

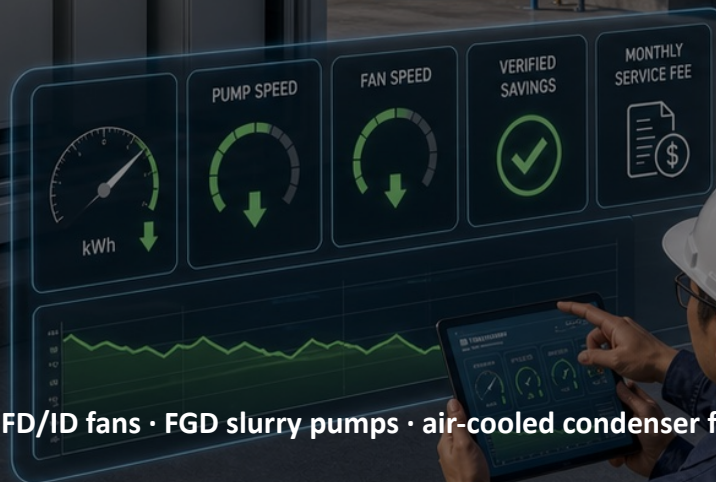
Fan, Pump & EMS

eHOUSE

Fan & Pump Energy Saving EaaS with eHouse + EMS

Provider invests in eHouse, VFD control, EMS platform and O&M; the plant pays from verified electricity savings

Applications: circulating water pumps · cooling tower fans · FD/ID fans · FGD slurry pumps · air-cooled condenser fans



Why Fans and Pumps

Clear asset boundaries, independent metering, and monthly settlement of verified electricity savings.

01

Long Run Hours

Large auxiliary equipment runs continuously, creating durable savings potential.

02

Throttle Losses

Dampers, valves and fixed-speed operation waste airflow and water flow.

03

Variable Demand

Unit load, season and ambient conditions require dynamic control.

04

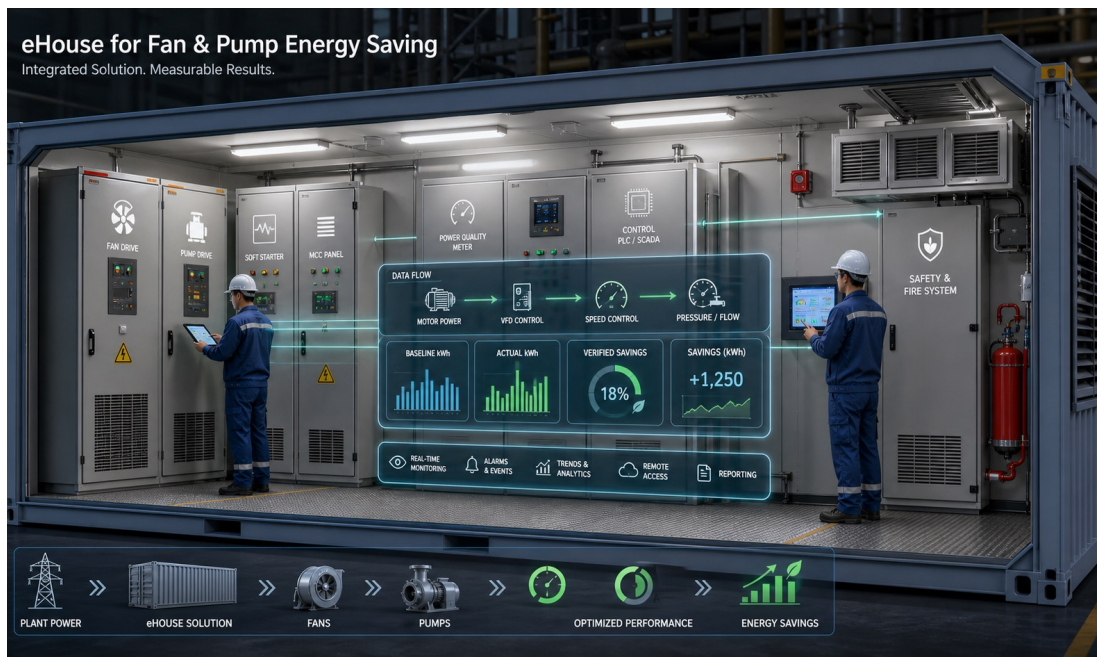
CAPEX Barrier

Plants want savings but often avoid upfront VFD and control investment.

Solution: use eHouse for field electrical control and EMS for monitoring, optimization, alarms and savings settlement.

eHouse + EMS Architecture

eHouse handles field electrical control; EMS delivers transparency, optimization and verified savings.



Electrical Layer

VFD, MCC, soft starter, bypass cabinet, protection and metering

Control Layer

PLC/SCADA, fan and pump group control, interlocks and alarms

EMS Layer

Baseline model, energy dashboard, optimization advice, M&V settlement

Deliverable: eHouse + VFD + EMS

Fan Energy Saving Service Package

Cooling tower fans, ACC fans, FD fans and ID fans run at variable speed according to actual operating conditions.



Control Strategy

- Closed-loop speed control by temperature, pressure and load
- Multi-fan group control and balanced operation
- Grid bypass and safety interlocks retained
- Savings verified by independent power meters

Recommended pilot: cooling tower fans

Pump Energy Saving Service Package

Circulating water pumps, FGD slurry pumps and makeup pumps are optimized by flow and pressure demand.

Scope

- VFD speed control and bypass protection
- Multi-pump optimization
- Pressure and flow setpoint redesign
- Pump efficiency curve management
- Synchronized kWh, flow and pressure metering

Settlement: savings share



EaaS Business Model: Zero or Low CAPEX for the Plant

The service provider funds design, equipment, installation, O&M and savings verification.



Recommended contract: 10 years savings share

Typical split: provider 80%, plant 20%. At contract end, transfer equipment or renew O&M.

EMS Energy Management: Turn Savings into Cash Flow

EMS is not only a dashboard; it connects monitoring, baseline, optimization, alarms and M&V settlement.

EMS Logic

**Collect data → build baseline →
optimize control → verify savings →
settle monthly**

Saved kWh = adjusted baseline kWh - actual kWh. Adjustments include load, run hours, flow, pressure, temperature and outage status.

Monitoring

kWh, power, speed, status

Optimization

Speed control by load, pressure and temperature

Diagnostics

Baseline deviation, inefficient operation, asset alarms

Settlement

Baseline, actual, adjusted savings

Rollout Path

Recommended first pilot: cooling tower fans or circulating water pumps. Clear boundary, low construction risk, easy savings verification.

01

Data Collection

12 months of power
data, DCS history,
equipment
nameplates

02

Site Audit

Positions, operating
curves, instruments
and electrical
conditions

03

Proposal

eHouse configuration,
EMS architecture and
savings model

04

Build & Operate

Installation, EMS go-
live and monthly
settlement

Next deliverables: target asset list + savings ranking + eHouse single-line + EMS point list + savings-share model