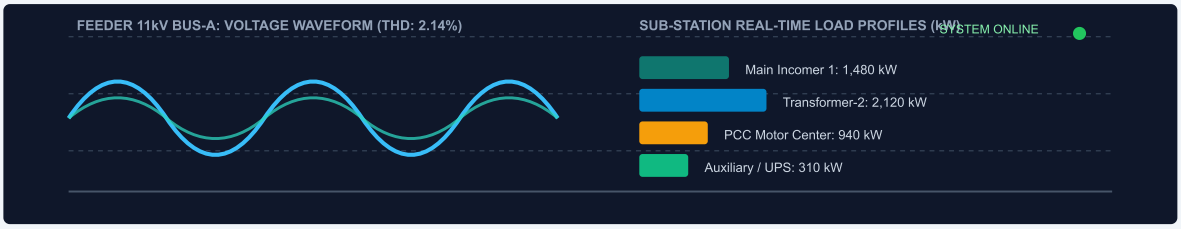
POWER-GRID™

COMPREHENSIVE INDUSTRIAL ENERGY MANAGEMENT SOFTWARE (EMS)

Neutron Automation
TECHNICAL PRODUCT DATASHEET

Power-grid™ is an enterprise-grade Energy Management System (EMS) engineered to provide end-to-end electrical telemetry, proactive power quality analysis, real-time switchgear supervision, and predictive load management for modern industrial plants, utilities, and commercial networks.

IEEE 519	< 100 ms	63rd Order	100% Web
COMPLIANCE STANDARD	SUBSTATION TELEMETRY	HARMONICS ANALYSIS	CLIENT ACCESS ARCHITECTURE



CORE OPERATIONAL MODULES

01 Power Quality Monitoring

Continuous surveillance of key electrical health indicators:

- Harmonics profiling (THD-V & THD-I up to 63rd harmonic).
- Transient disturbance capture, voltage sag, and swell tracking.
- Neutral current shifts and unbalance vector calculations.

02 Energy Distribution & Utilization

Granular facility-wide telemetry for optimal energy economics:

- Incomer-to-feeder electrical sub-metering and allocation.
- Specific Energy Consumption (SEC) per production unit.
- Time-of-Day (ToD) tariff analysis and peak load tracking.

03 Power Losses & Efficiency Analysis

Direct insight into systemic technical and operational leaks:

- Real-time transformer loss profiling (copper vs. core losses).
- Line impedance drop and transmission branch efficiency.
- Automated capacitor bank tracking for power factor penalization.

04 Switchgear Monitoring & Dynamic SLD

Full-spectrum electrical network topology visualization:

- Animated Single-Line Diagram (SLD) reflecting live breaker trips.
- Bus-coupler interlocking and remote command-state display.
- Contact wear estimation and breaker duty cycle counts.

AUTOMATED CONTROLS & INTELLIGENCE

05 Alerts & Fault Management

Rapid resolution framework for critical grid abnormalities:

- Instantaneous SMS, Email, and Audio-Visual annunciation.
- Sequence of Events (SOE) timestamping down to millisecond.
- Root-cause diagnostic logs and pre-trip waveform snapshots.

06 Historical Reports & Trend Analytics

Audit-ready energy intelligence and compliance reporting:

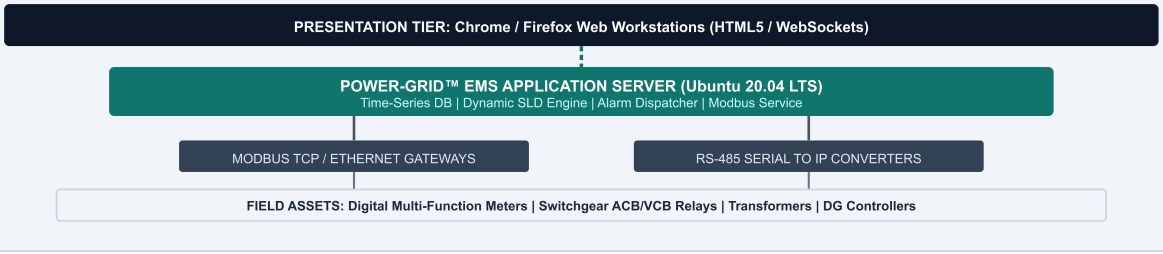
- Scheduled automated PDF and Excel dispatch to management.
- Shift-wise, feeder-wise, and seasonal trend regression models.
- Carbon emission monitoring (GHG Scope 2 documentation).

07 Power Scheduling & Load Management

Intelligent shedding algorithms and demand limit enforcement to prevent contract overruns:

- Automated peak-shaving routines and scheduled non-critical feeder interlocks during high tariff intervals.
- Diesel Generator (DG) synchronization optimization and captive solar integration telemetry.

SYSTEM & NETWORK TOPOLOGY ARCHITECTURE



SERVER SYSTEM SPECIFICATIONS

Specification Component	Minimum Certified Requirement	Supported Configuration / Interfaces
Processor (CPU)	Intel Core i3 / AMD Ryzen 3 (Quad Core)	Multi-core scalable architecture (x86_64)
System Memory (RAM)	8 GB DDR4	Dedicated memory allocation for in-memory polling
Storage Drive	512 GB Solid State Drive (SSD)	High-speed I/O for historical trends and logs
Hardware Interfaces	1× Gigabit LAN Port, USB Interfaces	RJ-45 Ethernet connectivity, Serial interface dongles
Operating System	Ubuntu Server 20.04 LTS (64-bit)	Long Term Support (LTS) kernel stability
Client Web Browsers	Google Chrome, Mozilla Firefox	Standards-compliant HTML5 zero-client installation

ENGINEERING & SALES SUPPORT

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