



LIGHTING CONTROLS



POWER MONITORING &
MANAGEMENT



INTEGRATED AUTOMATION



HEATING, VENTILATION &
AIR-CONDITIONING (HVAC)
CONTROLS

Smart Roof Top Units [S-RTU]

Intelligent Efficiency @ work

Company Overview

Innovative Solutions, Significant Savings



Smart Automation Energy (Smart) is an energy efficiency partner providing turnkey solutions for facilities. Our network-based system intelligently integrates with existing building automation systems and offers a holistic approach to significantly reducing OpEx.



Enabling total control and visibility for building managers, our system also provides intuitive dashboards, with simple, real-time data to illustrate energy performance and savings.



Our partnership approach ensures that our solutions evolve with your facility and needs, providing a truly sustainable answer to clients' energy optimization needs – now and in the future..



Retrofit Focus

- AC market is projected to grow (Green Side / New construction) by 5-6% within 17-23. (6wreasearch, 2017)
- Major contributor is from the residential building (DX-Driven market), (Business Wire, 2017)
- Focus should be on brown side (Existing Facilities) in order to reduce the current energy consumption
- Retrofitting brown buildings would contribute on the overall efficiency.





INTRODUCTION

The S-RTU is a smart control solution for rooftop unit (RTU). The control logic is both a demand management and energy usage device.

The solution is designed to improve energy efficiency and demand requirements of a RTU as well as solve humidity, common noise and frequent issues of on/off by modulating the capacity of an RTU to match the cooling space requirement.

Recognizing a large opportunity to provide the most cost effective customer-friendly energy efficiency solution for high tonnage RTU applications (>7 tons):



Mosques



Schools



Hypermarket



Residential villas

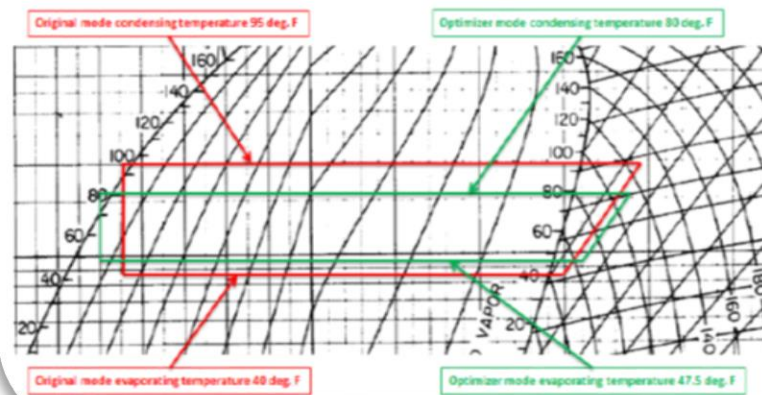
How S-RTU works ?

- The S-RTU is a control kit for HVAC Direct Expansion (DX) units such as packaged rooftop units, large DX-ducted split units. The control kit optimizes the operation of the HVAC DX unit by modulating the speed of the unit compressor(s) and indoor fan. The S-RTU thus ensures that the number of compressors in operation match the space load requirements.
- The S-RTU manages the compressor and fan speed

