

Able-Energy Energy Management System E-Book



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1. Executive Summary

An energy management system is capable of measuring energy consumption of a variety of building systems and intelligently control their operation which does not only save a significant amount of energy and utilities costs, but they can also improve the cost of maintaining the systems, improve overall reliability, and extend their useful life.

Energy management system gathers information from various instruments so that energy consumption can be tracked against dynamic energy targets. Capturing and analysing this data allows users to understand key energy indicators and how they affect overall energy consumption. This enables specific goals for improving energy use and emissions reduction objectives to be established.

In addition, the energy management system ensures that energy management flows from planning and business functions through to operations and provides the associated feedback. It captures raw energy data from the process and organizes it in a way that enables the user to quickly identify the big energy consumers and how they are doing against a set of appropriate targets.

The energy consumption data viewed through the energy management dashboard, can be broken down by kw, kwh, kw/sqft, or kwh/sqft. Data from all your meters across your building portfolio can be seen and analysed in one place, which is accessible on the cloud.

2. Key business objective

An energy management system collects data from 'legacy' and/or new sources, centralizes it, analyses it, and presents it to decision-makers to enable informed decisions about immediate energy saving potential as well as future investments in larger energy saving projects.

3. Benefits

At Able-Energy we build energy management systems not to look the same, since every installation has different requirements and desires. We also believe that it is important to have a toolkit that offers contemporary design and style tools to allow for a rich looking visual display. The better the dashboard, the more likely the information will be used and the opportunity for energy savings will take place. The following can be counted among other as benefits for our custom designed energy management systems:

- Reduce energy consumption.
- Reduce peak energy demand.

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- Utilities bill verification.
 - Measures unit of energy consumption per unit of production or per unit of value added.
 - Visualize energy consumption trends (daily, weekly, seasonal, operational, etc.)
 - Diagnose energy-related problems.
 - Evaluate the potential for using alternative energy sources.
 - Identify and eliminates waste energy through automated reporting (e.g., regular reports on equipment hours of operation, energy use, temperature set-points).
 - Assists with achieving carbon reduction targets.
 - Measurement and verification of any energy conservation measures implemented, allowing assessment of financial paybacks and environmental impact; and
 - Visibility of the building operation across all levels of the organisation, so that all stakeholders have input into operations.

4. Application of Energy Management System

- Energy management system measures, monitors, controls, and forecasts energy consumption, and ultimately benchmarks its energy performance.
- Energy management system allows for centralised monitoring and control of energy use across the building.
- It allows for constant monitoring of a building's energy consumption 24/7/365.
- An energy management system is a “central” control system, allowing facilities managers to operate all stand-alone operational technologies (production machinery, computers, copiers, lights, HVAC, fans, wall sockets, etc.) in a building simultaneously from a single control pad or web application.
- Sensors throughout the building that measure conditions such as light level, indoor/outdoor temperature, and water temperature (called “monitoring points”) serve as data inputs for the energy management system, which uses that information to adjust control components (called “control points”) such as dimmers, chillers, and boilers.

5. Considerations for acquiring energy management system

When procuring an energy management system, a more practical approach should be taken.

The following considerations should be acknowledged when acquiring an energy management system:

Decision input	Consideration
Building Size	Building size determines a host of details of an energy management system's usefulness and appropriateness. The size of a building generally can determine the overall energy spend, the types of equipment that is installed to heat and cool the building, the number of occupants, etc. Generally, the larger the building, the more sophisticated the energy management system can be.
Energy Spend	The monthly or annual energy spend of a company or building is one of the first determinants of selecting an energy management system. Sophisticated and expensive energy management systems are not appropriate for small buildings that use little energy. The savings from the energy management system can't overcome the initial and ongoing costs, and ROI and payback won't meet acceptable levels.
Number of Sites	Having an energy management system for one building is different than procuring one for a campus or portfolio of buildings. When more than one building is involved, it should be a consideration that the energy management system can "roll up" and summarize the data from all sites as well as make comparisons of individual buildings.
Building Use(s)	Building use can determine the requirements for an energy management system. A warehouse has different requirements than an office building which must consider things like occupant comfort. Data centres have different needs than office buildings, hospitals, or schools...and so on.
Occupancy	Occupancy is a factor in a building's energy consumption. Occupant comfort while still managing energy is one of the most important considerations for selecting an energy management system.
Intended Use of the System	Intended energy management system use affects the choice of system in many ways. This should be

	discussed at length prior to making the system choice. Some companies may just want better visibility into their energy consumption while not needing the sophistication and capabilities that some energy management systems contain.
Type of Building	Older buildings are different than new buildings. There are a host of considerations to be made based on the building type including the equipment that is installed, insulation, windows, lighting, digital capability vs. pneumatic, etc.
Financial Considerations	Although many of the above energy management system considerations are deemed important to the decision process, the reality is that the selection process ultimately boils down to the numbers. Does this energy management system make financial sense to the company? What is the return on investment that this energy management system will provide, and how long will it take to pay back the initial and ongoing costs related to the system?

6. Energy management system demo link

Please email nkosinathi@able-energy.co.za or call 079 013 1692 for a demo link.

7. Conclusion

An energy management system can significantly improve the overall energy performance and costs savings interventions of a buildings, in addition promoting a holistic approach to controls and providing operational feedback. Energy savings of 10-20 per cent can be achieved by installing an energy management system compared with independent controllers for each system.