 ton Packaged RTU's
- 1 – HW System with (3) 3,350 MPB Boilers
- 1 – Condenser Water System with (2) 848 ton Cooling Towers
- 41 – VAV Boxes

The Results - Identifying and Tracking System Faults

Equipment Operating Outside of Occupancy Schedule

It may not seem sexy or complex, but equipment operating outside of schedules is one of the biggest causes of energy and \$ waste in buildings. Buildings are complex and equipment gets overridden for a variety of reasons that may be right at the time, but how do we insure that systems get back to normal scheduled operation.

This spark looks for times when equipment is commanded on when the schedule calls for the equipment to be unoccupied. What we're looking for in the particular spark is extended periods of runtime during unoccupied hours. Typically, equipment will need to run during unoccupied hours to maintain setback conditions in a space, but this spark allows us to identify when systems are running excessively, indicating that an override may have occurred, or there are external factors causing the system to run longer than anticipated (i.e. someone left a window open). We present this data to our client as aggregate run-time hours available to all equipment in the building, aggregate scheduled occupied time for the equipment, and aggregate equipment runtime during hours each piece of equipment was scheduled unoccupied but was running.

This spark allows our clients to ensure they are running their equipment according to the contracted schedule times they agreed to as part of the Guaranteed Energy Savings contract. When equipment operates outside of the contractual schedule for extended periods of time, unnecessary energy usage will be seen, resulting in a shortage of energy savings required for pay back.



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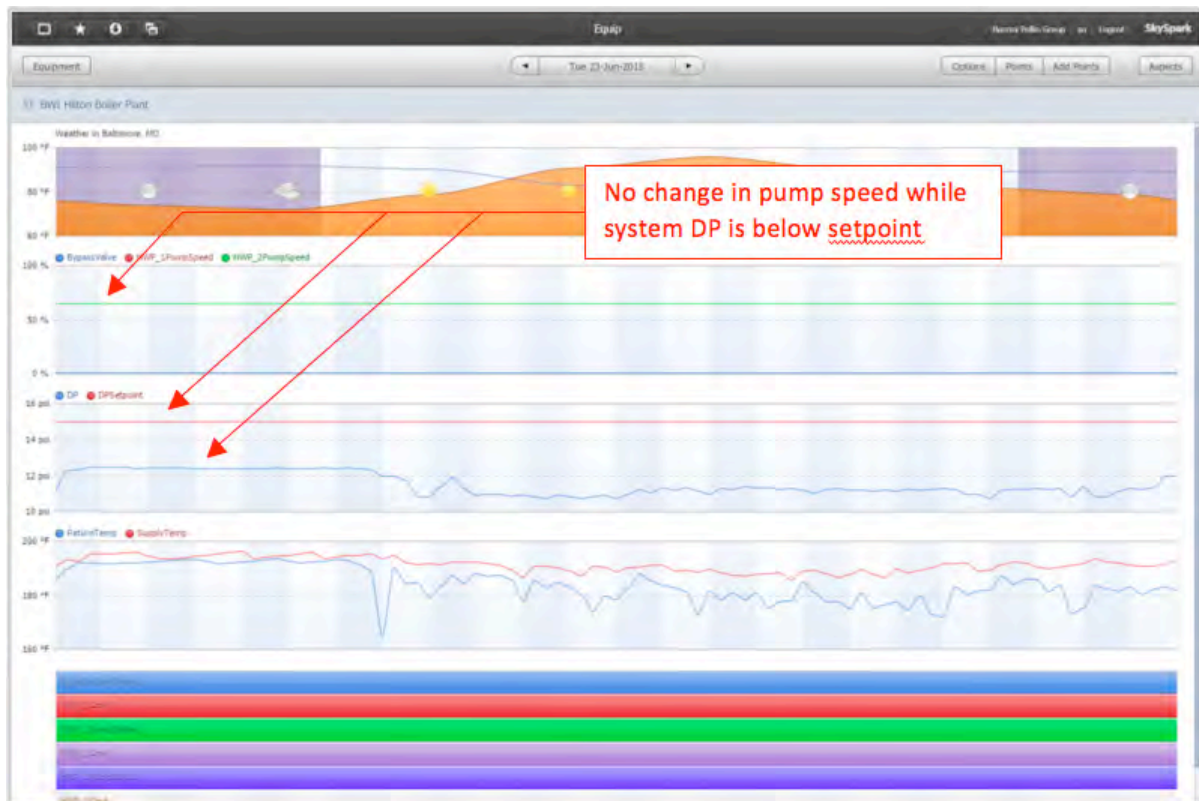
This spark allows us, as the ESCO and service provider, to:

- Ensure our client is recognizing the savings they expect as part of the contract they signed with us.
- Engage the client quickly when deviations from contract occur. The client relationship can quickly deteriorate if we are only communicating about these issues annually. Bringing these issues up as they occur provides the client ample time to adjust their behavior and enhances the role of the systems integrators as advisor and partner in achieving a successful project.

