



# ABB Ability™ Energy Management System

Monitor. Forecast. Optimize.

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• Reduce carbon emissions

Save up to 15% on energy costs

Create transparency

The ABB Ability<sup>™</sup> Energy Management System (EMS) is a real-time energy management solution that maximizes sustainability performance and energy cost savings through a cycle of monitoring, forecasting, and optimizing energy consumption and supply for an entire facility or enterprise. EMS helps process industries and manufacturing organizations make data-driven decisions about environmental, financial, and operational cost/benefit trade-offs while working toward carbon neutrality.

Our sustainable future is digital. Let's write the future, together.

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### Deliver on your sustainability commitments and maximize energy cost savings with a flexible, industrial-scale EMS

Energy-intensive industrial companies are not functioning at their full potential due to insufficient transparency into emissions, energy purchase, generation, storage, trading, consumption and performance of specific equipment, departments, production areas and sites. ABB helps you set up a robust, configurable platform with time-series data from process monitoring, automation and production planning systems, the information from your energy suppliers, weather data providers and other partners available centrally, on-line and in real time. Adopting an EMS will not only reduce costs and energy consumption, but also facilitate your regulatory compliance, continuous improvement in energy efficiency, and certification to ISO 50001.

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### Industrial energy efficiency: more efforts needed

Various sector's full potential remains unexploited.

	Green-house gas emissions	Energy % of EBIT	Energy saving target
Iron & Steel	7.2%	97%	10-15%
Cement & Glass	5.2%	159%	8-10%
Pulp & Paper	0.6%	78%	15%
F&B	1%	19%	15%
Mining	4-7%	15%	8-10%
Data Centers	2%		20%
Discrete	7.2%	12%	5-8%

Adopt modern digital technologies and start improving energy efficiency on an industrial scale

۲ Create transparency

CO<sub>2</sub> Reduce carbon emissions د ٥٠٠

Identify weak spots



Maximize profitibility EMS modules that adapt to your business goals, industry-specific production processes, local energy markets and regulations ABB Ability<sup>™</sup> EMS is the best fit for customers who want a fast ROI. Our solution helps you optimize energy consumption with production schedules, leverage spot price volatility, transition to renewables &/or on-site generation, move towards all-electric systems, and make datadriven operational decisions.

#### Focus areas

Energy use cases

Monitoring & reporting Start with basic monitoring & reporting

Forecasting & planning Extend with energy demand and supply forecasting

Energy Optimization Holistic optimization of energy supply and use

#### Real-time energy and emissions

monitoring and reporting (Extension to utilities with WAGES<sup>1</sup> monitoring)

Energy demand forecasting & planning (various time intervals 15-30-60 min, intra-day and day/ week ahead planning, grid trading communication)

Anomaly detection and

(Real time identification of

inefficiencies for quick resolution)

alarm management

Optimal use of energy resources to meet loads at minimum total cost (Grid, on-site co-generation, renewables, energy storage)

**Energy supply allocation** 

Energy efficiency continuous improvement program (Energy efficiency analysis based on historical records)

Power supply forecasting (based on inhouse power generation units, e.g., cogeneration, renewables)

 Optimal operating schedules of selected

 consumers depending on energy cost

 Application
 Thermo Cement
 Steel melt shop

 examples
 mechanical pulp
 production
 Electric Arc Furnace

#### **Energy demand scheduling**

#### ISO 50001 certification as a systematic method for continuous improvement of energy performance

All major process topics of the standard are supported by ABB Ability™ EMS.

Adopting ABB Ability<sup>™</sup> EMS can help you gain or maintain ISO 50001 certification so that you not only make real progress to save energy and lower costs, but also communicate and prove that you are environmentally responsible, thus helping you access sustainability programs and governmental incentives.





Small light



Large scale

High availability

ABB Ability<sup>™</sup> EMS is scalable from a single facility energy reporting application up to a multi-facility company-wide system serving hundreds of users as they manage reporting, energy efficiency, planning and procurement for your corporation.

Empower more people to contribute to your ESG targets and implement better processes every day.

### Establish an integrated system for all data related to regulatory compliance, energy mix, consumption, conversion, and trading

Designing, deploying, and maintaining the optimal site-wide or enterprise-wide energy management and emission control strategy is a large engineering and operational challenge. This requires a wide span of competencies, engineering tools, architecture approaches and service capabilities to identify the most performing and cost-effective solution for each process area and site



#### Typical steps and modular approach for deploying a digital solution for industrial energy management are:

- Monitor: Monitoring energy usage at plant and process level with real-time visual displays and data
- **Identify**: Identify best performance of process areas and opportunities for improvement
- **Report**: Report energy consumption patterns of process areas and production lines
- **Analyze**: Analyze inefficiencies in plant and process areas
- Alarm: Alarm capabilities enable corrective measures to be taken immediately
- Forecast: Forecast energy consumption schedules for process areas based on production plans and measured consumption
- **Optimize**: Solve economic real-time optimization problems consisting of own generation, trading and using of energy in industrial plants and power plants

Our sustainable future is digital. Let's write the future, together. Energy management itself is far from new, but the objectives and optimization models are changing fast. Data must be imported and integrated from many areas, not just from the site or a company's own systems, but also from external systems, such as energy  $CO_2$  certificate trading platforms, resource markets, weather data, and customer data.

