

CloudOps – Automation: An Analytic Service from Siemens

Achieving precise building automation system control

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Building systems deviate from their intended design over time, resulting in decreased performance and reliability. And, as digital technologies continue to affect our everyday lives, we have begun to see an evolution in how building owners and operators approach system maintenance and take advantage of data analytics to drive operational efficiencies.

Traditional maintenance approaches are failing today's businesses

Because the majority of all maintenance programs employed by facilities are reactive in nature, the cost to repair or replace equipment is typically much higher than if problems were detected and fixed earlier—not to mention the costs associated with lost productivity during downtime.

CloudOps – Automation from Siemens

As a way to overcome these issues and to take advantage of data analytics, we are seeing more cases of condition-based, outcomes-oriented services. In these cases, service is conducted based on deviations from pre-defined parameters. CloudOps – Automation, one of Siemens Analytic Services, takes a systematic approach to test, verify, optimize, and maintain system performance through data-driven analytics and onsite scheduled O&M. By focusing maintenance activities and prioritizing problem resolution, building owners can achieve operational and cost efficiencies.

Driving operational efficiencies with remote analytics

CloudOps – Automation can supplement traditional building automation system controls service to optimize critical spaces and to enable precise system control and operation of both the building automation system and its peripheral controlled devices.

Once the critical equipment and spaces are identified, Siemens performs a baseline functional test of the system; from there, ongoing maintenance and corrective actions are executed based on both scheduled and rules-based analytics. The systems are analyzed remotely on a monthly basis, improving system reliability, enabling focused maintenance activities, and helping prioritize problem resolution. Ultimately, building owners realize cost reductions by performing maintenance only as required.

Highlights

Take a systematic approach to test, verify, optimize, and maintain system performance through data-driven analytics and onsite scheduled O&M.

Key benefits

- Gain visibility into system performance
- Reduce business and facility interruptions
- Minimize visits to equipment until data suggest there is a fault
- Increase system uptime and extend equipment lifecycle
- Create positive environmental impact

Common KPIs

- Precise temperature control
- Precise humidity control
- System reliability

Increase uptime with fewer business and facility interruptions

Rather than monthly, onsite visits from a technician, building owners can benefit from more frequent analysis of critical building automation controls.

- up to **75%**ⁱ fewer equipment breakdowns
- up to **80%**ⁱ less time spent reacting to emergencies
- Potential for **95%**ⁱ system availability or better

Equipment options available

- AHUs
- Boiler plant
- Chillers
- Terminal units

Driven by outcomes

By taking an outcomes-based approach to understanding your business needs and goals, Siemens can establish key performance indicators (KPIs) aligned with your equipment, spaces, and goals. Results are always documented and shared through Navigator and other customer reporting.

Secure, flexible remote connection

- Flexible – Siemens can connect wirelessly, via VPN client, virtual network, or separate network connection.
- Secure - **ISO 27001 Certification** applies to VPN client and virtual networks to specify the requirements for establishing, implementing, and continually improving an information security management system within the context of the organization.



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Total Faults Detected:

Faults Detected by System:

CloudOps-Automation Analytics Methodology

Fault Detection and Diagnostics (FDD) is capable of using hundreds of rules to monitor and track equipment performance against pre-defined metrics. When the equipment isn't operating in an acceptable range, a fault is triggered in Navigator. A fault detects abnormalities with equipment, sensors, or controls that cause sub-optimal performance and identifies issues before an alarm condition or equipment failure occurs. Identifying faults leads to increased reliability for the systems in which the equipment operates. Additionally, energy savings are achieved and equipment life is extended. There are three types of faults: **Reactive, Proactive, and Optimization.**

Reactive faults respond to alarms in real time and inform operators when there is something that isn't working properly. **Proactive** rules are near real-time that inform when there is something occurring that is outside of the desired conditions. **Optimization** faults identify deviations from the ideal state and can be used to reduce energy consumption.

These three rule types assist building operators to take preventative actions, which is less costly and time intensive than reactive, emergency repairs. Downtime is significantly

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increased while replacing failed equipment than repairing it. Additionally, correcting faults proactively will help to ensure energy consumption is minimized and operational efficiencies are optimized with the equipment.

Tasking

Table 1 below describes recommendations to repair the faults identified.

Table 1 – Faults List

Recommendations	Equipment ID	Date Created	Due Date	Assigned To
If approved and after determining that it is safe to do so, release boiler ON/OFF command from manual override.	Science Bldg Boilers	1/24/18	2/9/18	Siemens
Find source of hot air leak into the return air plenum. Repair or remove source of hot air leak if possible.	AHU1-1	1/24/18	2/9/18	Siemens
Verify return air temperature sensor readings. Calibrate or replace if necessary.	AHU3-2	1/24/18	2/9/18	Siemens
Correct the chilled water valve operation to ensure that it is operating correctly in both directions and it is opening and closing fully. Repair or replace if necessary.	Chiller 2	1/24/18	2/9/18	Siemens

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(Part# 153-SBT-435)

Sample CloudOps – Automation Proven Outcomes report

ⁱ U.S. Department of Energy. "Operations & Maintenance Best Practices: A Guide to Achieving Operational Efficiency." Federal Energy Management Program, August 2010.

ⁱⁱ ReliabilityWeb.com. "10 Ways to Reduce Reactive Maintenance."