SOLUTION BRIEF

SUPERMICRO TEAMS WITH EMACX TO ENABLE REAL-TIME CARBON FOOTPRINT MONITORING

Supermicro's Fanless IoT Gateways teamed with EMACX's Aciex Platform

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SUPERMICRO

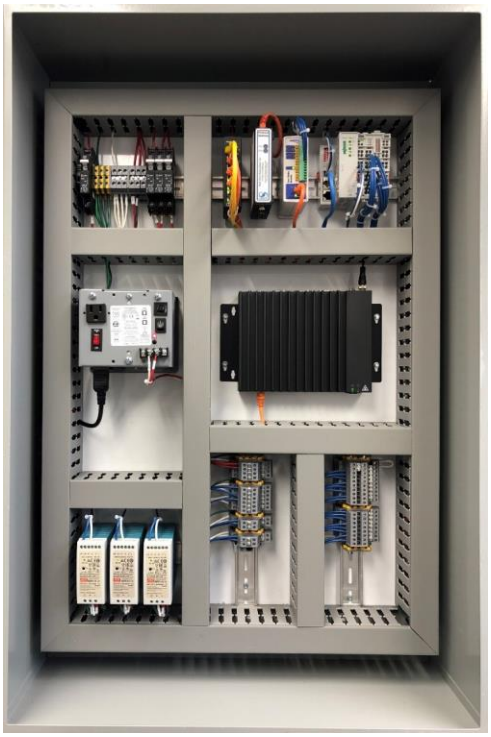
As a global leader in high performance, high efficiency server technology and innovation, we develop and provide end-to-end green computing solutions to the data center, cloud computing, enterprise IT, big data, HPC, and embedded markets. Our Building Block Solutions® approach allows us to provide a broad range of SKUs, and enables us to build and deliver application-optimized solutions based upon your requirements.

Executive Summary

Over the last few years, corporations have been under the constant mandate to elevate the building operations to a high-performance sustainable platform through the tenets of "You can't manage what you don't measure" interlocked with "You can't optimize what you don't manage."

Emacx Systems Inc. developed a powerful and unique Carbon Footprint Monitoring and Control Software, ACIEX Pulse©, running on a Supermicro Fanless IoT Gateway to provide building operations with the right tools.

ACIEX Pulse© specifically recognizes the infinitely distinctive facility operational modes dictated by occupancy and activities coupled with seasonal and hourly weather variations. This solution will proactively and incrementally adjust equipment operations and inputs/outputs to perform ongoing capture of those kWh being unnecessarily consumed. This enables Aciex Pulse© to deliver persistent real-time performance optimization with this "kWh harvesting" technique based on long term operating experience and proven technical capabilities.



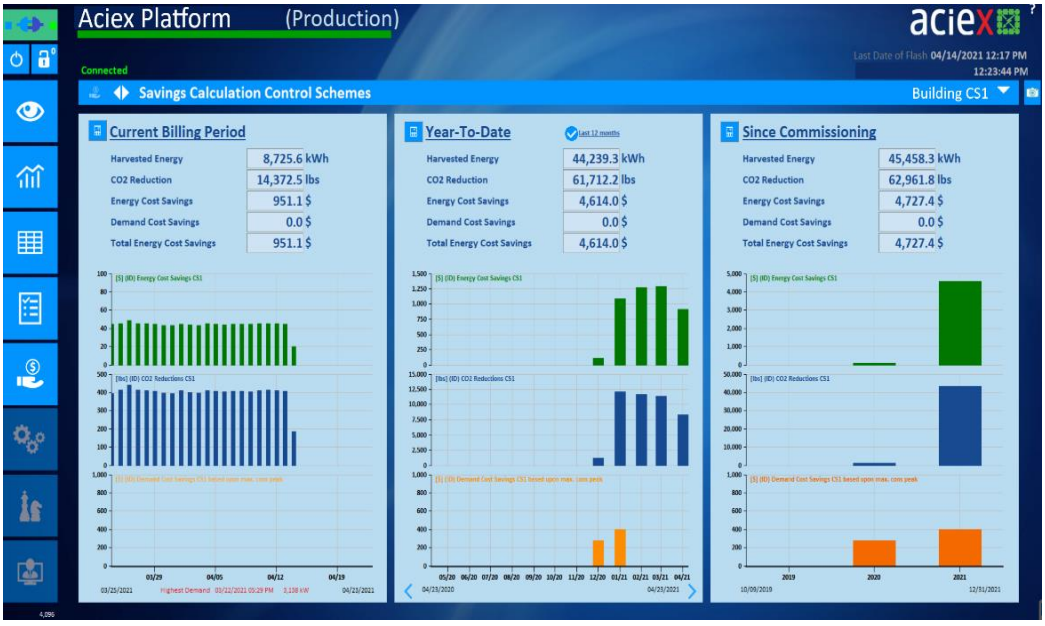
Aciex Panel powered by Supermicro Fanless Server

