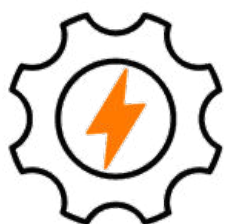


“Energy is our process. Energy management isn't just about saving money it's about competitive advantage, sustainability leadership and operational excellence. EMS delivers all three.”
Sr. Vice President Operations, Specialty Chemicals Leader



DATASHEET

Energy Management

Drive Efficiency. Ensure Compliance. Achieve Sustainability.

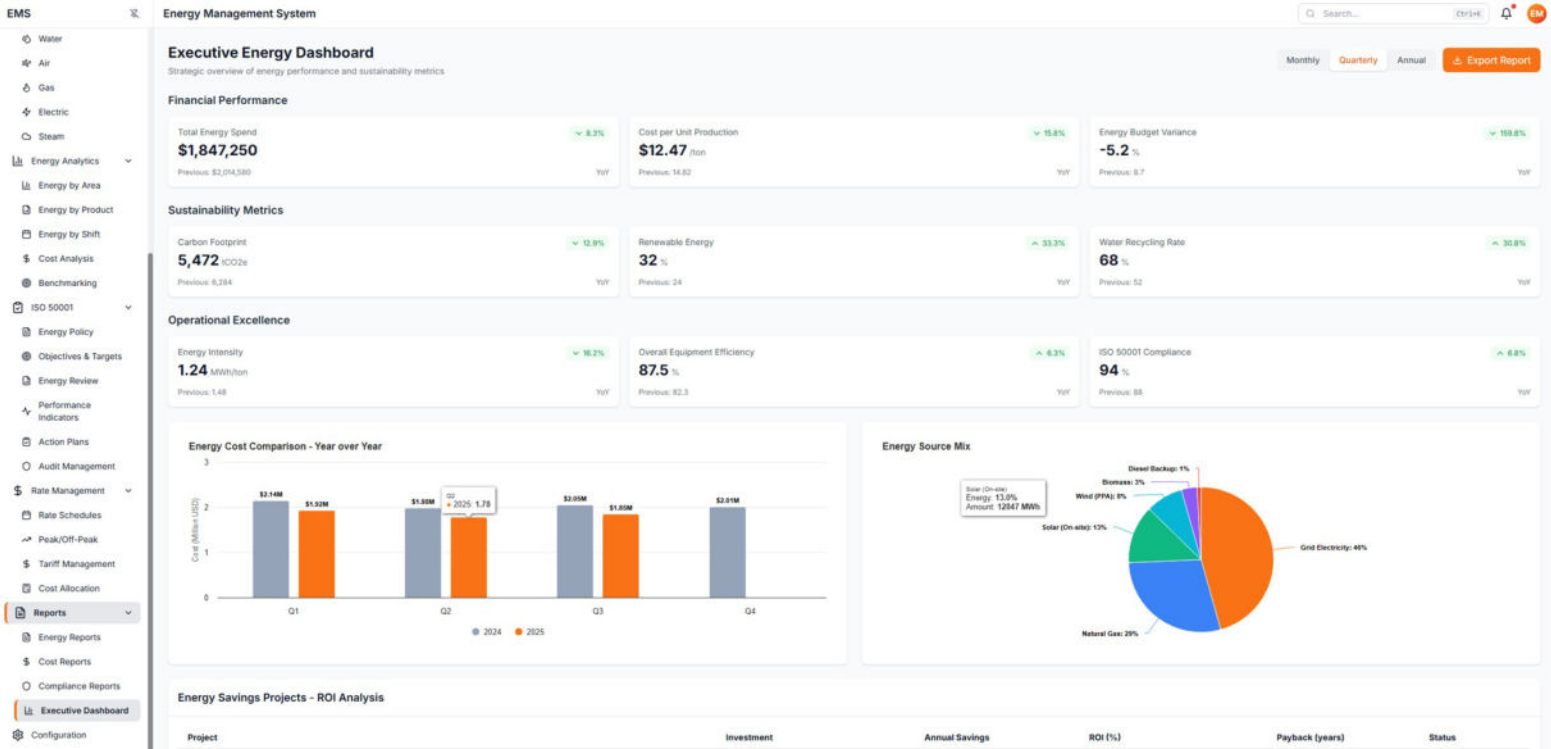
In today's competitive manufacturing landscape, energy costs account for 15 to 40 percent of operating expenses, while environmental regulations demand unprecedented levels of transparency and control. Yet many facilities still rely on traditional energy monitoring methods that create data silos, compliance gaps, and missed optimization opportunities. Inefficiency compounds over time, eroding both profitability and sustainability performance.

