

Problem

Legacy EMS solutions focus mainly on tracking the consumption (effect) and ignore the underlying process dynamics (cause) that influence the energy efficiency of a production line. Also, these solutions lack the necessary analytics capabilities for providing advanced energy insights to help drive higher efficiencies.

Solution

4Pointx EMS is a process-aware energy analytics solution that leverages Machine Learning to benchmark the consumption for various production scenarios and uses this knowledge to alert when deviations occur. For e.g., the solution tracks wastage due to equipment idling, tells how consumption varies by product, and gives insights on what process parameters are impacting efficiency the most.

BENEFITS OF AN ADVANCED EMS

Better Planning

– of energy capacity to match production demand

Lower OpEx

– increases competitiveness and sustainability

Increased Asset Life

– EMS can help create a business case for VFDs

Reduced CO₂ emissions

– comply with regulations and protect environment

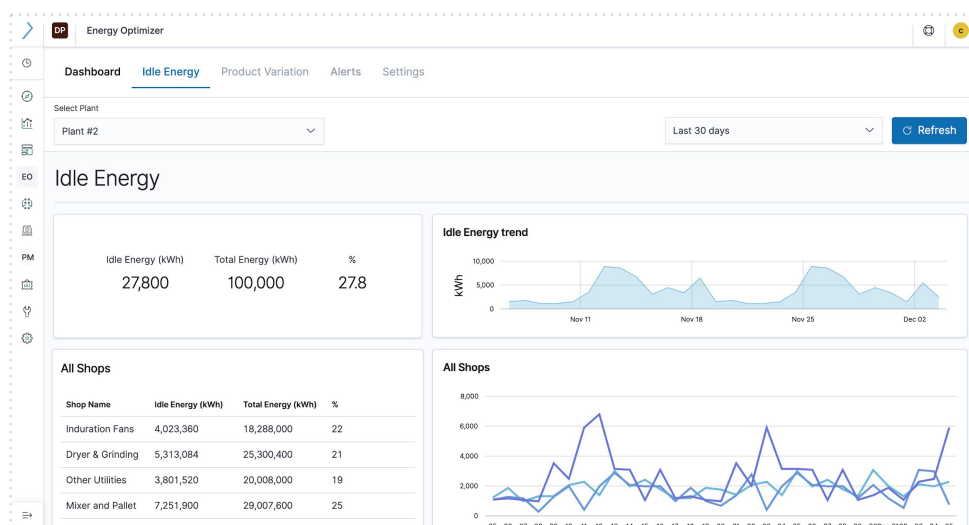
4POINTX EMS ADVANCED CAPABILITIES

Scalable for multiple plants and multi-vendor metering infra

Big Data stream analytics engine for merging energy data with process data

Self-service dashboards for visualizations and custom energy KPIs

Data Science Workbench for advanced energy analytics and ML models



Features and key performance indicators

Track consumption

- Total consumption (kWh)
- Total production (ton)
- Consumption per ton (kWh/ton) by plant, shop and equipment

Track idle energy

- Idle energy (kWh)
- Idle energy as a % of total energy by plant, shop and equipment

Alerting system

- Dynamic alerts on abnormal consumption
- Static (rule-based) alerts

Energy benchmarking

Process-sensitive benchmarks on energy consumed per ton (kWh/ton) for various combination of:

- Product specs (thickness, width etc.)
- Process parameters (speed, temp, cooling etc.)
- Raw material (grade, size etc.)

