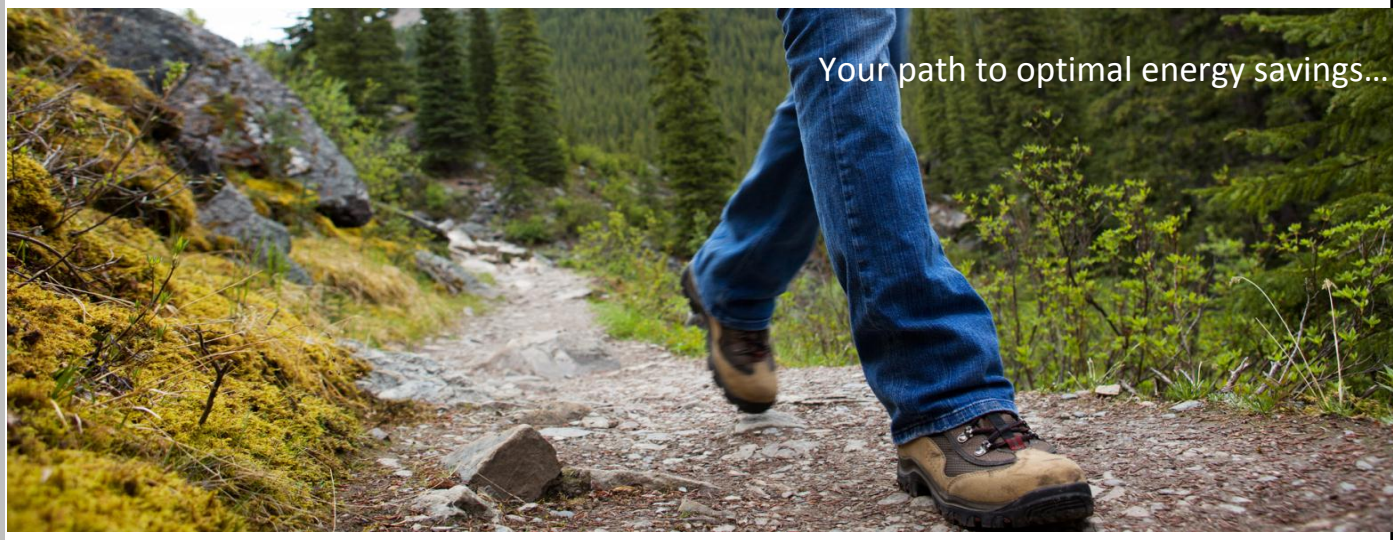
Retro Commissioning Building Suitcase(RCx)

Energy Saving System for Small Commercial Buildings



TECHNOLOGY DESCRIPTION

The RCx building suitcase provides a turnkey hardware-software solution that offers a degree of simplicity and automation that will enable realization of RCx at scale in small commercial buildings. It consists of five primary components delivered as a single integrated solution:

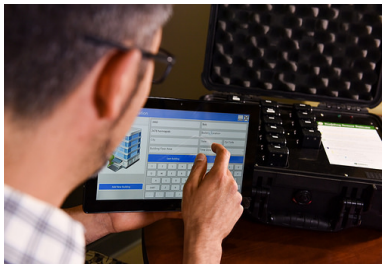
1. Easy-install battery-powered sensors (air temperature, light, and rooftop unit operating status) with on-board data storage.

2. A suitcase provides a means of transport, storage, charging capability and data transfer to a computer for analysis of the data collected.

3. A tablet to configure sensors, document information of sensors installed, and provides installation guidance.

4. Diagnostic algorithms to generate recommendations to improve building operations, utility costs, and energy performance. The algorithms target high-impact problems in lighting and HVAC system operations.

5. A software application with graphical user interface, which automatically analyzes data and outputs building- specific improvement recommendations to the user, along with cost impacts.



HERE'S HOW IT WORKS

The five-step application process of the sensor suitcase is briefly described here. **Step 1:** Use the application in the tablet to individually configure each sensor and install it in the building. **Step 2:** Recover sensors from the building about 4–6 weeks after installation. **Step 3:** Return the sensors to the suitcase and use the tablet to initiate download of the sensor data to the suitcase. **Step 4**: Transfer the .csv sensor data files to a computer on which the analysis software is installed so the data can be used as inputs to the analysis software. **Step 5:** Run the software, and enter the building's utility bill information and occupancy schedule. The software then provides low-cost improvement recommendations and estimated utility costs savings from implementing the recommendations. The following diagram describes the five components of the solution, categorized by the hardware and software.

Retro-commissioning Building Suitcase System

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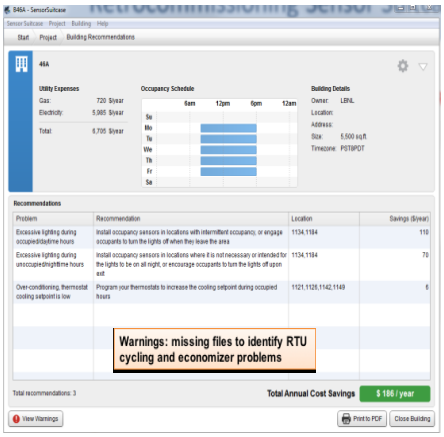
GreenPath's innovative energy savings w/È Building {dzÅűÖl·ăŜ offers a low-cost, low-risl approach to implementing wŜűN2 Commissioning (wCx) Services ű2 ăY l·ff l·yŘ YŜŘum-size commercial buildings



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.

Primary Target Use Buildings

Target application: small/medium (50K -100K sf) commercial building (Does not have on-site energy management staff or in-house expertise, buildings served by packaged rooftop units). **General Applicability: Technology could serve wide set of building systems types and regions:**

1. The algorithms and problems targeted have wide applicability.
2. A few exceptions: Laboratory bldgs.; Low energy use buildings, since the investment would be hard to justify.
3. The top candidates for RCx are those buildings with: A low ENERGY STAR rating or a high energy use index that cannot be explained, or unexplained increases in energy use; Persistent failure of building equipment, control systems, or both; Excessive occupant complaints about temperature, airflow, and comfort.

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 15% in most commercial buildings. The small business market presents unique challenges for utility energy efficiency programs. The RCx Building Suitcase provides GreenPath with a unique offering tailored to that market. The Building Suitcase can be deployed on one building and then moved to another building. As that process repeats, the program cost to achieve energy savings plummets as customers identify and implement low/no-cost operational improvements. They achieve significant energy savings and a high ROI on their investment.

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

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