



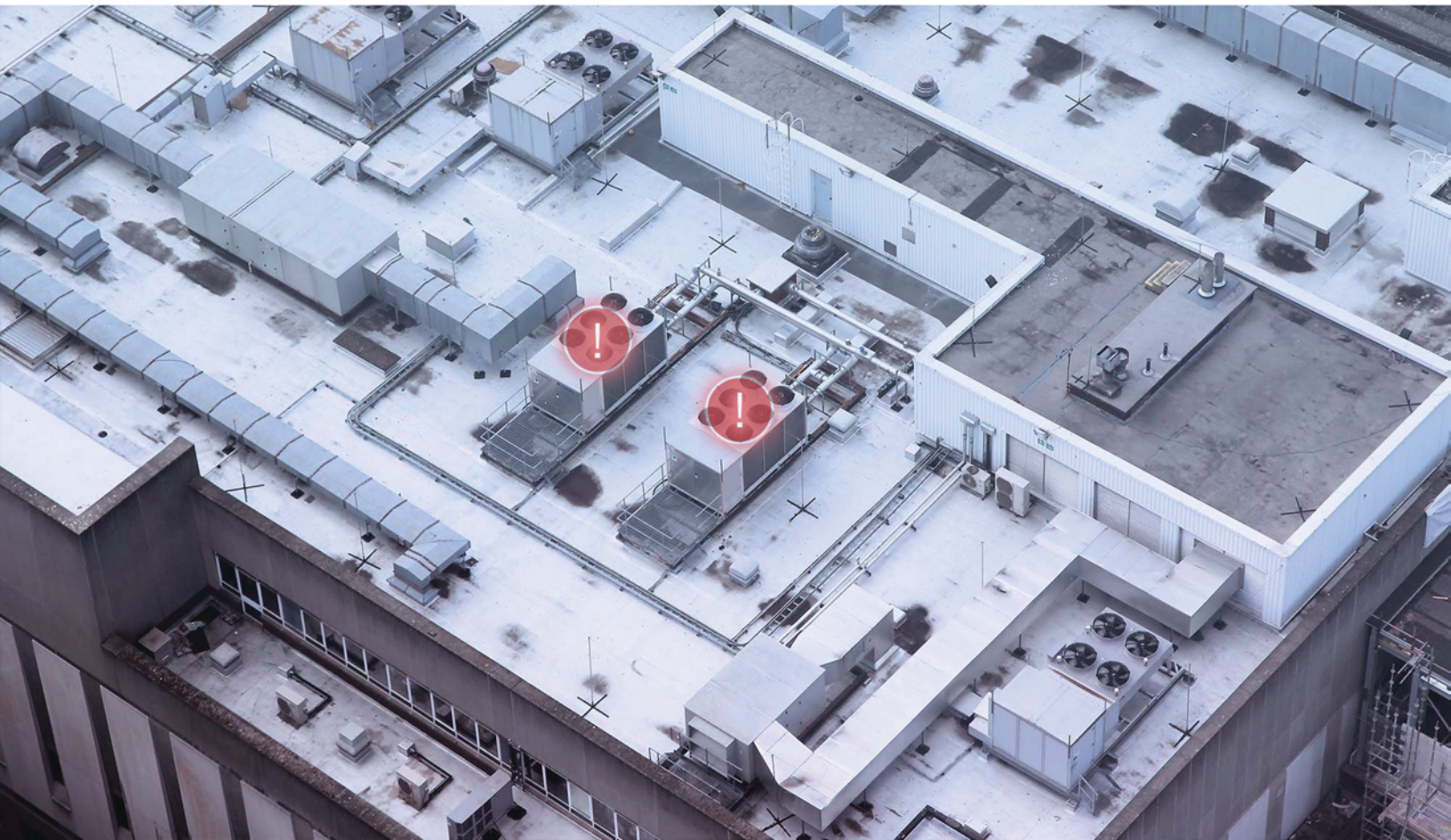
# Roof Top Unit (RTU) Optimization



# Rooftop units may be out of sight **but they shouldn't be out of mind!**

Traditionally, rooftop units are installed and ignored until something goes wrong and building owners are challenged to curb energy costs.