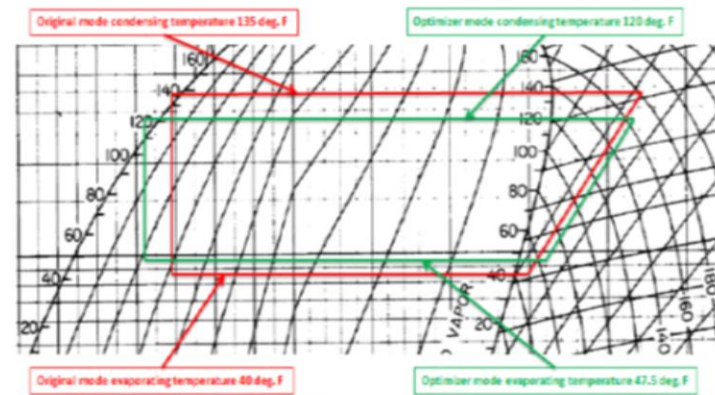


Compressor Energy Savings

WINTER OPERATION



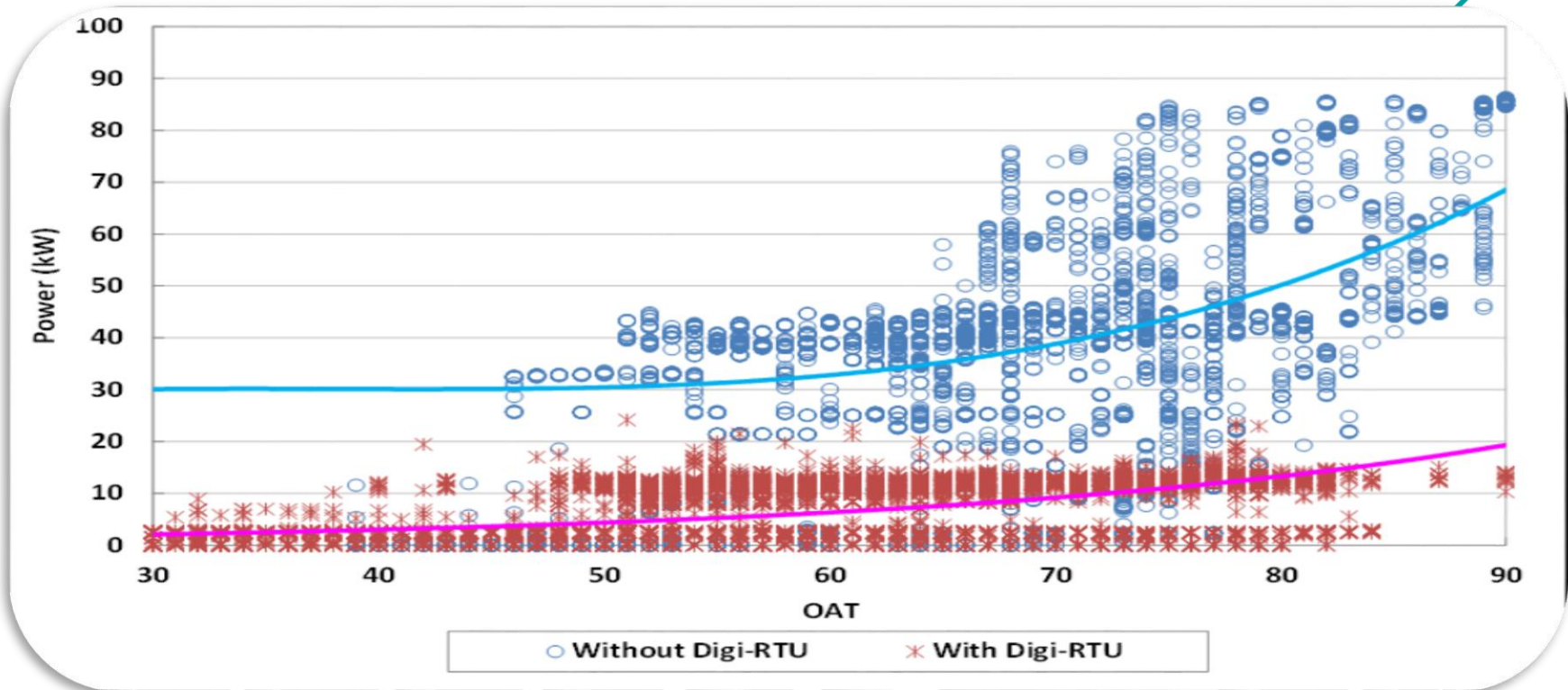
SUMMER OPERATION



Energy Performance of S-RTU / Main Features

- **Cooling Philosophy.**

The controller activates all of the compressors and modulates the speed of the indoor fan and compressors to maintain the room temperature set point. The speed varies (adjustable).



Energy Performance of S-RTU / Other Features

Fault detection

- *S-RTU software provides FDD and notifications*
- *Or can communicate with existing BMS*
- *Or can communicate with enables IP thermostats.*

Demand Management

- *Load limit factor can vary from 50%-100%.*

Demand Control Ventilation.

