

Hybrid Plant Simulation Report

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Mixed End-Use Hybrid Plant with Renewable Energy Integration

Executive Summary

Total Renewable Capacity: 90,000 MW
Total Storage Capacity: 20,000 MWh
Total Capital Cost: 440,000 Rs./kW (39,600,000 Rs./kW)

System Overview

Wind: 50,000 kW
Pv: 40,000 kW
Battery: 20,000 kW
Electrolyzer: 25,000 kW
Hydrogen Storage: 5,000 kW

Load Profiles

electric_load_hybrid.csv: Peak Electricity Demand = 33,000 kW
heat_load_hybrid.csv: Peak Heat Demand = 22,000 kW
hydrogen_demand_hybrid.csv: Peak Hydrogen Demand = 1,700 kg/h

Production Data Sources

Solar Data Sources: 2
Wind Data Sources: 8
SS01-KAT_H1: Max=232.49 A/m², Avg=52.22 A/m²
SS01-KAT_H2: Max=217.48 A/m², Avg=42.12 A/m²
WS01-OTT_Q01: Max=3569.47 kW, Avg=1510.63 kW

Technology Costs

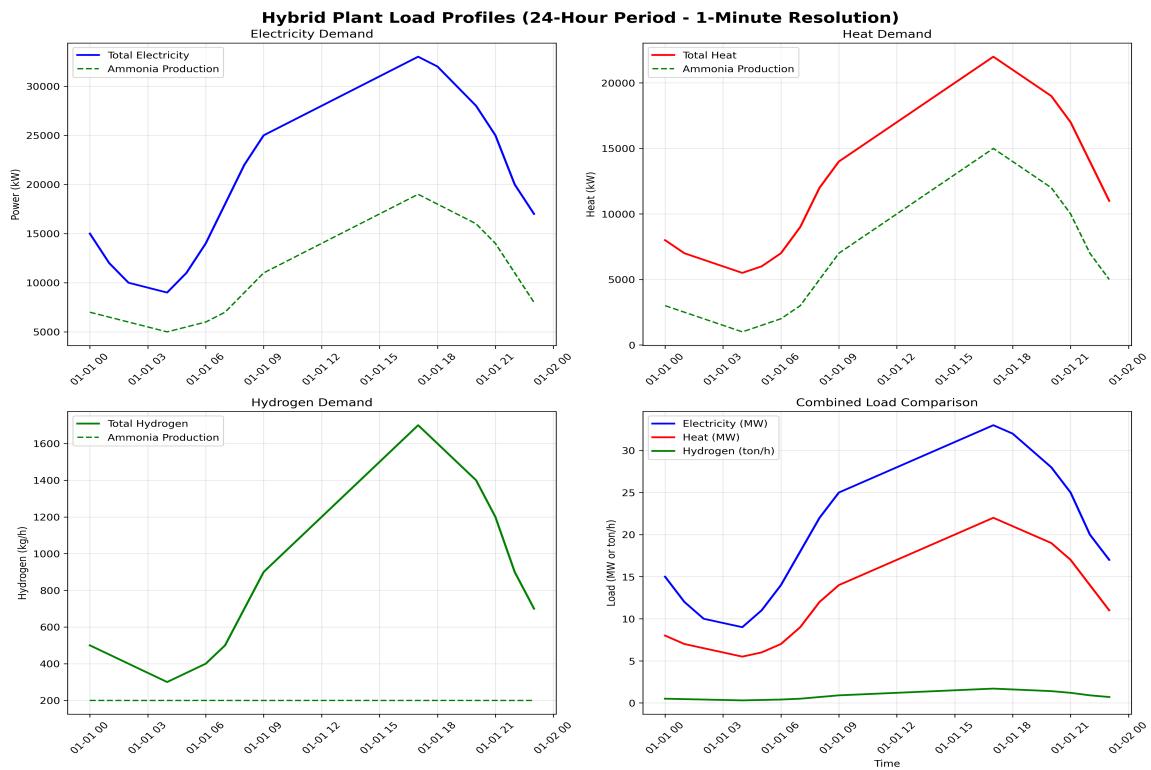
PV: 45,000 Rs./kW (4,050,000 Rs./kW)
wind: 65,000 Rs./kW (5,850,000 Rs./kW)
battery: 75,000 Rs./kW (6,750,000 Rs./kW)
electrolyzer: 135,000 Rs./kW (12,150,000 Rs./kW)
hydrogen_compressor: 35,000 Rs./kW (3,150,000 Rs./kW)
hydrogen_storage: 60,000 Rs./kW (5,400,000 Rs./kW)
ammonia_production: 25,000 Rs./kW (2,250,000 Rs./kW)