Equipment performance declines over time without proper attention leading to poor indoor air quality, poor temperature management, nuisance noise, escalating energy bills and unexpected system downtime with more costly repairs.



## Problem

In many retail, commercial and industrial buildings typical operating hours leave facilities unoccupied 67 percent of the time. Conventional thermostats keep spaces at constant temperatures, resulting in excessive energy waste during unoccupied times.

## Solution

Recognizing that HVAC equipment is quickly becoming a financial and environmental liability, NERVA Energy partnered with select building owners to develop a proven and reliable process to optimize Roof Top Units in order to drive significant energy savings and GHG reductions.

## Outcome

Through a combination of equipment optimization measures, real-time temperature scheduling and available utility incentives our pilot partners were able to achieve 40% annual energy savings and a simple payback period that averaged between 12-24 months.



**“We now have clear data and 40 percent lower heating costs. If you can’t see energy waste, you can’t save it. This project has uncovered many opportunities for future savings”**

**Sebastijan Zupanec, General Manager**  
***Nahanni Steel Products Inc.***



## **Pre-engineered solution** with proven & reliable results

In 2021, NERVA Energy partnered with select building owners and set out to explore new ways to reduce energy consumption and GHG emissions across their portfolios.

Through a combination of equipment optimization measures and available utility incentives our pilot partners we're able to achieve significant savings.

### **Quick pay-back and strong ROI**

- + **Save up to 40% on annual heating costs**
- + **Reduce GHG emissions by more than 25%**
- + **Available utility incentives cover up to 65% of project costs**
- + **Average simple payback period ranges from 12 - 24 months**
- + **Reduce maintenance calls and extend equipment lifespan**



# Existing **RTU deficiencies**

Every single facility we visited during our program incubation period had two or more of the following RTU deficiencies:

- + Under/over sized equipment
- + Broken economizers
- + CO2 on-demand malfunction
- + Faulty installations
- + Operational inefficiencies
- + Electrical & gas code infractions
- + No visibility across portfolio
- + No GHG benchmarking



# SOLVE YOUR BUILDING'S BIGGEST

## FINANCIAL & ENVIRONMENTAL LIABILITY!

### FINANCIAL BENEFITS

- + Huge Utility Incentives
- + Significant Energy Savings
- + Pay-back in as little as 12 months

### CORPORATE BENEFITS

- + Real-time Data Reports
- + Benchmark Energy Performance
- + Plan Capital Upgrades

### OPERATIONAL BENEFITS

- + Decrease Equipment Run-time
- + Equipment Failure Alerts
- + Extend Equipment Lifespan

### OCCUPANT BENEFITS

- + Improved Indoor Air Quality
- + Optimal Occupant Comfort
- + Increased Productivity



# Increase efficiency and comfort **with precise control**

## BETTER EFFICIENCY

- + Up to 40% annual energy savings
- + Up to 25% GHG reduction
- + Reduce service calls
- + Extend equipment lifespan

