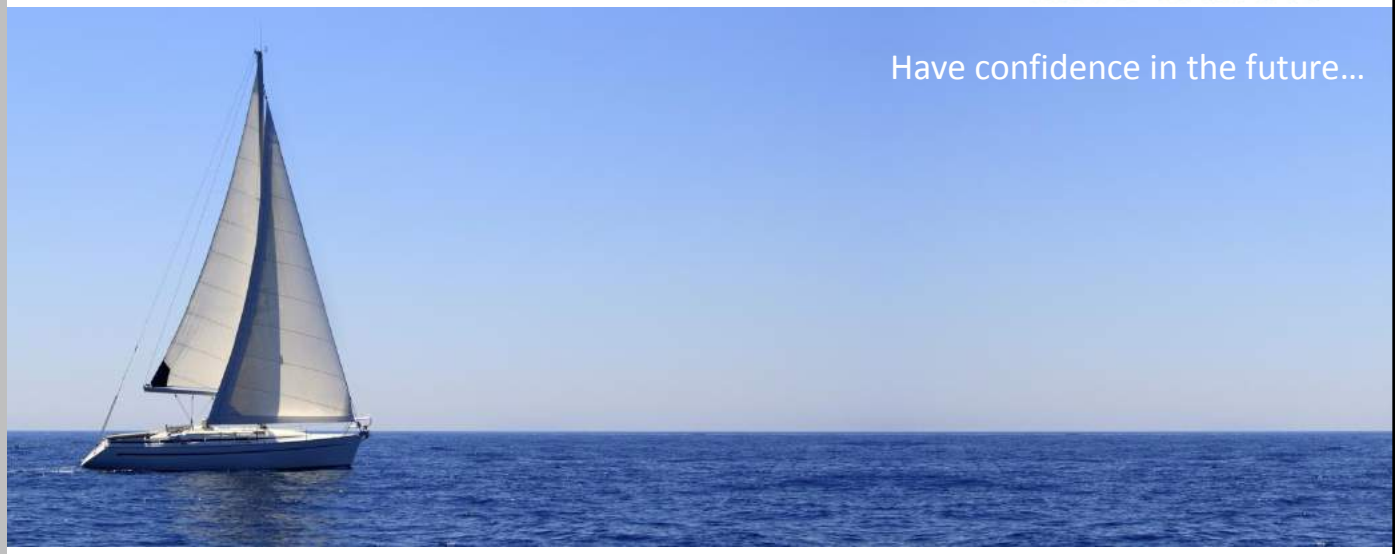
Retro Commissioning Sensor Suitcase(RCx)

Analytics, Recommendations and Implementation



Retro-commissioning (RCx), the process through which professional energy service providers identify and correct operational problems has proven to be a cost-effective means to achieve median energy savings of 16%. However, retro-commissioning is not typically conducted at scale throughout the commercial building stock. Very few small commercial buildings are retro-commissioned because utility expenses are relatively modest, margins are tighter, and capital for improvements is limited. In addition, small buildings do not have in-house staff with the expertise to identify improvement opportunities.

The RCx Sensor Suitcase technology is targeted for buildings with floor areas under 50,000 sq ft, although it can also be applied in larger facilities, provided that they are served by packaged units. In the United States, small commercial buildings represent 51% of total floor space of all commercial buildings and consume nearly 3 quadrillion Btu of site energy annually, presenting an enormous opportunity for energy savings.

