

## **Energy optimization in retail – towards an energy-conscious and environmentally friendly future with seamlessly integrated demand-response strategies**

*In the dynamic landscape of modern retail, large retailers face multiple challenges, with rising energy costs standing out as a significant operating cost. As a provider of sustainable energy solutions, we want to show how our state-of-the-art energy management system can help retailers reduce their energy costs.*

*Our energy management system is a holistic solution that integrates advanced technologies and data analytics to optimize energy usage in large retail spaces. The system includes real-time monitoring, predictive analytics and intelligent automation to enable retailers to take control of their energy infrastructure. The system also enables the seamless integration of renewable energy into the energy infrastructure, optimizing overall consumption. Our system is a transformative solution for large retailers dealing with the complexities of energy consumption and cost reduction.*

### **Current Situation**

**Energy Cost as a Factor:** Energy costs represent a significant expenditure for retailers, and the continual rise in energy prices exacerbates this financial burden.

**Regulatory Requirements:** Compliance with regulatory standards regarding energy usage is imperative for retailers, necessitating efficient energy management systems.

**Consumer Demand for Sustainability:** Consumers increasingly prioritize sustainability, prompting retailers to adopt environmentally friendly practices, including energy efficiency.

**Skilled Workforce for Implementation:** Implementing effective energy measures requires skilled professionals capable of navigating complex energy systems.

**Lack of Understanding of Energy Consumption:** Many retailers lack comprehensive understanding of their energy usage patterns, hindering efforts to optimize consumption efficiently.

### **Company-specific focus areas**

Companies approach energy management with tailored focuses, aligning strategies with their unique needs and goals.

**Cost Reduction:** Many companies prioritize strategies to minimize energy expenses, seeking innovative solutions to lower operational costs.

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**Sustainability Initiatives:** Embracing sustainability is a core objective for numerous enterprises, driving efforts to integrate eco-friendly practices into their operations.

**CO2 Visualization:** Visualizing carbon dioxide emissions is gaining traction among businesses, aiding in understanding environmental impacts and guiding emission reduction strategies.

**Reporting:** Robust reporting mechanisms are essential for companies to track and communicate their energy management efforts effectively, ensuring transparency and accountability.

**Integration of Renewable Energies:** Incorporating renewable energy sources into the energy mix is becoming increasingly vital for businesses aiming to reduce their carbon footprint and reliance on fossil fuels.

**Optimization of Self-Consumption:** Optimizing self-consumption of generated energy allows companies to maximize the use of renewable resources and reduce reliance on external energy sources.

**Peak Load Reduction:** Mitigating peak energy demand not only cuts costs but also enhances grid stability and reduces strain on energy infrastructure, making it a priority for many enterprises.

**Enhancing Transparency:** Improving transparency regarding energy usage and efficiency measures is crucial for fostering trust with stakeholders and demonstrating a commitment to responsible energy management.

Therefore, an EMS must primarily be flexible to adapt to the requirements.

## **Data Foundation: A Cornerstone for Effective Energy Management**

**Data is Essential:** Without a solid foundation of data, conducting meaningful analyses and formulating actionable recommendations becomes impossible. Therefore, establishing a robust data infrastructure is a fundamental prerequisite for successful energy management initiatives.

**Data Visualization:** Visualizing energy data is crucial for gaining insights into consumption patterns, trends, and anomalies. By presenting data in a clear and accessible manner, businesses can better understand their energy usage and make informed decisions.

**Evaluation and Identification:** A comprehensive data set enables businesses to assess their energy consumption holistically. By analyzing data, companies can identify areas of inefficiency and pinpoint opportunities for cost savings and resource optimization within their operations.

**Tracking and Quantifying Impact:** Implementing energy management measures is only half the battle; tracking their effectiveness is equally important. By continuously monitoring energy

usage and comparing it against baseline data, businesses can quantify the impact of their initiatives, ensuring accountability and driving further optimization efforts.

In summary, a solid data foundation is indispensable for effective energy management. By visualizing data, evaluating consumption patterns, and tracking the impact of interventions, businesses can optimize their energy usage, reduce costs, and enhance sustainability performance.