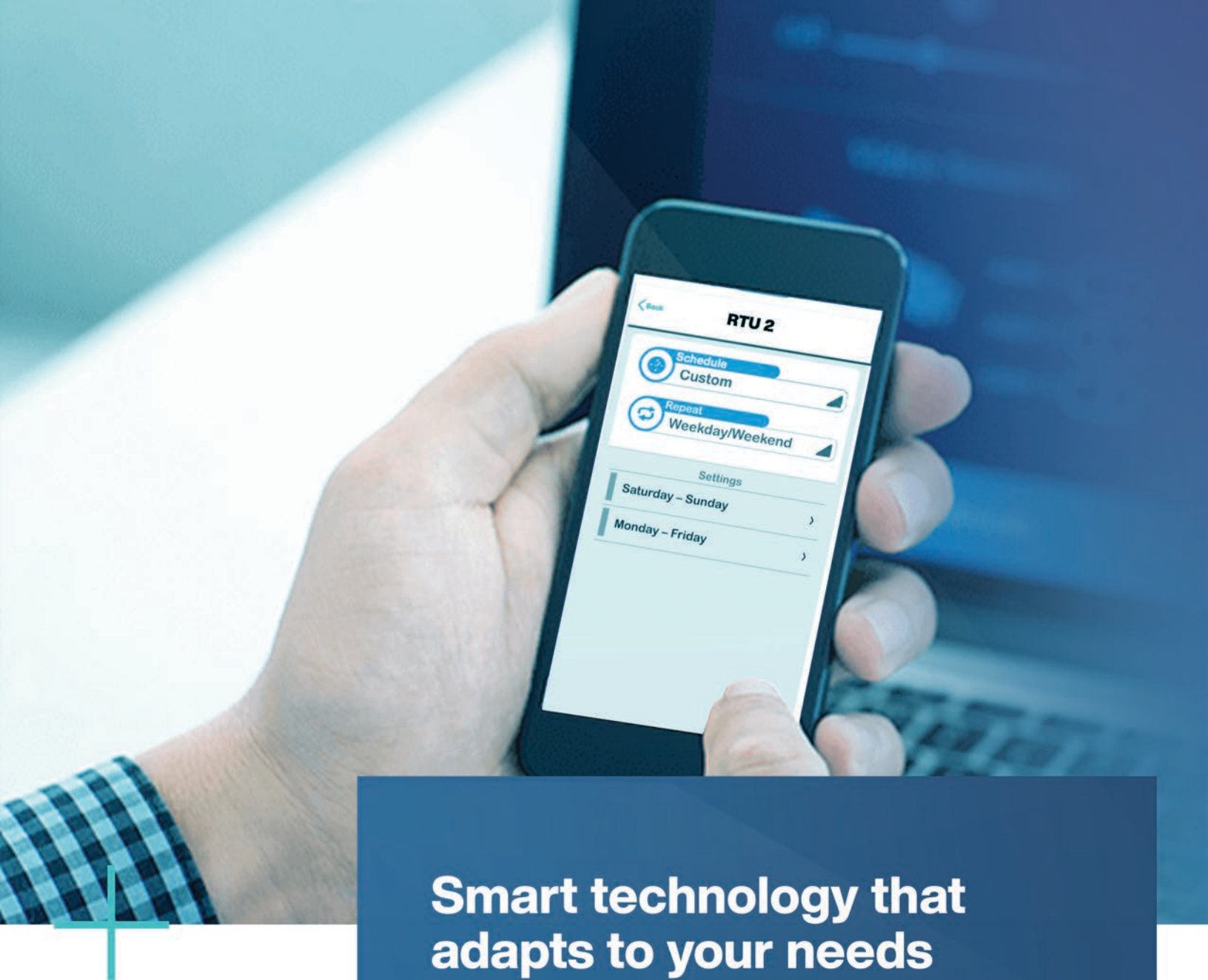
## BETTER COMFORT

- + Eliminate temperature extremes
- + Improve air quality
- + Reduce noise levels
- + Improve occupant satisfaction

## BETTER CONTROL

- + Visibility of consumption trends
- + Energy performance data
- + GHG benchmarking
- + Portfolio capital planning





## Smart technology that adapts to your needs

Our smart temperature thermostats allow you to set temperature settings based on the occupancy schedules of each facility. Temperature set-point limitations, and night-time setbacks reduce your equipment runtime, resulting in significant energy savings and GHG reductions.





