

1. About Dataset

Overview

The Smart Grid Real-Time Load Monitoring Dataset is a time-series dataset designed for energy management, load forecasting, and fault detection in smart grids. It includes key electrical parameters, renewable energy sources, environmental factors, and anomaly indicators, making it suitable for machine learning and deep learning applications in energy optimization.

Key Features

50,000+ records with 15-minute intervals for real-time analysis.

Smart grid parameters: Voltage, current, power consumption, and reactive power.

Renewable energy sources: Solar and wind power contributions.

Grid supply monitoring: Measures power drawn from the main grid.

Fault detection: Identifies overload conditions and transformer faults.

Environmental factors: Temperature, humidity, and electricity price fluctuations.

Predicted Load (kW): Target variable for real-time energy forecasting.

Use Cases

Energy Demand Forecasting – Predict future energy consumption trends.

Renewable Energy Integration – Analyze solar and wind power contributions.

Fault and Anomaly Detection – Identify voltage fluctuations, overloads, and faults.

Dynamic Pricing Analysis – Study electricity price variations and their impact.

This dataset is ideal for machine learning, deep learning, and smart grid analytics, supporting research in real-time energy optimization and predictive modeling.