Smart energy monitoring with Zaphire EMS

Zaphire EMS is an advanced, cloud-based Energy Monitoring System (EMS) that monitors, analyzes, and optimizes energy consumption across facilities and infrastructure.

The Energy Management System provides a complete overview of energy consumption and production. With access to energy data, managers can make faster, data-driven decisions to reduce costs and improve operational performance.

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From energy control to data-driven value creation

Buildings are no longer just physical structures — they are complex, digital energy systems. A modern Energy Management System (EMS) from Zaphire functions as the brain of this system. It collects, analyzes, and monitors data from the building's entire energy infrastructure — everything from electricity, district heating, and cooling to solar production, charging stations, and consumption measurement.

Zaphire Energy Management System enables:
- **Energy efficiency and CO_2 reduction** through precise monitoring
- **Load management** based on trend data and deviation analysis
- **Better comfort and operational reliability** by balancing energy use and indoor climate
- **Strategic property management** with data-driven insight, comparison, and portfolio analysis in real time

Who is Zaphire?

Zaphire is a Norwegian company based in Drammen. Since 2018, we have developed modern systems for building automation and energy monitoring, with a focus on user-friendliness, security, and reliability.

Zaphire is driven by the desire to create a first-class system built on modern IT principles and open standards. Before we started developing Zaphire, we saw that processes in traditional building and energy management systems were inefficient and complex. Existing solutions appeared outdated, difficult to use, and lacked the efficiency needed to meet modern demands. In 2018, we decided to solve these challenges and began developing a system for building and energy automation. The result became Zaphire.

Today, Zaphire is an established player in the market, with solutions used by municipalities and major property managers. With Zaphire, you get a complete solution for building control, monitoring, and energy supervision, with high operational reliability, full mobile access, and lower lifecycle costs than traditional systems.

What is an energy monitoring system?

An Energy Management System (EMS), is a digital tool that monitors, analyzes, and documents energy consumption in buildings and facilities. The purpose of the system is to provide full insight into energy use. At the same time, the system identifies opportunities for efficiency improvements and savings.

A modern energy monitoring system collects data from various energy sources and technical installations. The information is displayed through intuitive dashboards and reports. This gives decision-makers a solid foundation for reducing costs, improving operations, and contributing to sustainability goals.

An energy monitoring system is relevant for many sectors and applications, and is used by organizations that want better insight and control over their energy consumption. In commercial buildings, such as office buildings, shopping centers, and hotels, the system ensures efficient operation of technical systems like ventilation, cooling, and lighting. Schools and public buildings also benefit greatly, both to reduce operating costs and meet public climate targets. For property companies, the system offers valuable insight across portfolios, which can be used for optimization and documentation, such as in sustainability reporting and green financing.

When you combine energy monitoring with a building management system (BMS), you can monitor, control, and optimize energy consumption. In Zaphire BMS, adjustments can be made based on actual usage patterns, temperature, or other relevant information. This makes it easier to identify energy waste, adapt operations to building needs, and reduce both costs and environmental impact.

Benefits of implementing an energy monitoring system

Reduced energy costs

A well-functioning energy monitoring system gives you full insight into how the building actually uses energy. It becomes easy to identify unnecessary consumption, adjust operating times, optimize setpoints, and prioritize measures with the greatest effect. The result is direct and measurable savings, often without major investments.

Efficient operations

When operational personnel have easy access to historical data, it becomes easier to operate the building more intelligently. The system uncovers incorrect operating times, unnecessary night consumption, and inefficient regulation. This makes it possible to adjust operations proactively and ensure better comfort, lower consumption, and longer lifespan for technical equipment.

Early warning of deviations

The system continuously monitors consumption and notify you when something deviates from normal, whether it's leaks, faults in technical installations, or abnormal peak loads. Early detection ensures that problems can be handled before they turn into major costs or downtime.

Documentation and reporting

Automatic collection of energy data ensures accurate documentation over time. This simplifies reporting to owners, boards, authorities, or certification schemes such as ENOVA, BREEAM, or ESG. All information is gathered in one place and can be exported as needed.