## **Improve equipment performance to drive efficiency**

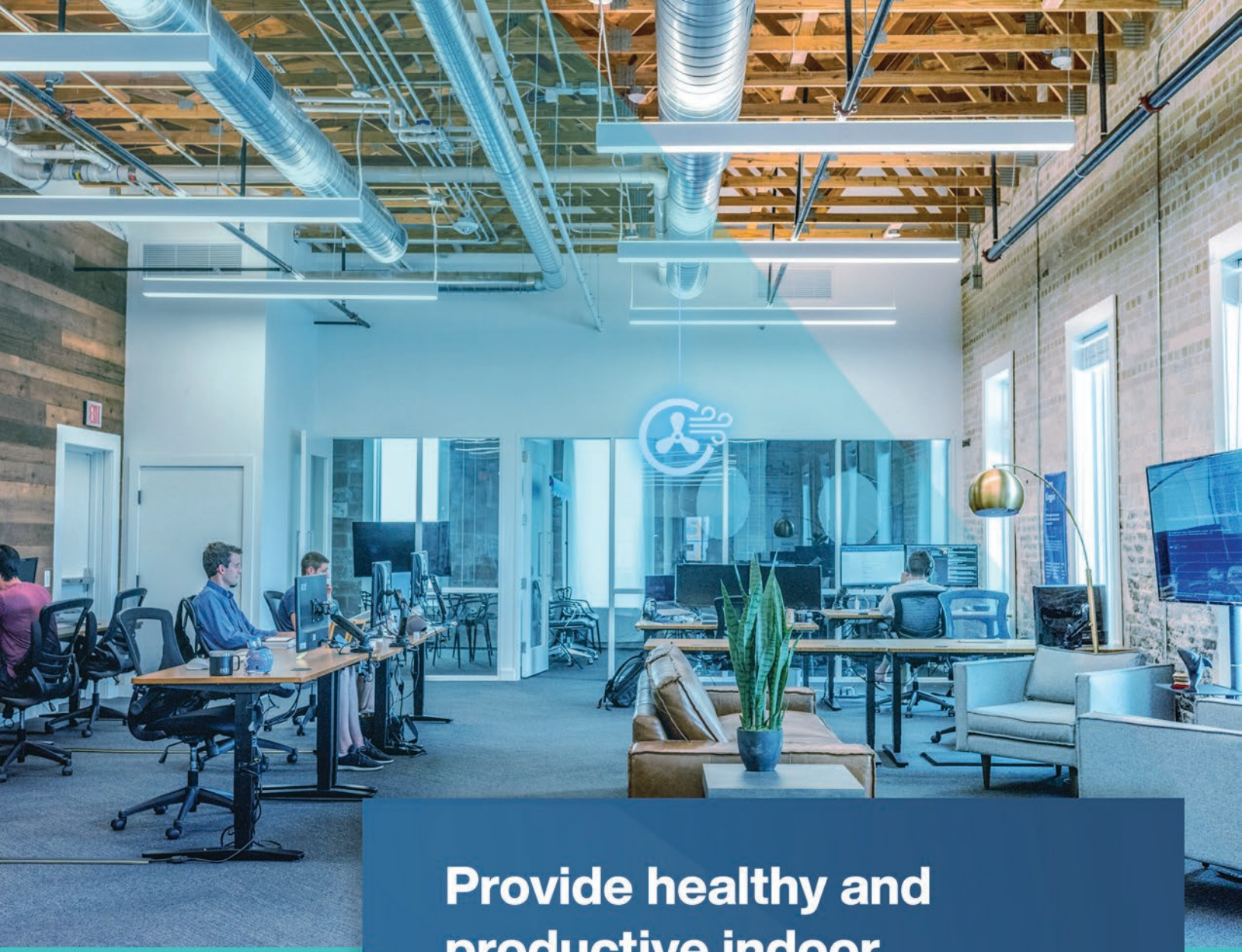
Our controls provide reliable damper performance and monitor damper position in order to optimize free cooling and provide optimal energy efficiency year-round.