You can start bringing this data together for holistic optimization with ABB Ability<sup>™</sup> Energy Management System.

### **Monitoring and reporting**



### Improve energy efficiency, ESG compliance and productivity

An online platform for monitoring, automated reporting against targets and decision support to:

- Bring transparency over **energy consumption** and **sustainability** performance
- Influence organization and routines around continuous improvement of energy efficiency
- Achieve and maintain ISO 500001 certification

Covers multiple energy types and emission monitoring Sets benchmarks following your process areas & asset hierarchies Triggers alarms for non-intuitive consumption patterns Makes improvement potential visible in real time



## "The initial system payback was only a few months"

LARGE INTERNATIONAL PAPERMAKER

### **Forecasting and planning**



### Avoid energy demand and supply risks, price peaks, and penalty charges

Planning tools that forecast energy consumption & calculate the corresponding energy supply schedule to:

- Purchase the **right level of power in liberalized power market** and minimize costs
- Predict **complex/variable energy demand** with temporary peaks more accurately
- Design the most **effective production plan** given power/energy constraints

Predicts energy consumption patterns for each consumer Supports multiple energy types & forecasting methods Adapts to grade / rate / cyclical profiles, rule-based 15-30-60 min or day-ahead balancing, strategic planning over months/years

"ABB experts know which levers to pull for greatest effect"

ASIAN CEMENT MANUFACTURER

### **Energy optimization**



### Utilize energy price volatility and process flexibility for optimal production scenarios

Holistic energy supply & demand optimization depending on your business objectives:

- Minimize the total energy cost, reduce emission levels or maximize the total profit of the operations
- Leverage process flexibility for peak shaving, load shedding, shifting production when energy is cheaper
- Leverage flexibility in energy sources to enable effective **energy procurement strategy**

Supports multiple energy types and optimization scenarios Optimizes energy generation, procurement, trading Shifts consumption to off-peak hours Provides decision support & APC set points for optimal startup / operation

"There is no other supplier with an equivalent industrialscale product"

EUROPEAN STEELMAKER

# Increase value by connecting EMS with your digital ecosystem

Interoperability – Can connect to 3rd party DCS, energy meters and other systems, including AI/ML and data analytics using open communication protocols

**Scalability** – Architecture based on data collector nodes to read data from local system nodes to plant wide edge servers to enterprise cloud platform

High performance and availability database – Uninterrupted service and enabling continuous operation during system updates and hardware maintenance

**Cyber secure data collection and transfer** from site's automation systems to corporate level with data buffering and automatic backfill of data



Identifying goals and adopting an impact measurement framework will reveal opportunities for successful solutions across untapped areas.



## Why ABB?

Main reasons to choose ABB Ability™ Energy Management System:

#### **Beyond energy monitoring**

A comprehensive integrated solution from monitoring, to forecasting and optimization of process flexibilities

#### Common platform

Complete sustainability metrics, to provide awareness/benefits across an organization from EE engineers, to sustainability champions, management and executives

#### **Digital convergence**

Ability to connect to above and below automation layers enabling DCS, APC, MES convergence

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### Purpose-built for your site

Open and configurable to exploits your specific processes, energy mix, local electricity market constraints

#### Robust, reliable and flexible

High performance, industrial time-series platform with embedded cyber security for mission-critical systems, with various deployment models (site to enterprise level)

#### Track record across verticals

Proven track record in Pulp & Paper, Metals, Mining, Cement, Metals, Power, and Discrete Manufacturing.



ABB offers global support across Americas, Europe and AMEA regions. We also conduct industrial energy performance assessments / energy audits - comprehensive, on-site evaluations of manufacturing systems to identify inefficiencies & opportunities for improvement and uncover the causes of current or potential problems. We analyze and provide recommendations that will be most effective in achieving your objectives.

### **Contact us**



#### Sources:

https://ourworldindata.org/emissions-by-sector

https://www.sustainabilitymatters.net.au/content/energy/white-paper/energy-management-is-no-longer-just-for-power-hogs-1013185433/download https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/primary-energy.html https://new.abb.com/pulp-paper/abb-in-pulp-and-paper/articles/previous-2/industrial-demand-side-energy-management-in-mayr-melnhof-karton