Challenges

In 2019 New York City passed the Climate Mobilization Act, one of the most aggressive and rigorous carbon footprint reduction laws in the US. Local Law 97, the centerpiece of 2019's Climate Mobilization Act, calls for carbon footprint reductions of 40% by 2030 and 80% by 2050, affecting more than 50,000 buildings in NYC. Not meeting these strict greenhouse gas (GHG) emission standards will result in penalties of $268 per metric ton of CO2 over the mandated limits. If left unaddressed, the fines could reach hundreds of thousands of dollars per building each year. Thirty-five cities in the US have announced plans to follow suit with similar Carbon Footprint laws.

Building owners and operators are asking the question; How best to mitigate potential greenhouse gas fines? What is the Energy Conservation Measure (ECM) one should put in place, and what are the lowest hanging fruits for kWh Harvesting? To successfully implement a reliable and efficient energy management infrastructure, organizations need to address energy usage and the changing electric grid, requiring a "next level of energy efficiency" to mobilize energy savings beyond historical practice. The five most significant challenges to address are:

1. The amount of energy savings must increase dramatically.
2. Energy efficiency sources and savings must be diversified.
3. Robust Measurement and Verification (M&V) for energy savings must be common.
4. Energy efficiency savings must be integrated with a carbon reduction framework.
5. Energy efficiency must be part of an evolving grid, integrating renewables distributed energy resources (DERs) and intelligent load management.



Aciex Platform - Calculated Savings Interface

SYS-E100-9W-IA-E

powered by aciex

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The Solution

The ACIEX Pulse Software running on Supermicro's Fanless SYS-E100-9W-IA-E IoT Gateway provides seamless integration with any existing Building Management System on the market. The integrated platform will provide operators of commercial buildings, hospitals, universities, and other facilities with the means to monitor their posture regarding Local Law 97 and to take a proactive approach to reduce emissions.

Real-Time Performance Optimization

ACIEX Pulse will proactively and incrementally adjust equipment operations and inputs/outputs to perform the ongoing capture of those kWhrs being unnecessarily consumed while maintaining the strictest environmental conditions. This tool optimizes operations by responding to inherent systems overdesign and capitalizing on non-peak conditions to identify reduction potentials, ACIEX Pulse relies on integrated, proactive protocols, including the rotation of grouped loads identified and retained for kWh reduction. Correcting and capturing these inefficiencies is one of the main principles in delivering high performance sustainable building operations. With this unique kWh harvesting, technique building operators will be able to achieve persistent real-time performance optimization.

The facility integration of the ACIEX Pulse© platform begins with a thorough evaluation process. A meticulous granular load study is performed where all potential load assets that qualify for the kWh Harvesting technique are identified with all operating parameters documented. These pre-qualified load assets are keyed into the ACIEX Pulse© system for the kWh-Harvesting protocol. Through a proprietary sophisticated feedback analysis, the software will know at any given time how the load is performing (speed %, HZ, kW, etc.) Facility operators have complete visibility to make decisions in real-time, turning the response to LL97 from reactive to proactive. The result is optimizing the portfolio of properties not just for the environment but also for the bottom line.

Conclusion

Deploying Real-Time Carbon Footprint Monitoring and Control Software has never been more accessible and more lucrative. With Supermicro Fanless IoT Gateways and EMACX's ACIEX Platform, enterprises can comply with the strict greenhouse gas emissions laws and achieve significant cost savings through kWh Harvesting and demand control.

KEY BENEFITS

- Quantify and assess building GHG emissions relative to legal limits in real time, and by sources of energy
- Gain full transparency from the building level down to individual meter levels, across billing cycle, year and compliance periods
- Calculate and forecast building penalties or surpluses across compliance periods
- Identify high-energy-consumption meters/tenants for targeted reduction
- Facilitate noncompliance gap closure scenarios
- Enable carbon emissions reporting & audit requirements
- Maximize demand response revenue earnings capabilities
- Improved risk management
- Improved tracking and performance reporting
- Reliable and durable E100-9W-IA-E fanless server to ensure peak performance for mission critical deployments
- Key Features: 8 USB Ports, Dual GbE LAN, 3 M.2 Slots, up to 64GB DDR4 2400MHz SODIMM, and dual displays.

ABOUT EMACX

Is a real-time energy management software and technology company providing the next generation of Demand Side Management (DSM) solutions to energy intensive businesses in North America. Emacx's energy management solutions empower users to intelligently manage their energy consumption, adjusting both the timing and the quantity of their electricity use in real-time, without degrading mission critical operations.

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