## Manage fresh air levels in real-time

Our on-demand ventilation feature allows you to monitor carbon dioxide levels and increase fresh air supply only as required by the actual occupancy needs of your facility.

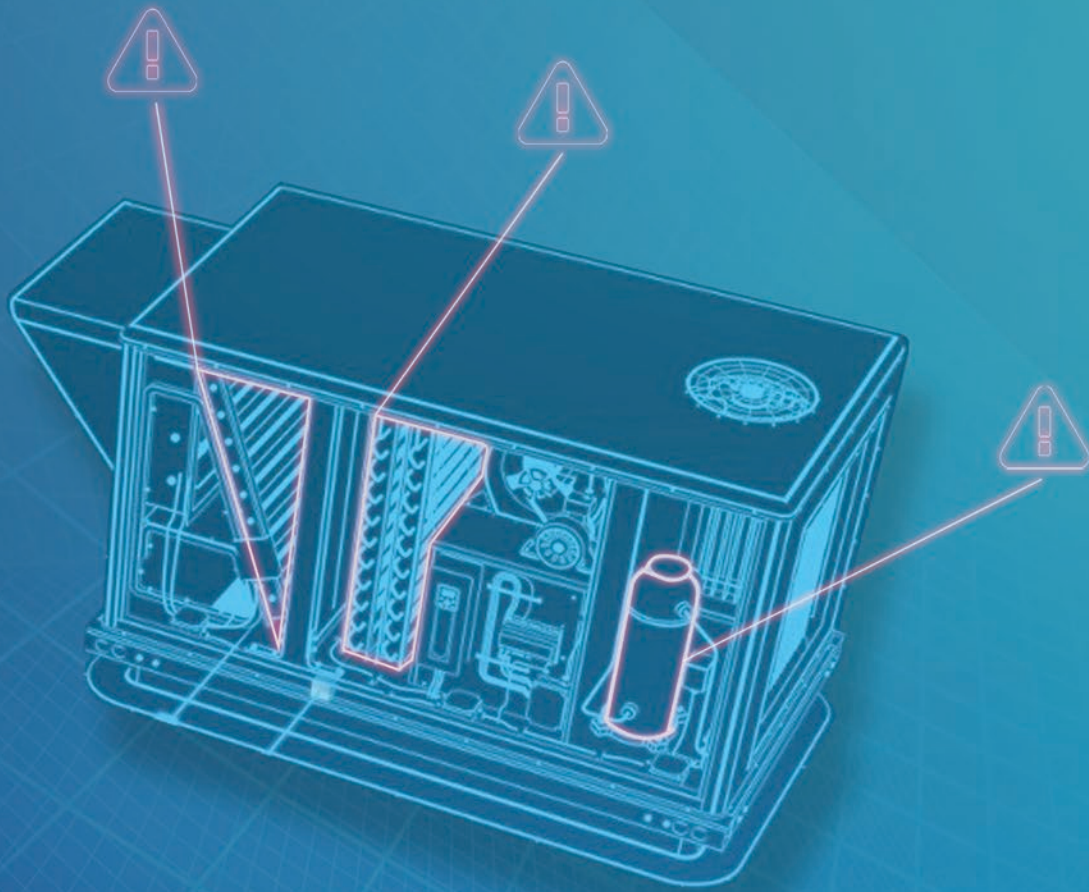




## **Provide healthy and productive indoor environments**

Our system is not only designed to monitor RTU performance and operate the unit more efficiently, it regulates ventilation, airflow, and humidity to provide optimal occupant comfort.