- *Control of the air dampers & fan speed based on CO2 levels.*
- *The S-RTU complies with all related ASHRAE Standard 62.1*

Overview of Benefits

Compressor Optimization

- *Conforms to OEMs recommendation of motor speed (35Hz)*
- *Soft starting (wear & tear) vs On/Off starting.*
- *Compressor modulation savings (Unique Feature).*

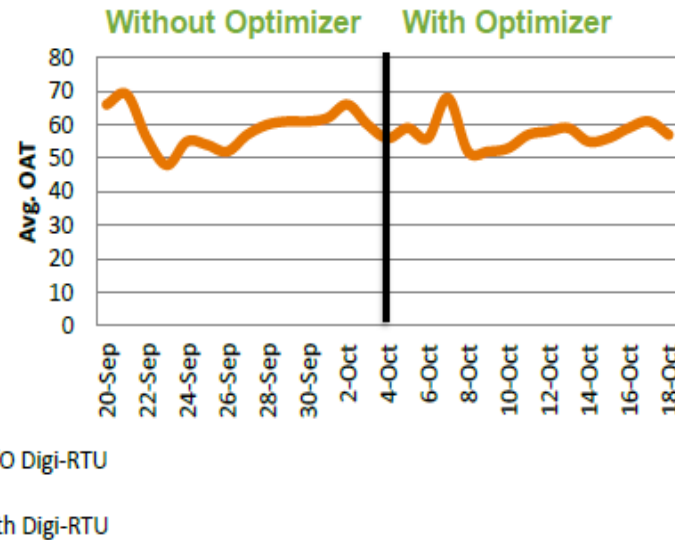
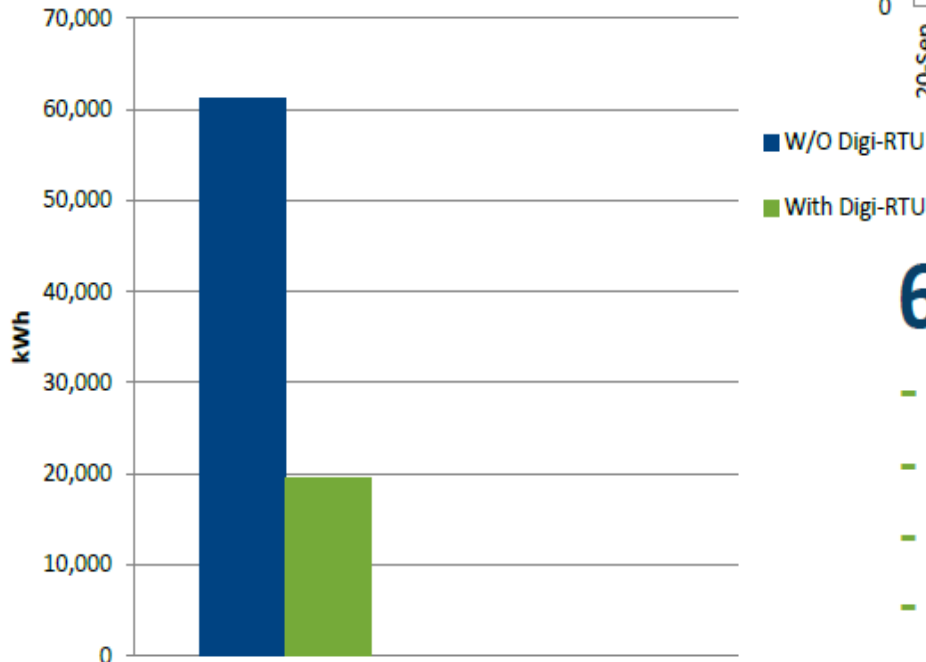
For Building Owner

- *Reducing carbon foot print (CO2 emissions)*
- *Reducing overall energy bills up to 50%*
- *Better maintain humidity & temperature conditions.*
- *Reduce compressor ON/Off cycling up to 75%*
- *Reduce HVAC noise pollution on occupied space*

