

About Emacx Systems, Inc.

Emacx Systems, Inc. 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 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.

Emacx developed the **Acix** Real-Time Energy Management Platform to deliver the economic benefits of intelligent Demand Control (iDC), intelligent Demand Response (iDR), and the integration of Real-Time Pricing and Smart Metering. As the deployment of microgrids and Distributed Energy Resources increase, **Acix** will provide oversight and optimization of alternative energy sources during times of load curtailment.

powered by **aciex** IDC & iDR

As demand for electric energy continues to increase, new generation capacity has not kept pace with demand. One of the consequences is ever increasing demand charges. Electric demand reduction has therefore become a necessity to keep energy costs down. To encourage investment in demand reduction technologies, lucrative incentive programs throughout the country pay commercial and industrial users to install these platforms and curtail electric load.

The **Acix** intelligent Peak Load Control (iDC) Application Module curtails the peak power within the utility interval of a facility through a sophisticated feedback-control process that operates in a fail-safe mode. These loads are automatically controlled and monitored without compromising production, product quality, or building comfort.



Trending chart synchronized with imposed utility billing interval

Equipped with intelligent monitoring technology and state-of-the-art microelectronics, **Acix** measures and regulates power demands in real-time. Connected loads

are curtailed to ensure that aggregate power demand remains below the desired threshold, based on live energy data and end-users' priorities. **Acix** therefore mitigates disproportionately expensive demand peaks while maintaining end-user operations and comfort. By gradually changing the power flowing to individual component such as air handlers, fans, motors, and pumps, **Acix** also avoids the destructive stresses associated with on-off demand controllers (both manual and automatic).

Acix seamlessly integrates into any existing BMS system on the market today such as Johnson Controls, Siemens, Andover, Automated Logic, Trane-Tracer, Honeywell and many others.



Typical facility demand profile showing monthly demand peaks

Benefits

An **Acix** installation provides the following benefits:

- **Reduction of up to 10% of peak demand load**
- **Typical payback period less than 2 years**
- **Qualifies for financial incentives**
- **Easy integration into existing BMS**
- **Synchronization with utility billing interval**
- **Forecasting, measurement and verification of demand and energy usage**

It also provides increased intelligence and control to VFDs, lighting controls, chillers and other efficiency platforms.

Ideal Project Candidates for iDC and iDR

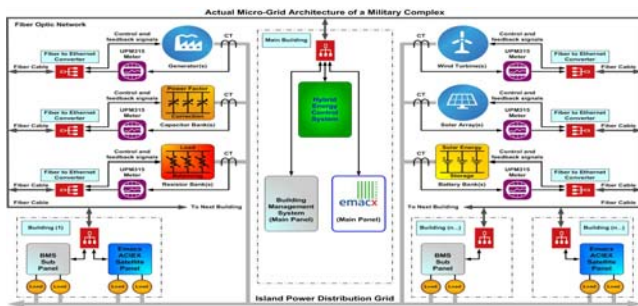
Emacx has installed **Acix** all over the country in hospitals, hotels, commercial buildings, college campuses, malls, retail stores and many other large facilities. Ideal project candidates have the following characteristics:

- **At least 1 MW of peak demand**
- **Demand charges of \$9.00/kW or more**
- **Existing BMS and VFDs**

As a result, **Acix** routinely delivers investment payback periods of less than 2 years.

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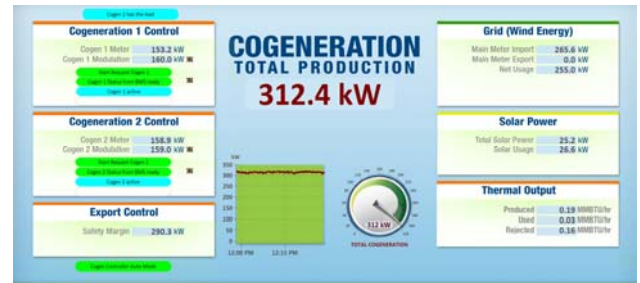
The Emacx **Aciex** Platform can optimize complex microgrid systems. Microgrids are small-scale power grids that typically connect with the main grid but can operate independently for a short duration and supply power to electrical local loads.



Microgrids have become more popular over the last few years, and most likely will play a larger role in the future. These on-site renewable power and storage system networks give industrial and corporate facilities more control over their energy supply and cost. Microgrids provide backup in case of grid outages, as well as relieve pressure on the utility grid. Microgrids are typically smaller in size and more susceptible to disruption from load variability. The Emacx **Aciex** smart software platform addresses these challenges by continually balancing demand with generation, maintaining stability, and ensuring that peak demand doesn't exceed available supply. Using **Aciex** for microgrid control has additional advantages such as:

- Using the **Aciex** sophisticated trending and prediction algorithms to minimize demand from the utility, reducing peak charges and grid impact.
- Ensuring secure operation and productivity using sophisticated load prediction and control algorithms, combined with customer-defined operation standards and built-in intelligence and parameterization on how to shed loads.

The **Aciex** Platform also interfaces with other renewable energy sources such as storage batteries, wind, and solar, as well as with co-gen plants and other electrical generation sources. It regulates utility supplies and coordinates the optimal power source, availability, and pricing signals with load demands. The result is evident: A sophisticated control process that does not compromise production and operational priorities while ensuring the best possible use of the energy resources available. For example, Emacx installed **Aciex** in a university where they participate in short-notice demand response events



by automatically balancing the co-gen plant and balancing the grid import with on-site generation. They run on solar power during afternoon peak hours and switch to low-rate grid power when the system detects that generation resources will not meet load demands. In a California facility, **Aciex** controls the building via automated Demand Response accepting a curtailment signal from the utility.

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aciex **Real-Time Pricing**

Dynamic Pricing, or Real-Time Pricing, is more and more common. Many utilities are adopting dynamic pricing structures, in which rates change frequently, often hourly, based on the market price of electricity, weather events, or other conditions. These changes can happen from just minutes to 24 hours based on the contracted rate schedule. The **Aciex** Dynamic Pricing Module (DPM) allows businesses to benefit from fluctuating rates by automatically adjusting power usage based on the price of electricity.

Real-time pricing (RTP) programs often offer much lower utility rates than conventional rate schedules. Such rates can be 30 times or more inexpensive than usual rates.

Emacx's **Aciex** Platform is typically connected to the Demand Response Automation Server (DRAS) of the utility. Receiving real-time electricity prices from the DRAS or the utility server directly to the **Aciex** DPM implements preset load management strategies based on that information. The load is now regulated based on a pricing signal and not a kW value. The system can implement different strategies in response to different pricing thresholds, all while protecting key processes, so that businesses can optimize their participation in dynamic pricing programs.