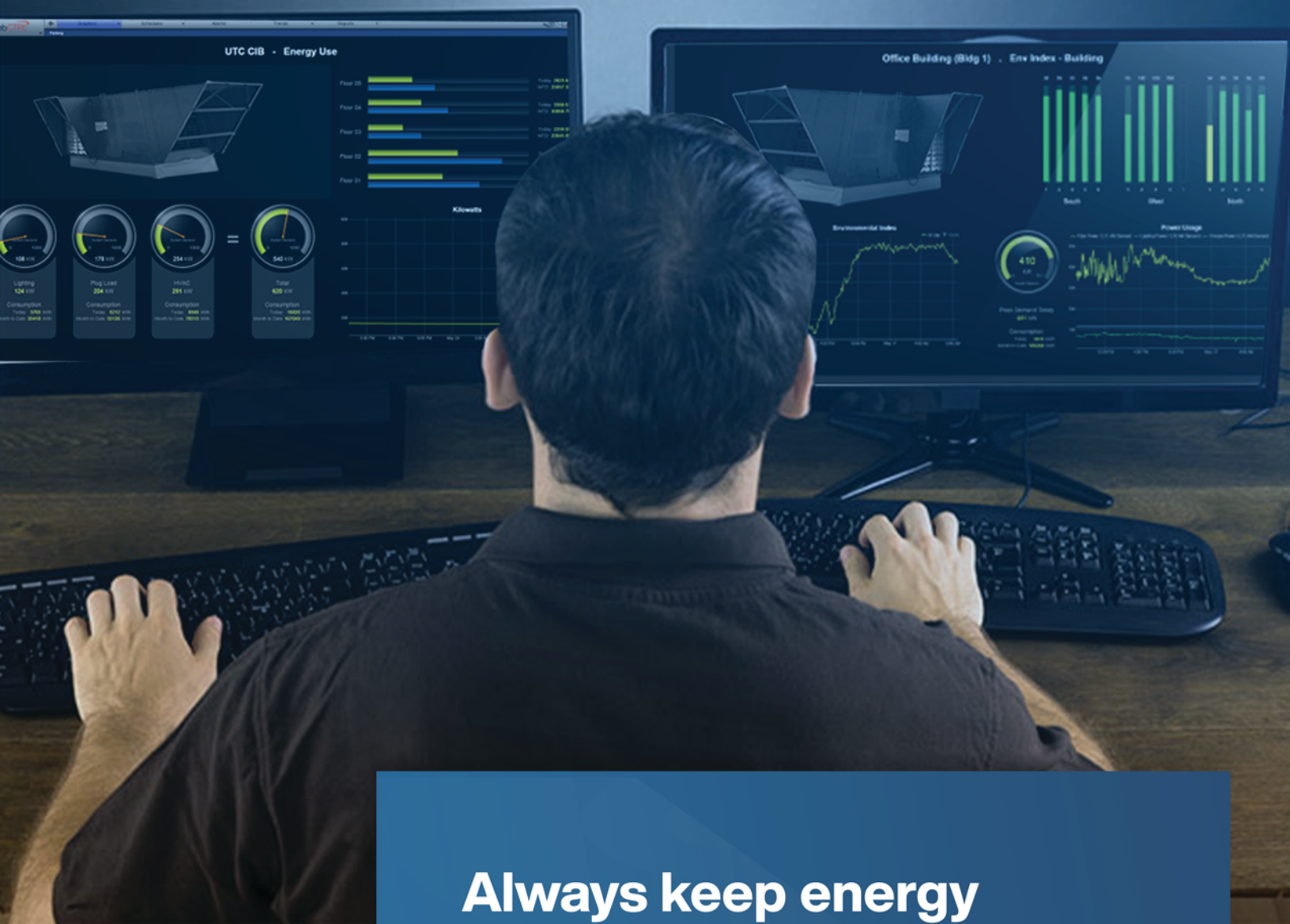




## **Ensure rooftop units always perform as expected**

Our Roof Top Unit Optimization package includes fault detection diagnostics and pre-configured alarms that monitor points such as filter status, damper alarm cycles, excessive or insufficient outside air, freeze alarms, compressor alarms, heater alarms, sensor alarms and more.