Case Study

Distribution Center

Metered Savings = 68%



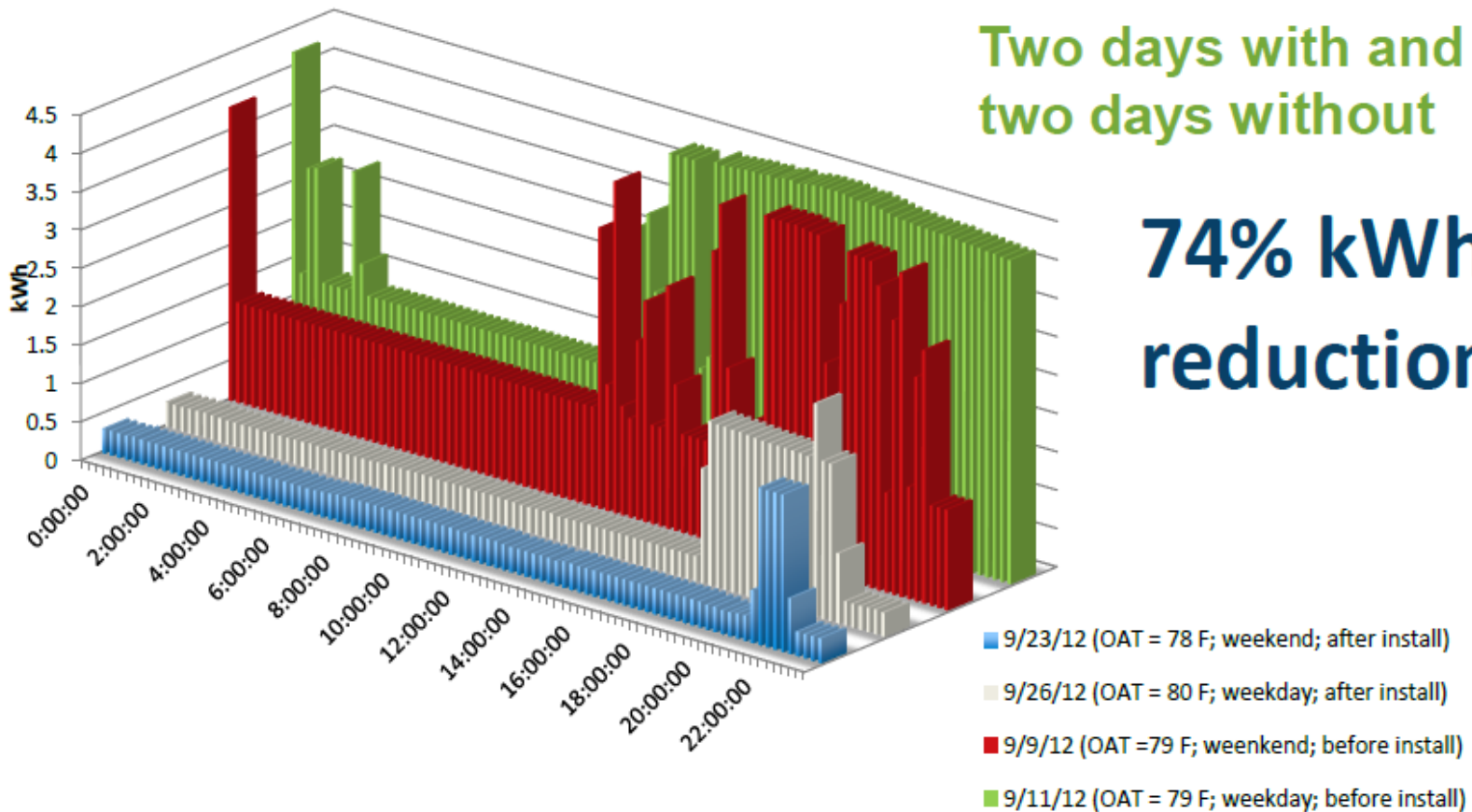
68% kWh reduction

- Equipment sub-metered
- Two weeks pre
- Two weeks post
- IPMVP

BIG BOX RETAIL

Two days with and
two days without

74% kWh
reduction



HIGH PROFILE RESULTS

Key Benefits

- ✓ Fully automated, state-of-the-art, reliable and transparent turnkey solution.
- ✓ Guaranteed energy savings.
- ✓ Prolonged equipment life and reduced breakdowns due to optimized operation leading to less wear and tear.
- ✓ Reduction of CO₂ footprint – better environmental welfare and sustainability profile for your organization.
- ✓ Improves Asset Value.
- ✓ Remote monitoring service as an option.
- ✓ Finance options available.



QUESTIONS