## **Key Demands for an EMS that can handle the complex requirements of the retail sector**

The seamless integration of energy monitoring with the incorporation of generation, storage, and consumption management forms the backbone of an effective energy management system. This combination offers a comprehensive approach to optimize energy usage, ensuring that energy is generated, stored, and utilized efficiently across diverse operations.

Crucially, such a system must possess adaptability at its core, allowing it to flexibly adjust to the specific requirements of each organization. This adaptability enables customization and fine-tuning, catering to unique operational needs and evolving objectives seamlessly.

A key aspect of this adaptability lies in the coupling of various system components, facilitating synergy and maximizing efficiency. By integrating monitoring, generation, storage, and consumption management, businesses can streamline operations and enhance overall performance.

Automation plays a vital role in ensuring the smooth operation of such integrated systems. Automation processes enable the seamless coordination of different components, optimizing energy flows and minimizing manual intervention, thereby improving operational efficiency and reducing costs.

Moreover, the presence of diverse consumers within a single system necessitates flexibility and scalability. An effective energy management system can accommodate various energy consumers, from large industrial machinery to office spaces, ensuring that each receives optimal energy supply tailored to its specific requirements.

Furthermore, the system's flexibility extends to the integration of external information, such as operational parameters or market data. By incorporating external data sources, businesses can enhance decision-making processes, anticipate energy demands, and optimize resource allocation in real-time.

In essence, the combination of energy monitoring, integration of generation, storage, and consumption management, coupled with adaptability, automation, and flexible integration of diverse components and external information, forms the foundation of a modern, efficient energy management system.

## The EcoPhi EMS – Exceptional and highly flexible



EcoPhi offers an all-in-one solution encompassing both hardware and software components ensures seamless integration and comprehensive functionality. With a straightforward installation process, businesses can swiftly implement the system without unnecessary delays or complications.

The system's high degree of flexibility, facilitated by numerous interfaces, allows for effortless customization to meet specific needs and accommodate evolving requirements. It enables the capture of individual as well as distributed energy consumers, providing a holistic view of energy usage across the organization.

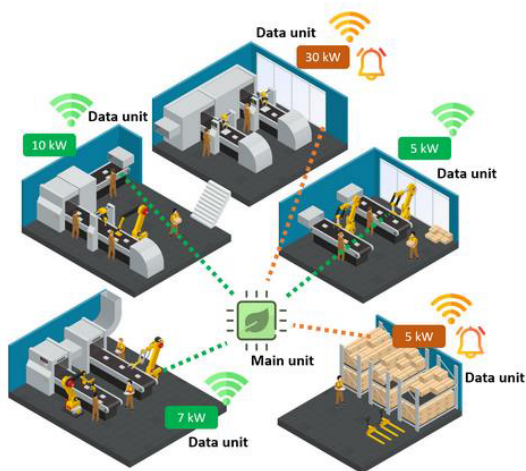
Flexible dashboards and reporting capabilities empower users to visualize and analyze energy data effectively. Customizable dashboards tailored to user preferences enhance usability and facilitate informed decision-making. Meanwhile, robust reporting functionalities offer detailed insights into energy consumption patterns, performance metrics, and cost-saving opportunities.

Automated controls streamline operations by eliminating manual intervention and optimizing energy management processes. Through automated scheduling, adjustments, and optimization algorithms, the system ensures efficient energy usage while minimizing human error and maximizing savings potential.

## The EcoPhi hardware



A central monitoring box, coupled with modular subunits featuring integrated energy meters, forms the backbone of the system. This architecture eliminates the need for cumbersome wiring, and facilitates communication with distributed consumers through LoRa technology, ensuring seamless data transmission across the network.



