



SkySpark

Find What Matters™

Case Study

**Southeastern Office Building:
Advanced Analytics as a
Commissioning Tool**

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SkyFoundry

www.skyfoundry.com



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Suburban Office Building: Initial Commissioning and Ongoing Automated Commissioning Project

Overview

Buildings are complex. No two buildings are exactly alike and virtually every new building is a one of a kind creation. Even when considerable effort is applied to commission equipment systems for optimum performance important issues can be missed. One of the great benefits of SkySpark® Analytics is that it looks at all of the data, all of the time, continuously evaluating rules to detect patterns that represent deviations from optimal performance.

This makes it an ideal tool to support the initial commissioning process and to provide automated, ongoing commissioning. The following case study demonstrates the value of SkySpark® in commissioning.

Location

Building Type – Class A Suburban Office Building, Southeastern US

Issue Description

The client had several new buildings come online recently. The goal was to bring these buildings into SkySpark® quickly and use SkySpark® as a tool to support the commissioning process. The following case study shows the value SkySpark® adds to the commissioning process. Within the first couple of weeks after the contractor was finished with manual commissioning of the building,

SkySpark® identified issues with VAV box operation that had been missed during the manual commissioning process. This case study demonstrates that even when you are focused on assessing equipment operation and have allocated resources, there are just too many pieces of equipment and too many data points to manually review and verify.

The Results

Issue 1: VAV Box Airflow Not Reaching Setpoint

The Spark View shows the issues including description, frequency, duration and the relationship of the Spark to specific equipment.

Equipment	Rules	Cost	Dur	Timelines
VAV1_02 4 sparks	Cooling Past Setpoint		21.75hr	Sun 9th, Mon 10th, Tue 11th, Wed 12th, Thu 13th, Fri 14th
VAV1_04 5 sparks	Cooling Past Setpoint		14.5hr	Sun 9th, Mon 10th, Tue 11th, Wed 12th, Thu 13th, Fri 14th
VAV1_05 3 sparks	Cooling Past Setpoint		7.25hr	Sun 9th, Mon 10th, Tue 11th, Wed 12th, Thu 13th, Fri 14th
VAV1_14 3 sparks	Cooling Past Setpoint		26.25hr	Sun 9th, Mon 10th, Tue 11th, Wed 12th, Thu 13th, Fri 14th
VAV1_18 3 sparks	Cooling Past Setpoint		20.75hr	Sun 9th, Mon 10th, Tue 11th, Wed 12th, Thu 13th, Fri 14th
VAV1_19 5 sparks	Cooling Past Setpoint		50.75hr	Sun 9th, Mon 10th, Tue 11th, Wed 12th, Thu 13th, Fri 14th
VAV1_20 5 sparks	Cooling Past Setpoint		37.75hr	Sun 9th, Mon 10th, Tue 11th, Wed 12th, Thu 13th, Fri 14th
VAV1_27 1 sparks	Cooling Past Setpoint	Newly commissioned building. 11 of 66 VAV units had balance issues.		Sun 9th, Mon 10th, Tue 11th, Wed 12th, Thu 13th, Fri 14th
VAV1_30 5 sparks	Cooling Past Setpoint			Sun 9th, Mon 10th, Tue 11th, Wed 12-Sep-2012, Thu 13th, Fri 14th

Equipment	Rules	Cost	Dur	Timelines
VAV1_26 5 sparks	Box Flow Not Reaching Setpoint		30.5hr	Sun 9th, Mon 10th

Zoom-in Detail of the Spark.

In this case, a SkySpark® rule identifies VAV boxes that are unable to reach the airflow setpoint being called for to satisfy the space comfort conditions. One of the key goals of the commissioning process is to insure that all VAV boxes are able to meet airflow setpoints.

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Issue 2: Overcooling by VAV Boxes

Another issue that SkySpark® identified was overcooling caused by VAV boxes delivering too much airflow to the space, which is a symptom of incorrect balancing. Given that fan horsepower varies with the cube of the airflow (“the fan law”), this can result in significant energy waste in addition to comfort problems.

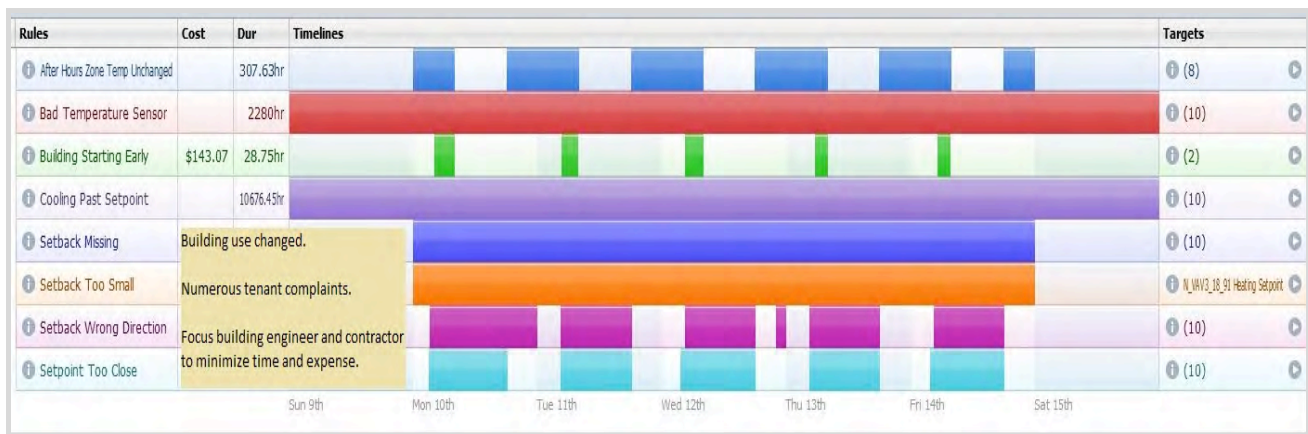


Case Study: Southeastern Office Building

Issue 3: Streamline Repairs and Corrections

Re-commissioning can be an even bigger challenge than initial commissioning because of limited budget and resources to look at balancing and operational issues across the building when there is a change of use. In another recent example, a change-of-use in a building threw the systems out of balance. Numerous tenant complaints were received. SkySpark® was used to identify issues enabling the maintenance technician and contractor to minimize the time and expense needed to research and resolve the issues.

The SkySpark® view below shows 8 significant operational issues that were detected, from setpoint issues and broken temperature sensors to buildings systems starting too early.



Zoom-in Detail of the Spark Rules.

Summary

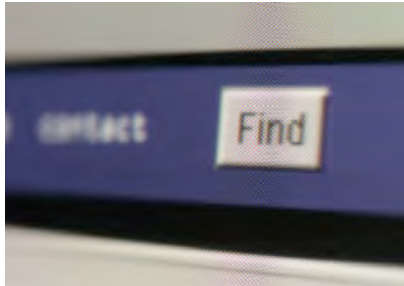
SkySpark® rules identified VAV boxes that are unable to reach the airflow setpoint being called for to satisfy the space comfort conditions, identified overcooling caused by VAV boxes delivering too much airflow to the space, which is a symptom of incorrect balancing, and identified issues enabling maintenance technicians and contractors to minimize the time and expense needed to research and resolve issues during re-commissioning.

SkySpark® case studies are fascinating, but not unique. Virtually all buildings, old and new, have operational issues. The challenge is to find them in order to eliminate the waste, cost and comfort impacts they cause.

SkySpark® is unequalled in its ability to do this with systems and data of all types.

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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

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