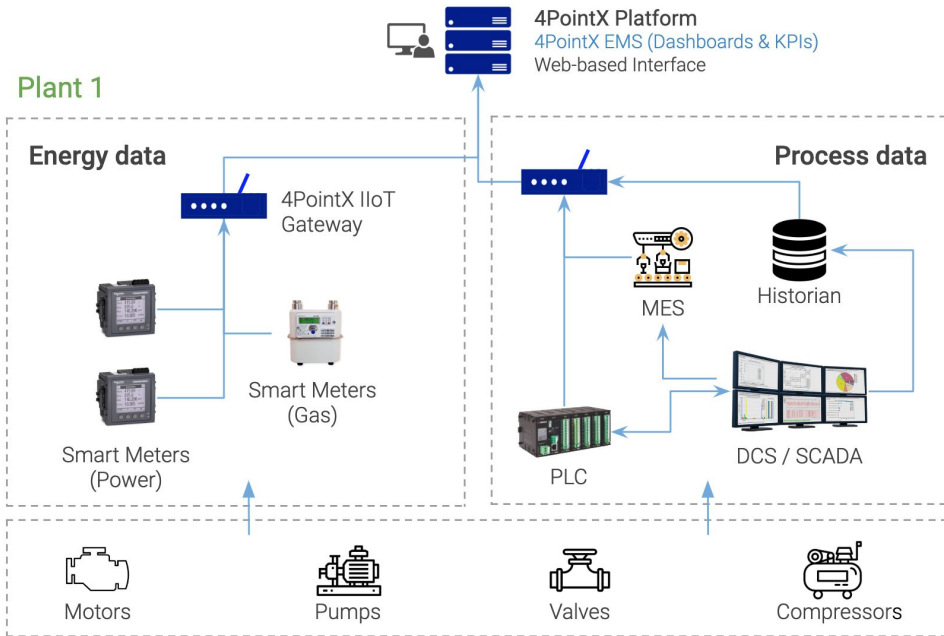
Demand planning

Forecast future energy demand based on orders in pipeline and plan your production accordingly.

- Forecast consumption (kWh)

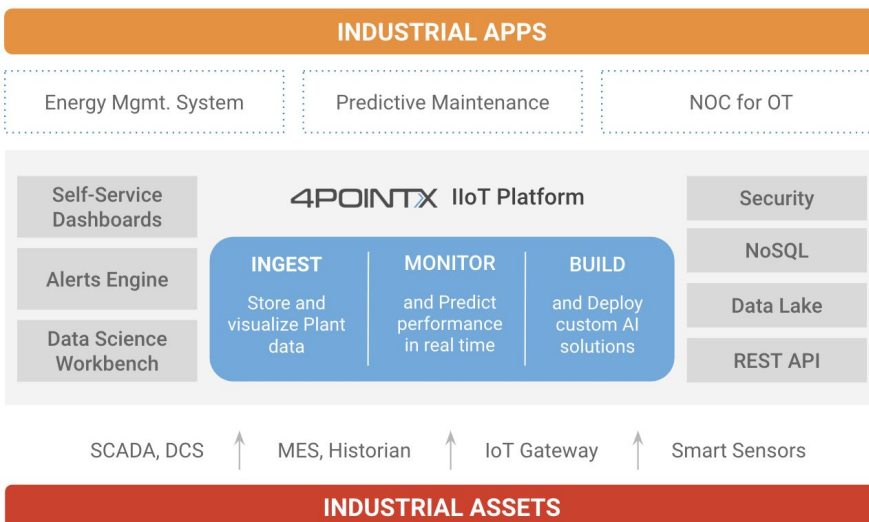
Data acquisition is seamless & vendor-agnostic

4Pointx EMS is one of the many industrial apps on the 4Pointx IIoT Platform that integrates with your Plant's automation systems and smart metering infra for acquiring Process and Energy data. The platform supports a wide range of PLCs, SCADA/ DCS and smart meter vendors.



4Pointx IIoT platform for manufacturing analytics

4Pointx converges the three crucial technologies - IoT, Big Data and AI - into a unified platform that enables collection, storage and analysis of Plant operations data at scale. The Platform works on top of SCADA/ DCS and provides a scalable analytics layer for operations managers to build and deploy shop floor solutions in an automated manner.



4POINTX

Case Studies in EMS

A Large Steel Plant contacted 4Pointx to optimize the energy cost per ton in Mills - HSM, CRM etc.

4Pointx EMS Idle Energy tracker helped create a case for investing in VFDs that brought down the specific energy cost by 5 kWh/ton.

4Pointx EMS Benchmarking tool gave additional needed insights to understand the energy variation by product and plan the production accordingly.

Energy cost reduced by 5.4 kWh/ton

Equipment life enhanced

A Large Steel Wires Manufacturer contacted 4Pointx to consolidate their legacy EMS's into a unified process-aware integrated EMS.

4Pointx EMS Benchmarking tool guided the operators on ideal consumption for a given product/process spec. Timely alerts on abnormal consumption helped minimize wastage.

4Pointx Platform Data Science Workbench & Self-service Reporting helped deliver advanced energy insights for continuous monitoring.

Energy cost reduced by 7.2 kWh/ton for WRM mill

Energy Demand Variation (plan vs. actual) reduced to 6%

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