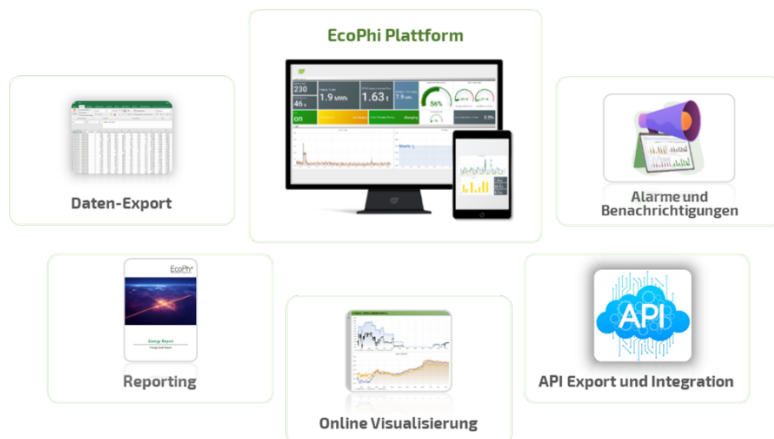
Interfaces with existing devices and additional sensors enhance the system's versatility, enabling comprehensive data collection and analysis. Flexible communication options, including SIM, LAN, and WLAN, ensure compatibility with various network configurations and infrastructures.



The system supports both short-term and long-term monitoring objectives, thanks to its user-friendly installation process. Monitoring boxes, capable of capturing data from individual or multiple consumers, provide insights into overall consumption trends and the performance of individual components.

In addition to electricity, the system can also monitor gas, water, and temperatures, offering a comprehensive view of resource usage and environmental conditions. This multifunctionality enhances decision-making capabilities and enables proactive management of energy and resources.

## The EcoPhi software



A browser-based version offers in-depth insights, while a mobile app ensures quick access anytime, anywhere. This dual-platform approach provides users with flexibility and convenience in accessing energy data and analytics.

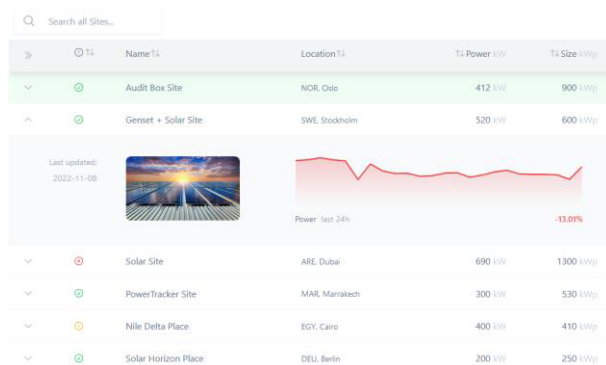
Customizable and automated energy reports empower users to tailor reporting functionalities to their specific needs and preferences. Automated alerts and notifications enable timely responses to critical events, ensuring proactive management of energy resources.

The system supports detailed analyses and custom calculations of key performance indicators (KPIs), providing valuable insights into energy efficiency and performance metrics. Remote control capabilities and automated adjustments streamline operations and optimize energy usage, even from afar.

Branding options allow businesses to personalize the interface with their own logos and branding elements, enhancing brand visibility and recognition. The promo mode feature enables businesses to showcase their energy management efforts to stakeholders and the public, fostering transparency and engagement.

Extensive data exports and an API interface facilitate seamless integration with external systems and enable advanced data analysis and visualization. These features empower users to leverage energy data effectively and derive actionable insights to drive continuous improvement and innovation.

## Software Feature Highlight: Comparison of Branches and Different Locations



Overview of Individual and Aggregated Locations: Gain insights into both individual locations and the collective performance of multiple sites.

**Overall and Location-Specific Reporting:** Access comprehensive reports that provide a holistic view of energy usage across all locations, as well as detailed insights specific to each site.

**Comparison of Branches Based on Specific KPIs:** Evaluate the performance of different branches using customized key performance indicators tailored to your organization's needs.

**Management of an Unlimited Number of Locations:** Easily manage and monitor energy data from an unlimited number of branches or locations within a single platform.

**Cross-Location Analytics:** Analyze trends and patterns across multiple locations to identify opportunities for optimization and efficiency improvements.

**Comprehensive Filtering Functionality:** Filter and segment data based on various criteria to focus on specific locations, timeframes, or performance metrics.

**Simple User and Role Management:** Streamline user access and permissions with easy-to-use tools for managing user accounts and defining roles within the system.