The LOGICAL SYSTEMS Energy Management System (EMS) provides an ISO 50001 compliant platform that transforms fragmented energy data into real-time, actionable intelligence. Built on proven industrial standards and designed specifically for regulated industries, the EMS delivers live visibility, advanced analytics, and automated compliance across the entire energy infrastructure. Unlike conventional tools that stop at simple monitoring, our application goes further by addressing financial leakage, operational blind spots, regulatory complexity, and sustainability stagnation through a fully integrated, end-to-end approach. Live dashboards present consumption, cost, and efficiency metrics in real time. Intelligent alerts notify teams of anomalies, threshold violations, or emerging risks. Pattern recognition continuously uncovers hidden waste and inefficiencies, while energy intensity calculations normalize consumption against production levels, weather conditions, and other variables. In this way, decisions are consistently grounded in facts rather than assumptions.

From utility meters and production lines to virtual calculations and cost allocations, the EMS creates a unified ecosystem for energy management. Whether the objective is tracking Water, Air, Gas, Electric, and Steam (WAGES) or managing peak demand, or driving toward carbon neutrality, the platform empowers data-driven strategies that reduce costs, ensure compliance, and accelerate sustainability initiatives. By eliminating silos and integrating every energy source into a single, coherent platform, the EMS app provides complete transparency across operations. Physical meters, manual readings, virtual tags, and production systems communicate seamlessly through an ISA-95 compliant data model that preserves context from shop floor to top floor. Multi-site enterprises benefit from enterprise-wide oversight while maintaining the autonomy of individual sites.

The outcome is straightforward but transformative: a smarter, leaner, and more sustainable operation, powered by real-time energy intelligence.

Complete ISO 50001 Framework without the Complexity



Comprehensive Utility Coverage

WAGES monitoring encompasses utility critical to manufacturing operations:

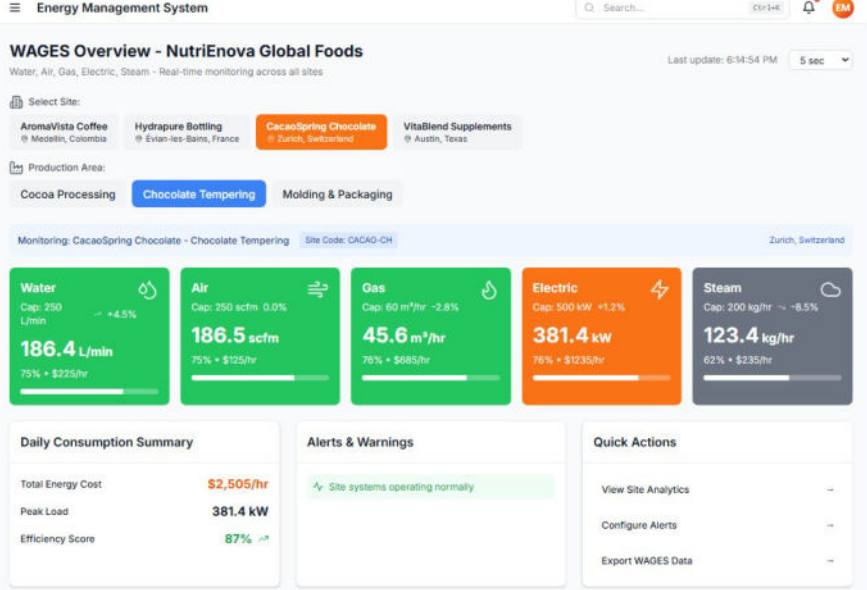
Water: Track consumption, quality parameters, treatment costs, and recycling rates. Monitor process water, cooling water, boiler feedwater, and wastewater separately. Identify leaks, optimize usage, and ensure regulatory compliance.