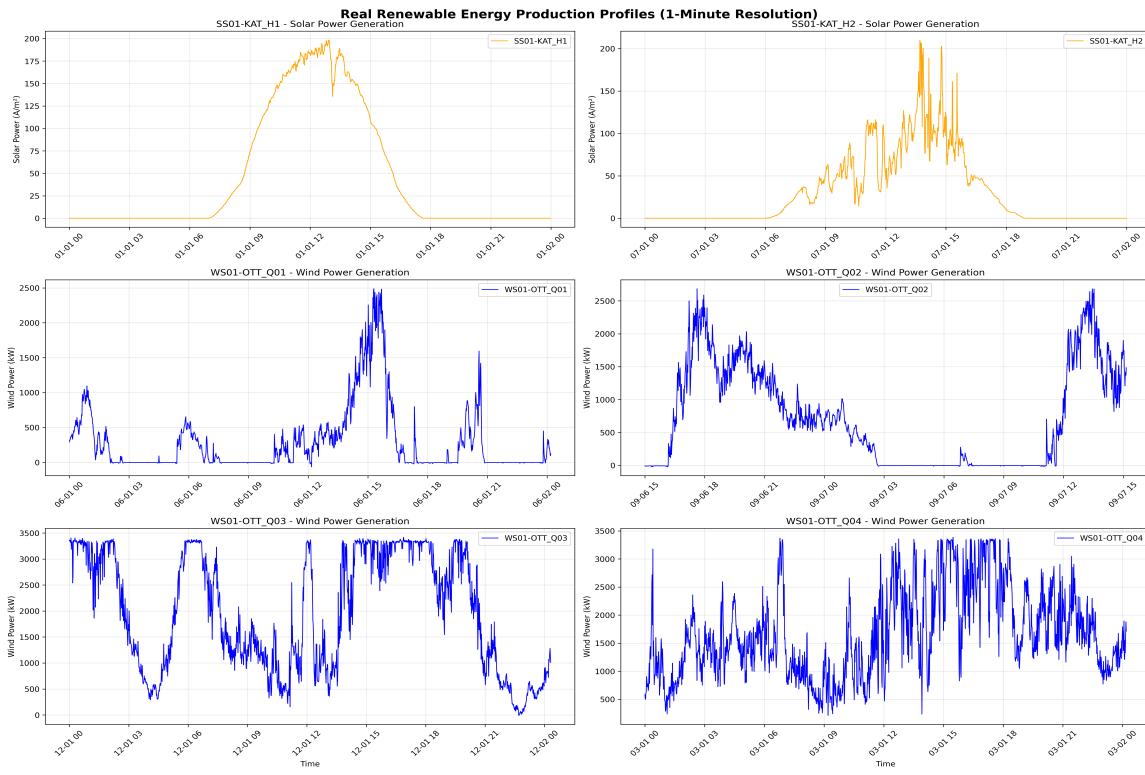
Energy Market

Electricity Purchase Price: 0.12 Rs./kWh

Electricity Sale Price: 0.08 Rs./kWh
 Hydrogen Purchase Price: 2.50 Rs./kg
 Hydrogen Sale Price: 2.00 Rs./kg

Generated Analysis Plots





Hybrid Plant Energy Flow Diagram

