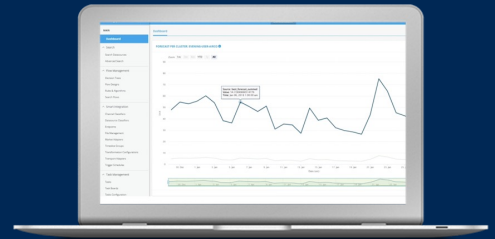


# Load Pattern Analyzer

From data to actionable grid intelligence



## Understanding Shifting Load Behaviour

Electrification, **electric vehicle (EV) charging** and **local generation** make consumption patterns increasingly dynamic and difficult to predict. Traditional monitoring tools give only limited visibility into how demand behaves across networks.

Utilities collect **massive amounts of metering data** but turning that data into insight requires **advanced analytics**.

**Energyworx Load Pattern Analyzer** provides this capability by revealing **typical and changing load shapes**, helping utilities **plan capacity, detect anomalies** and **understand evolving customer behaviour**.

## Discover the Solution

The **Load Pattern Analyzer** leverages advanced analytics to further process the data collected, validated and structured by the **Energy Data Manager module**. By building on this trusted and consistent data layer, it enhances the value of metering and IoT information with deeper contextualisation and refined data modelling.

Using machine learning, the module identifies **consumption trends, behavioural patterns and emerging network insights** across customer groups and grid areas.

It works seamlessly with other modules such as **Demand Forecaster** and Advanced **Smart Grid Analytics**, ensuring consistent and reliable insights across all datasets.

Delivered as **Software as a Service (SaaS)**, the solution offers **scalability, continuous updates** and **secure integration** with utility systems for **future-proof grid intelligence**.



### Automated clustering

Groups millions of meters by similar load profiles to uncover usage patterns and segment customers or network areas.



### Behavioural insight

Reveals how consumption changes over time, supporting capacity planning, tariff design and demand response.



### Scalable analytics

Cloud-native machine learning processes large data volumes with continuous model updates and seamless integration.

# Covered Use Cases

Turn **metering data into actionable intelligence** for planning, operations and customer insight.

## What it enables...

### Automated load segmentation

Meters and feeders are grouped by **similar load profiles** to identify customer types and usage behaviour. The clustering adapts dynamically as **consumption patterns evolve**, providing a real-time view of grid diversity.

### Self-learning anomaly detection

**Abnormal usage, data loss and malfunctioning meters** are detected through self-learning algorithms. This enables **targeted maintenance** and fewer unnecessary field visits.

### Intelligent EV and solar detection

New **patterns caused by EV charging, heat pumps or rooftop solar panels** are detected automatically without manual setup. The system continuously learns from data, revealing where **decentralised generation** or new demand emerges.

### Cluster-based forecast enhancement

**Cluster-level load profiles** are used to refine demand forecasting models for greater precision and stability. The result is better **short- and long-term planning** for operations and procurement.

### Advanced feeder and transformer analysis

Each network segment is monitored for **overloads, imbalances and capacity constraints**. Pattern-based analytics replace static threshold rules, providing **earlier and more reliable insight**.

### Tracking long-term demand trends

Evolving energy **behaviours such as EV adoption or seasonal load shifts** are continuously monitored. Trend insights help utilities plan network investments and adapt **to changing consumption dynamics**.

## Business Impact



### Operational efficiency

Automated analytics cut manual work and reduce computing costs by up to **50%**.



### Smarter investment decisions

Pattern insights guide capacity planning and focus Capex where it brings the most value.



### Faster business outcomes

Machine learning reduces analysis time to **one third**, enabling quicker decisions.