## Always keep energy performance data in sight

Our system provides access to real-time performance data, allowing you to remotely monitor rooftop unit operating parameters and mitigate costly breakdowns. Our energy performance dashboard allows you to confidently plan capital expenditures and benchmark GHG emissions across your portfolio.

# Why you'll love this **tech package**

- + 1/3 of the cost vs. competing solutions
- + No contract, SAS fees or ongoing upgrades or maintenance costs
- + Wireless, cloud-based, machine learning
- + Remote portfolio wide control and visibility into HVAC performance
- + Open API
- + Monitor and control your GHG emissions in real-time
- + Receive 24/7 maintenance and system alerts to your phone or desktop
- + 24/7 technical support
- + Ongoing energy advising and commissioning at zero cost





# Improving sustainability one rooftop at a time!

As Canada continues to do its part to combat climate change, commercial building owners are facing increasing market pressures such as rising energy costs, new requirements to publicly disclose energy usage, and increased scrutiny on energy efficiency.

NERVA's Roof Top Unit Optimization is a game-changing application for retail, commercial and industrial property owners looking to drive significant energy savings, and GHG reductions.

## Current State



Annual Energy Consumption

**\$2.8M**

Annual Carbon Emissions

**10,632 tonnes**

**VS.**

## Optimized State



Annual Energy Consumption

**\$1.8M** (34% Decrease)

Annual Carbon Emissions

**6380 tonnes** (40% Decrease)

\*\*FINANCIAL CALCULATIONS BASED ON 1000 RTU'S, WITH AN AVERAGE UNIT SIZE OF 7.5 TONNES\*\*

# Industry impact

NERVA Energy has committed to and dedicated operational resources to optimize 30,000 Roof Top Units by the end of 2024.

UNITS OPTIMIZED

**30,000**

ENERGY SAVINGS

**>\$32Million**

CARBON REDUCTION

**141,075 Tonnes**

This is equivalent to the CO<sub>2</sub> emissions from:



**43,220**  
passenger  
vehicles



**60,098,811**  
litres of gasoline  
consumed



**33,039**  
homes' energy  
use for one year



**94,327**  
homes' electricity  
use for one year



**1,883**  
tanker trucks'  
worth of gasoline



**318,742**  
barrels of oil  
consumed



# Start regaining control of your rooftop units

## 1 IDENTIFY TARGET LOCATIONS

We can work with you to review your portfolio and help you identify which buildings present the largest energy conservation opportunities, based on size of equipment, operating hours, needs of the occupants, etc.

## 2 AUDIT & REPORT.

Once the target locations are identified, our auditing team will perform an on-site visit to verify the age, health and efficiency of each RTU. We will provide you with a fully costed business case that showcases energy and carbon savings, utility incentives, and ROI.

## 3 SECURE UTILITY INCENTIVES

Nerva Energy handles all requirements and submissions to ensure you obtain the maximum value of available incentives, which currently cover up to 50% of the project cost. Incentives and energy savings combined provide an incredible ROI of 12-24 months.

## 4 IMPLEMENTATION & OPTIMIZE

Our end-to-end implementation is quick and non-disruptive. We provide a turn-key solution including installation, set-up, and system optimization to ensure energy and carbon savings occur immediately.

## 5 MEASURE & VERIFY

Once each RTU is optimized to operate at peak efficiency, NERVA will monitor the performance of each unit to ensure your financial savings are on track. The system will also notify you of any mechanical equipment issues that require attention. These alerts and alarms prevent equipment failure and provide significant repair and maintenance savings.

[illegible]

**Clean50**  
2022   
contributeurs exceptionnels à l'économie propre  
**TOP PROJECT**



**Sustainability  
Leadership.**

Presented By  
Sustainable Hamilton Burlington

[www.nervaenergy.com](http://www.nervaenergy.com)