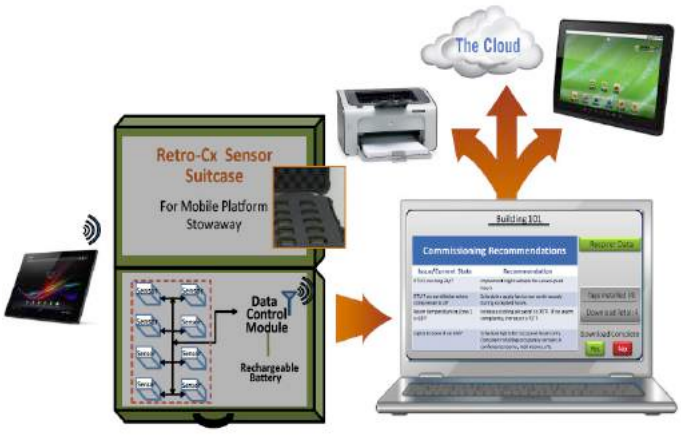
Technology + Process = Savings

In response, a turnkey hardware-software solution was developed to enable cost-effective, monitoring-based RCx of small commercial buildings. This highly tailored solution enables non-commissioning providers to identify energy and comfort problems, as well as associated cost impacts and remedies. It also facilitates scale by offering energy service providers the means to streamline their existing processes and reduce costs by more than half. The turnkey RCx Sensor Suitcase consists of two primary components: a suitcase of sensors for short-term building data collection that guides users through the process of deploying and retrieving their data and a software application that automates analysis of sensor data, identifies problems and generates recommendations.

Here's How it Works

The RCx process is initiated by using the sensor suitcase and its handheld tablet computer to guide installation of logging sensors at strategic building locations. As part of the process, the suitcase stores data on each sensor identifying the building in which it is installed, the type of measurement made by the sensor, and the sensor location (e.g., the room name and number). The tablet also provides easy-to-understand graphical instructions that guide the user in initiating configuration of each sensor and properly installing it. The sensors are left in place for 4 to 6 weeks and then retrieved, with each sensor returned to any slot in the suitcase.

The data on the sensors are then transferred from the suitcase to a computer used for data stroage and running the suitcase RCx analysis software; the software generates improvement recommendations. Finally, recommendations are implemented directly by the building owner or GreenPath.



Retro-commissioning Sensor Suitcase System

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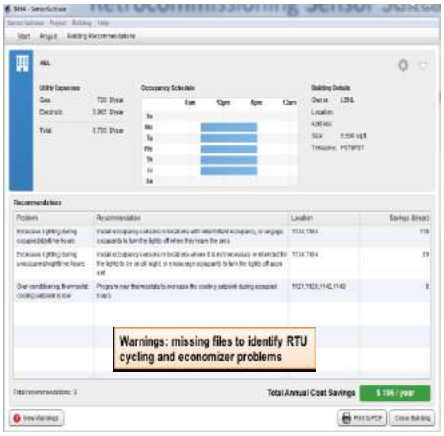

Analysis Software

Rule-based diagnostic algorithms were developed and embedded in the analysis software to identify savings opportunities and generate recommendations for eight common, high-impact problems in the control and operation of lighting and HVAC systems in small commercial buildings. Implementation of the recommendations decreases energy costs, improves the comfort of occupants, and extends the life of building equipment. The software uses a graphical user interface to simplify user interactions and clearly present the recommendations. For each recommendation, the software provides the annual energy cost saving, an explanation of the existing problem, and a description of the recommended action to alleviate the problem, improve operations, and reduce building operating costs.

Sensor Suitcase Field Tests Show Promise

After a month or so of automatic data collection, the results from field tests on two commercial buildings in Berkeley, California and in the Portland, Oregon area identified potential savings of up 9 percent from simple measures such a using thermostat setbacks at night, eliminating short cycling of the rooftop units, using outdoor air economizing, eliminating excessive daytime lighting use.

Entering basic information into the suitcase's computer, like energy consumption and costs from the building's electricity bill, allows the software to generate recommendations on how to improve the building's performance, and how much energy could be saved by each measure.

> The sensor suitcase helps penetrate a market that's in dire need.

> The sensor suitcase complements existing products and services.

> Technology is pretty versatile and could give you data where you wouldn't otherwise know what the actual operating conditions are.

> The sensor suitcase's guided sensor configuration and installation could significantly reduce labor time and required expertise.

About GreenPath Energy Solutions

GreenPath is a leading supplier of energy efficient building solutions to business, industry, and government. For more than a decade, GreenPath has helped building owners and facility managers control their energy costs. We focus on identifying low- and no-cost O&M-based measures and typically target initial energy savings of at least 10% in most commercial buildings. We also work with you to identify other measures that could require some investment, but may contribute additional savings of 10-20% over time. Our objective is to help facility managers and building owners control their operational, energy, and facility costs by providing energy auditing, retro-commissioning, and easy-to-use and effective software solutions.

To learn more about how you can save money and increase your asset values, please contact one of our account representatives today at sgraham@greenpathes.com.

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GSA Contract Holder
GS-21F-003GA