Air: Compressed air systems consume up to 30% of industrial electricity. Our system monitors generation efficiency, distribution losses, and end-use consumption. Detect leaks, optimize pressure, and rightsize equipment.

Gas: Natural gas, propane, and specialty gases require careful management. Track consumption by process, monitor combustion efficiency, and optimize heating operations. Ensure safety while minimizing costs.

Electricity: The largest energy expense demands the most attention. Monitor real-time demand, power quality, and consumption patterns. Manage peak demand, improve power factor, and optimize time-of-use rates.

Steam: Critical for many processes yet often poorly monitored. Track generation efficiency, distribution losses, and condensate return. Optimize boiler operations and recover waste heat.



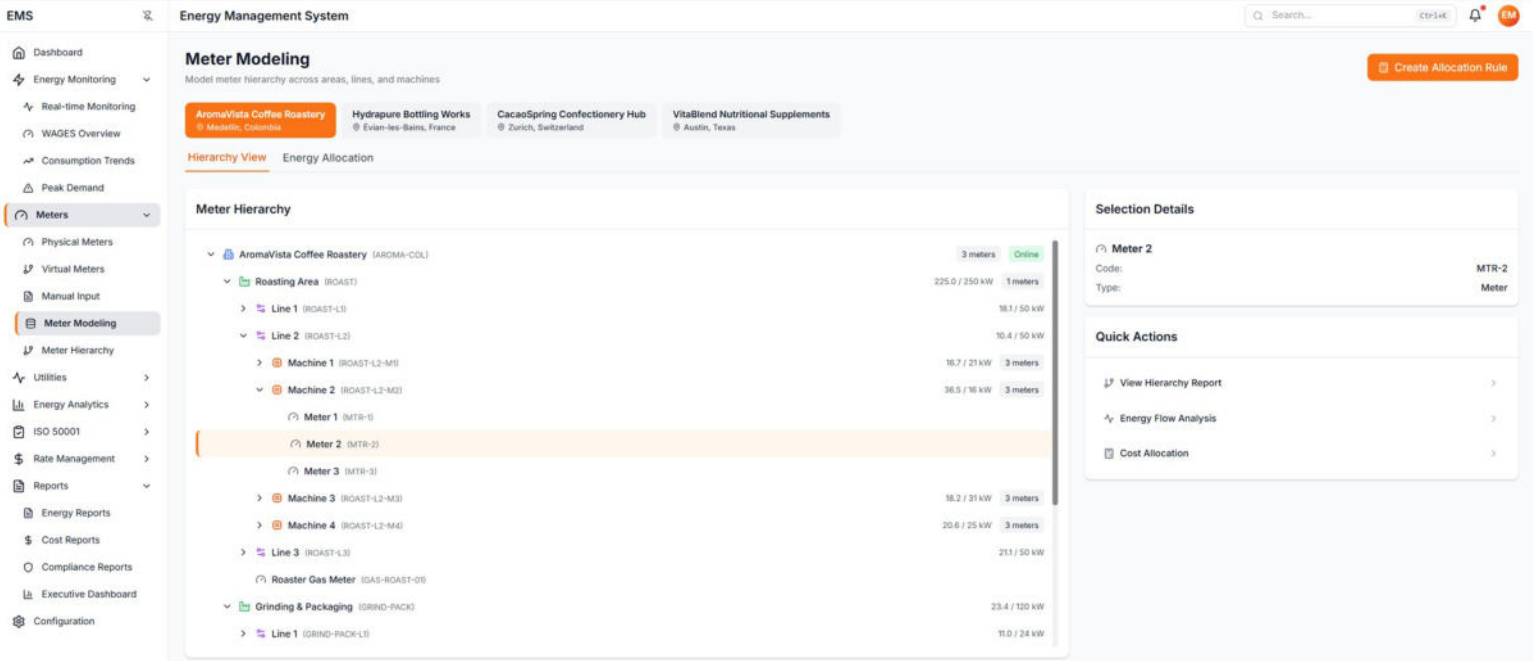
The path to energy excellence is clear. Organizations that implement comprehensive energy management achieve:

- 25-40% reduction in energy costs
- 20-35% reduction in carbon emissions
- 50-70% reduction in compliance reporting effort
- 15-30% improvement in equipment efficiency
- 100% visibility into energy consumption and costs

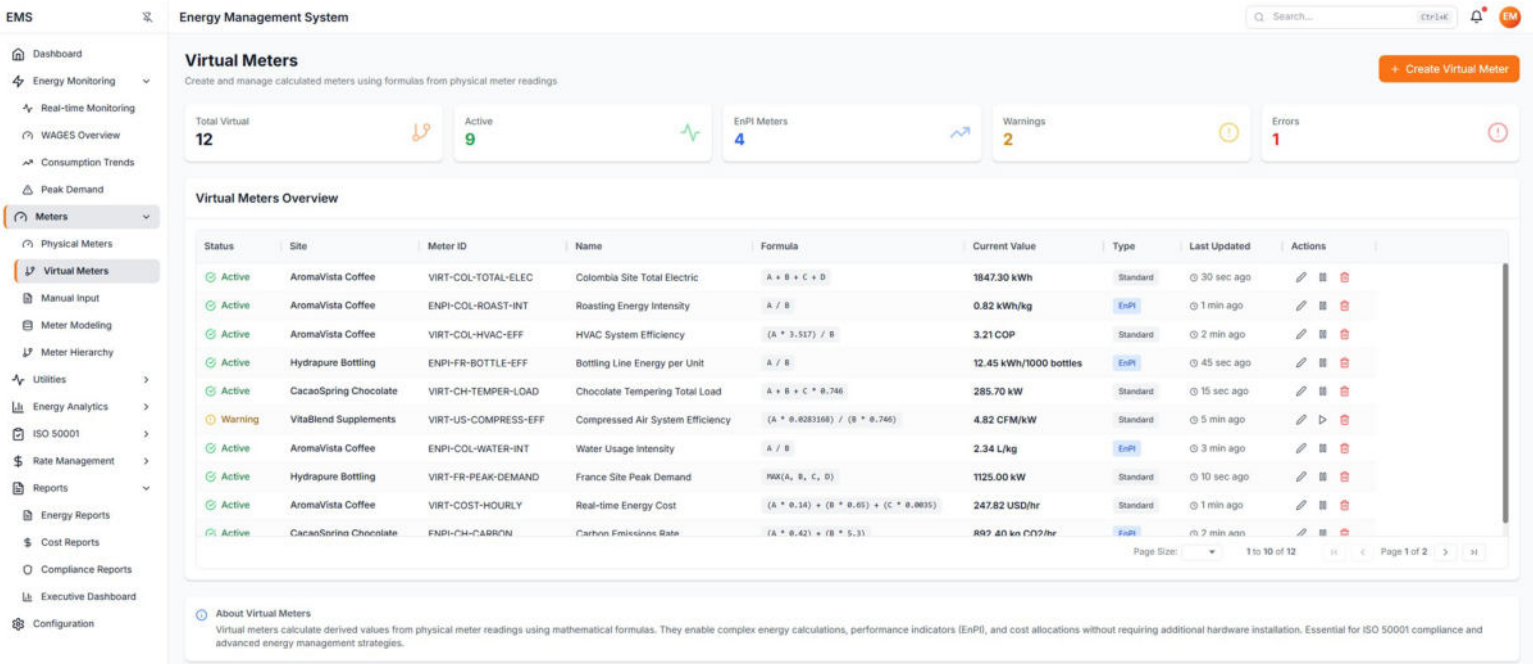
Hierarchical, Informational

Functional Modeling of Physical & Virtual Meters

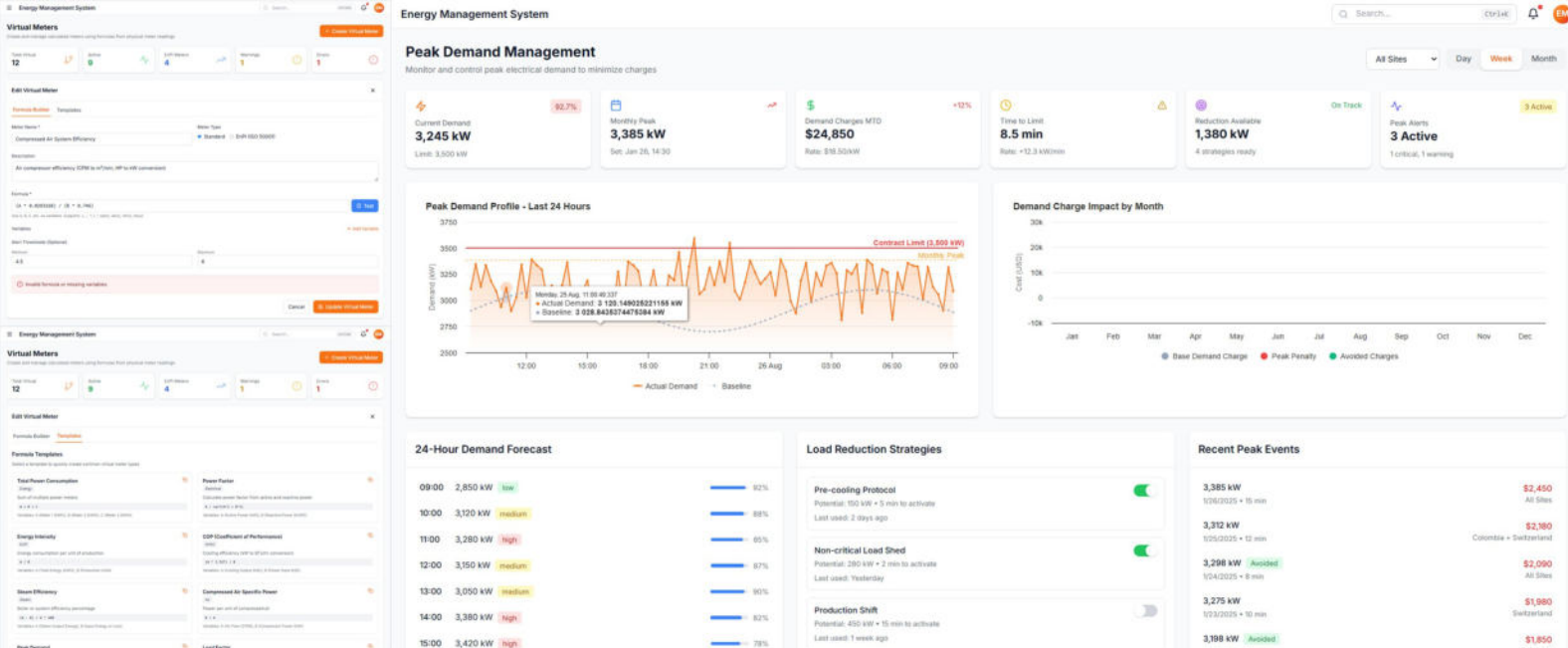
The LOGICAL SYSTEMS EMS employs sophisticated hierarchical modeling to mirror your actual facility structure, creating a digital twin of your energy infrastructure. As shown in the meter hierarchy view, the system organizes meters from enterprise level down through sites, production areas, lines, and individual machines perfectly aligned with ISA-95 standards. This hierarchical approach enables automatic roll-up calculations where energy consumption aggregates naturally from machine level to line, area, site, and enterprise totals. For example, a typical production facility structure shows how individual production lines (consuming 15-50 kW each) roll up to area totals of 200-300 kW, which then contribute to the site's overall consumption across multiple utility meters. This structured modeling enables precise cost allocation, departmental chargebacks, and identification of energy-intensive operations at any organizational level.