How an EMS system works

An EMS can be divided into three levels: 1. Top-level system, 2. Automation level, 3. Sensors.

1. **The supervisory system** is the top level, where all the underlying systems can be managed through a common user interface, also called the top system. The top system ensures monitoring in the EOS System. Integrating the system with a building management system (BMS) ensures central control and coordination of the building's technical installations, and gives operating personnel full control across automation levels. Through the top system, you can override local automations, for example turning systems on and off, adjusting setpoints or changing operating modes, all from one unified platform.

2. **The automation level** forms the intermediate layer and serves as the link between the sensors and the supervisory system. It contains logical controllers, commonly known as PLCs (Programmable Logic Controllers), which interpret data from the field level and perform control functions. This level ensures that the building's systems operate according to predefined parameters established by electricians or automation technicians during installation.

3. **The sensor level** is the lowest tier of the system and consists of sensors, actuators, and other devices that collect and transmit data from the building's systems - such as heating, ventilation, air conditioning, and lighting. These devices are responsible for executing the physical operations, such as adjusting temperature, controlling lighting, or opening and closing valves.

How to get started with energy metering

Establishing energy monitoring does not require large investments or complex systems. Most buildings already have necessary data sources available, and implementation can be done step by step. Here's how to get started:

1. **Map the current situation** – Start by gaining an overview of the building's energy use and metering infrastructure. Identify which energy carriers are used, which meters exist, and where data is missing. This provides a clear picture of the current state and areas needing attention.

2. **Define goals and what to measure** – Determine which measurement data is necessary to achieve the organization's goals. Some need insight on a total level, while others must monitor specific systems, zones, or tenants. Clear goals make it easier to identify the required meters and data sources.

3. **Install and connect the right meters** – Once needs are clear, install new meters or upgrade existing ones. Then connect them to Zaphire EMS, which collects and ensures data quality. This establishes a reliable data foundation for analysis and insight.

4. **Visualize consumption and identify improvement areas** – With data in the EMS, energy use becomes visible through dashboards and analyses. This makes it possible to detect unusual peaks, high baseload, technical faults, and other inefficiencies. Visualization provides the basis for targeted actions.

5. **Implement improvements and optimize continuously** – Based on insights, actions are initiated to reduce consumption. This may include operational adjustments, maintenance, temperature or cooling changes, or load management based on price. Over time, processes can be automated and energy use evaluated continuously to ensure lasting improvements.

Data that drives smarter operations

Time-based data makes it possible to monitor and understand trends and patterns throughout the building's lifecycle. Combined with access to data from all units, the building's functionality can be analyzed and optimized to reduce energy consumption and become more cost-efficient.

Cost-effective and scalable

Zaphire EMS adapts to buildings of all sizes, making it a flexible solution for all types of properties. By optimizing energy consumption and reducing the need for personnel to be physically present, Zaphire EMS helps reduce operating costs.

Use EMS as support for the BMS

An Energy Monitoring System (EMS) is a valuable supplement to a building's BMS. While the BMS controls and monitors technical installations in real time, the EMS provides an analytical layer that uncovers trends, inefficient use, and hidden opportunities for improvement. Together, they form a powerful tool for optimal operations.

An EMS collects and structures energy data across buildings, zones, and energy carriers. By comparing actual consumption with expected operation, it becomes easier to identify deviations that the BMS does not necessarily show, such as night consumption, incorrect setpoints, leaks, or abnormal load profiles. This insight enables operational personnel to take targeted actions directly in the BMS and ensure that systems operate as designed.

Uncovered hidden energy waste

An EMS analyzes consumption patterns over time and reveals deviations that the BMS does not always display, such as night consumption, incorrect setpoints, and leaks.

Documents the effect of measures

An EMS collects and visualizes data, making it easy to see the impact of adjustments in the BMS and document both energy savings and improvements. The system can also be used for reporting and sustainability documentation.