Analytic Results

Pump Speed Not Adjusting to Maintain Desired Differential Pressure

This spark looks for times when the differential pressure in a plant is not being met and the associate pumps are not adjusting their speed to maintain the system differential pressure. The situation seen below indicates to us that a pump has been overridden as the speed never changes in response to differential pressure changes. As seen below the differential pressure is consistently below setpoint while the HW pump speed never changes.

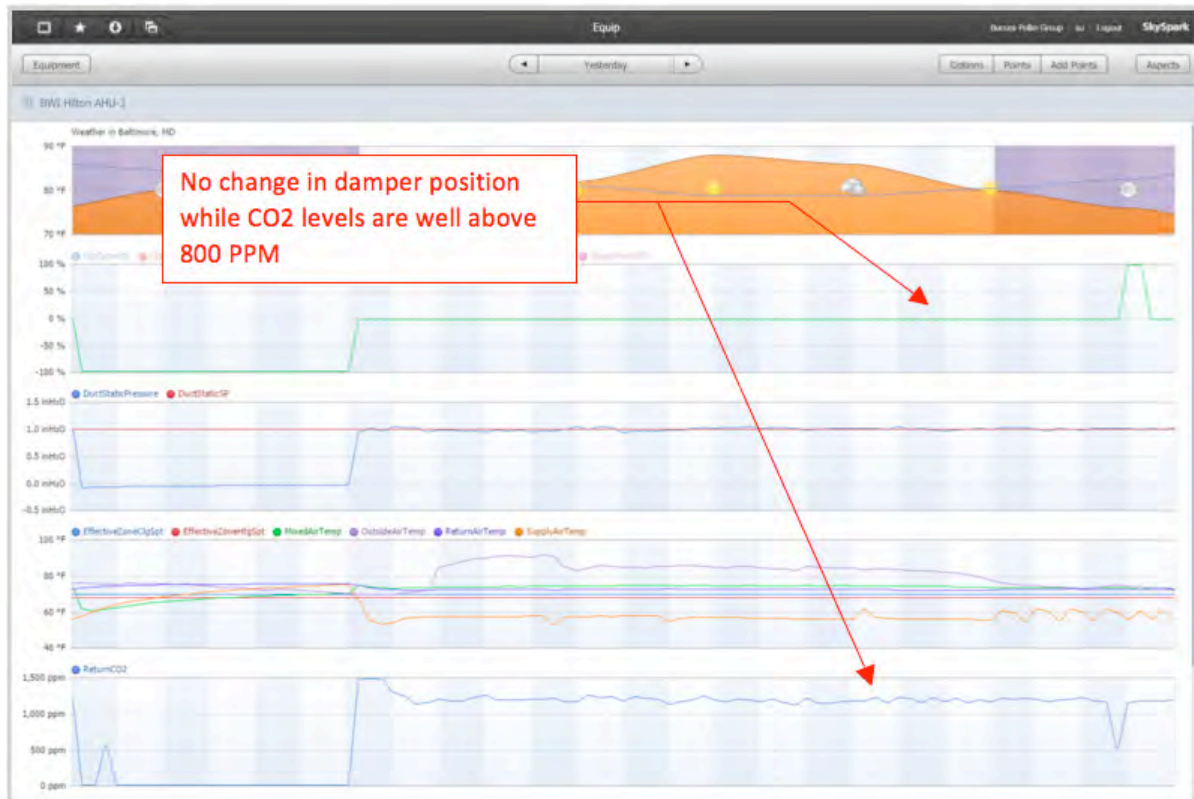


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Return CO2 Above 800PPM and no Change in Outside Air Damper Position

This spark looks for times when the return air CO2 levels are above 800PPM for extended periods of time with no change in the OA damper position. This spark indicates that the equipment is not operating in such a way that the spaces served by the AHU are being ventilated properly.



Management Level Summary Reports

Monthly Changes Rollup

This set of metrics contains the following information:

1. Occupied Runtime of Equipment – Month to Month
2. Unoccupied Runtime of Equipment – Month to Month
3. Average Site Temperature during Occupied Hours – Month to Month
4. Weather High's and Low's – Month to Month