Virtual metering technology eliminates the need for expensive hardware installations while providing unlimited measurement points throughout your facility. The system supports dozens of virtual meters calculating critical metrics like Total Site Electric consumption, HVAC System Efficiency (COP), Water Usage Intensity (liters per unit produced), and Real-time Energy Cost using mathematical formulas that combine data from physical meters. These virtual meters support complex calculations including EnPI metrics for ISO 50001 compliance, with formulas clearly displayed for transparency and validation. The platform automatically executes these calculations in real-time, updating values every few seconds to minutes based on criticality, providing warnings when thresholds are exceeded, and enabling sophisticated energy allocation rules that would be impossible with physical metering alone. This virtual infrastructure delivers the granularity needed for true energy optimization without the capital investment of traditional submetering.



The EMS app seamlessly integrates real-time data tags from meters and devices connected through industrial protocols like MQTT, OPC UA/DA, Modbus TCP/RTU, and BACnet, allowing these live data points to be directly mapped as variables in virtual meter formulas—enabling calculations such as "A + B + C + D" where each variable represents a different physical meter's consumption value streaming from your PLCs, SCADA systems, or IoT devices.



Key Features and Benefits

Features

- Unlimited meters (physical and virtual) with hierarchical modeling
- Real-time WAGES (Water, Air, Gas, Electric, Steam) monitoring
- ISO 50001 compliance framework with EnPI calculations
- Multi-protocol integration (MQTT, OPC UA/DA, Modbus, BACnet)
- Advanced formula engine for virtual meter calculations
- Multi-site enterprise architecture with centralized dashboards
- Complex utility rate management (TOU, tiered, demand charges)
- Automated energy allocation and department chargeback
- Role-based access control with Active Directory integration
- RESTful API for ERP/MES/SCADA integration
- Real-time alerting with configurable thresholds
- Automated compliance reporting and documentation

Benefits

- 25-40% reduction in total energy costs
- 15-30% reduction in peak demand charges
- 20-35% decrease in carbon emissions
- 60% faster ISO 50001 certification
- 40+ hours/month saved on reporting
- 10-15% improvement in equipment efficiency
- ROI achievement within 6 months
- 100% visibility across all utilities and sites
- 5-10% immediate savings from waste elimination
- Complete audit trail for regulatory compliance
- Accurate product energy cost allocation
- Data-driven sustainability achievements

Technical Requirements

System Requirements

Ignition® (8.1.+) Core Modules, Quad-core processor, 16 GB RAM, 10 GB free disk space

Supported Operating Systems

Windows Server 2019/2022/2025, Windows 10/11, macOS (X, 10.16+), Linux (Ubuntu, CentOS, RHEL)

Supported Protocols

MQTT, OPC UA / OPC DA, REST API (JSON Payloads) Kafka (via connector), Snowflake (via pipeline, data bridge)

Supported Databases

Microsoft SQL Server, Oracle, MySQL, MariaDB, PostgreSQL, any database with JDBC driver

Supported Browsers

Chrome, Firefox, Safari, Microsoft Edge