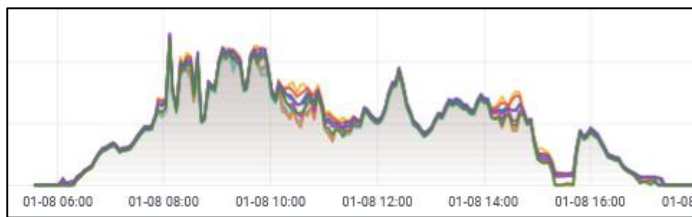
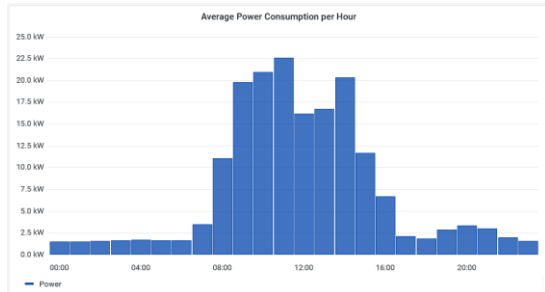
**Unlimited Tenants:** Scale your energy management solution to accommodate growth and expansion, with no limits on the number of tenants or entities that can be managed within the platform.

## **Software Feature Highlight: Effective analytics**

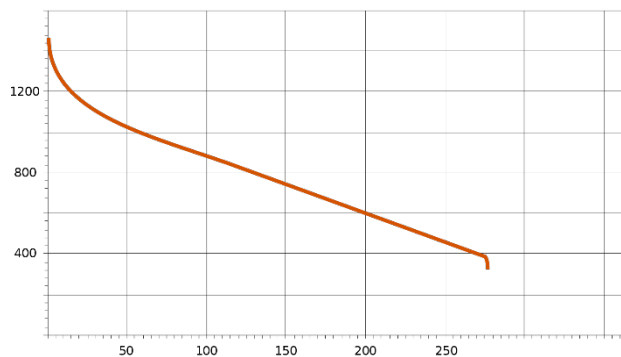
The software provides quick and profound insights into energy consumption through its integrated analyses. Additionally, it allows for customized calculations and analyses to further enhance understanding and optimization efforts.

**Load Profile:** Provides an overview of energy consumption patterns categorized by load profiles, enabling users to understand variations in usage intensity over time.

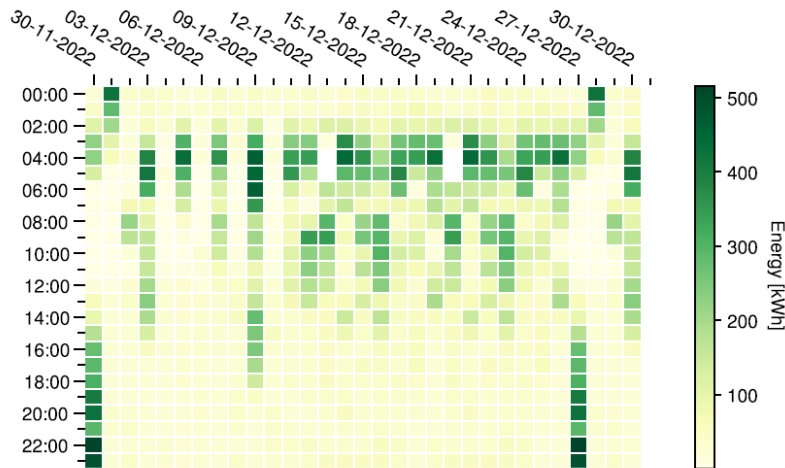




Duration Curve: Illustrates the distribution of energy load over time, categorizing consumption patterns by duration to identify trends and intensity levels.



Heatmap: Utilizes color gradients to visualize energy consumption data, categorizing usage intensity by color to highlight areas of high and low demand, facilitating quick identification of consumption patterns.



## Typical applications in retail for Energy Management

- Load profiling and analysis for identifying measures to reduce electricity consumption
- Implementation of automated and remote controls for lowering energy usage
- Optimization of self-consumption
- Integration of charging stations to provide electricity for customer charging
- Reduction of peak loads to minimize energy demand spikes
- Integration of diverse components and retrofitting of existing facilities
- Supplementing energy data with operational data for comprehensive analysis
- Intra-branch comparisons to identify efficiency improvements
- CO2 visualization and transparency enhancement for environmental awareness

Feel free to get in touch with us if you are looking for an extensive and highly flexible Energy Management System tailored to your individual requirements.