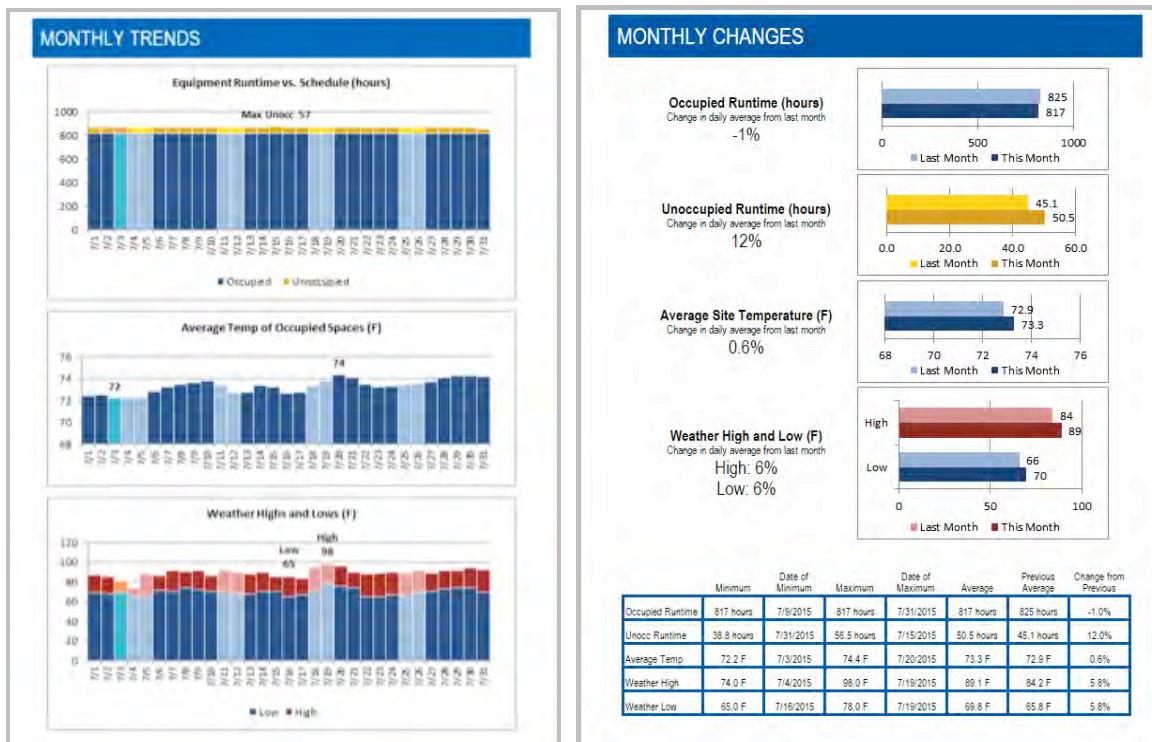
Case Study: BWI Hilton

The first two metrics allow our client, at high level, to understand how often equipment is running during occupied and unoccupied hours the current month as compared to the previous month.

The second two metrics allow our client, at a high level, to understand where the temperature of the building is the current month as compared to the previous month. The weather metric provides context as to what the weather was like each of those months and if it may have contributed to variations in the monthly building temperatures.

As stated above these metrics provide talking points around the Guaranteed Energy Savings contract and allow us, as the ESCO and service provider, to work with the client to ensure they are running their building in such a way that they can recognize energy savings, extend mechanical equipment life, and maintain occupant comfort.

All of this information is generated and automatically pulled from SkySpark® and reformatted into a monthly report.

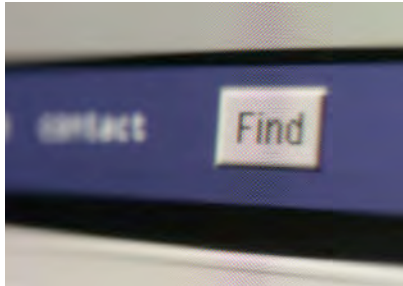


Additional Information

SkyFoundry would like to thank Seiberlich Trane and PM Hospitality Strategies - BWI Hilton for this case study.

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SkySpark® Analytics Software - For the World of Smart Devices



The past decade has seen dramatic advances in automation systems and smart devices. From IP connected systems using a variety of standard protocols, to support for web services, it is now possible to get the data produced by the wide range of devices found in today's smart devices and equipment systems.

Access to this data opens up new opportunities for the creation of value-added services to help businesses reduce energy consumption and operational costs and to identify opportunities to enhance operations through improved control, and replacement or repair of capital equipment.

Access to the data is just the first step in that journey, however. The new challenge is how to manage and derive value from the exploding amount of data available from these smart and connected devices. SkyFoundry's SkySpark® Analytics Software directly addresses this challenge.

The new frontier is to efficiently manage and analyze data to *Find What Matters™*.



About SkyFoundry

SkyFoundry's mission is to provide software solutions for the age of the "Internet of Things".

Areas of focus include:

- Building automation and facility management
- Energy management, utility data analytics
- Remote device and equipment monitoring
- Asset management

SkyFoundry products help customers derive value from their investments in smart systems.

Learn more at: www.skyfoundry.com

Contact us at: info@skyfoundry.com

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