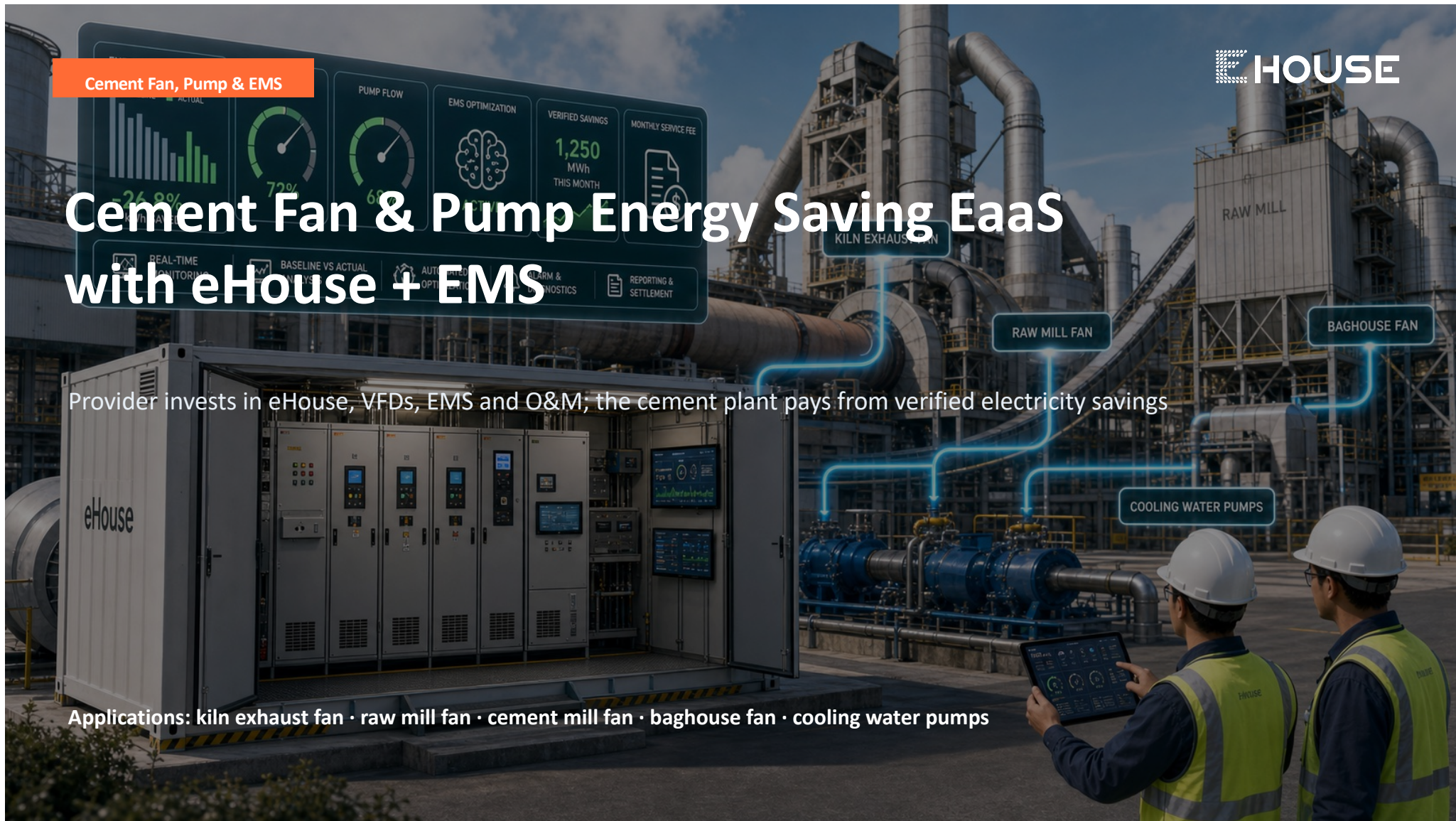


Cement Fan, Pump & EMS

Cement Fan & Pump Energy Saving EaaS with eHouse + EMS

Provider invests in eHouse, VFDs, EMS and O&M; the cement plant pays from verified electricity savings

Applications: kiln exhaust fan · raw mill fan · cement mill fan · baghouse fan · cooling water pumps



Why Fan and Pump EaaS Fits Cement Plants

Fans and pumps cover kiln, mills, bag filters and utilities; long run hours make savings measurable.

01

Large Continuous Loads

Kiln, raw mill, cement mill and baghouse fans run for long hours.

02

Throttle and Leakage Losses

Dampers, system air leakage and pressure margins waste power.

03

Variable Operating Conditions

Output, raw material moisture, mill load and baghouse pressure change constantly.

04

CAPEX and Verification Barrier

Plants need zero or low CAPEX and a trusted savings settlement method.

Solution: eHouse handles field electrical control; EMS delivers energy transparency, optimization, diagnostics and settlement.

eHouse + EMS Architecture for Cement Lines

Integrate VFDs, metering, control, diagnostics and settlement into one service package.



Electrical Layer

VFD, MCC, bypass cabinet, protection and metering

Control Layer

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

EMS Layer

kWh/t clinker, kWh/t cement, baseline model and settlement

Deliverable: eHouse + VFD + EMS

Fan Energy Saving Service Package

For kiln exhaust, raw mill, cement mill and baghouse fans, variable speed follows real operating demand.



Priority Assets

- Kiln exhaust fan
- Raw mill circulating fan
- Cement mill circulating fan
- Baghouse fan
- Kiln hood / clinker cooler fan

Pilot: cement mill or baghouse fan

Pump Energy Saving Service Package

For cooling water, waste heat recovery, utilities and environmental systems, reduce bypass and wasted circulation.

Scope

VFD speed control and bypass protection
Multi-pump optimization
Closed-loop control by temperature, pressure and flow
Reduce bypass and wasted circulation
Power, flow and pressure metering

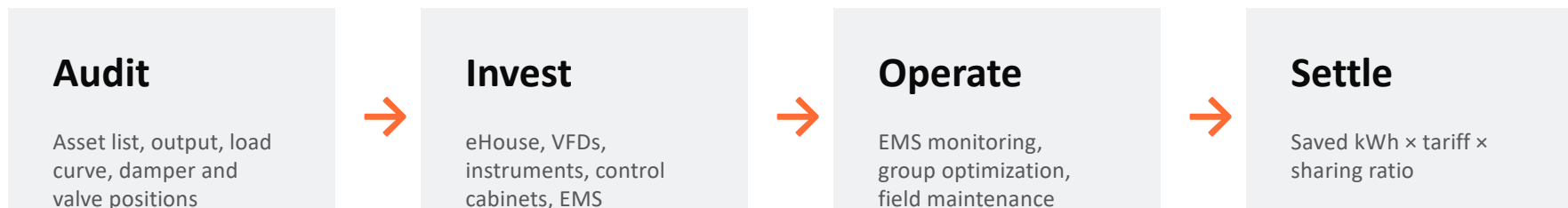
Settlement: savings share



EaaS Business Model: Zero or Low CAPEX for Cement Plants



The provider funds diagnosis, investment, construction, O&M and savings verification.



Recommended contract: 10 years savings share

Typical split: provider 80%, cement plant 20%. Transfer assets or renew EMS O&M at contract end.

EMS Energy Management: Data-Backed Savings Share

EMS connects real-time monitoring, baseline modeling, optimization, diagnostics and M&V settlement.

EMS Logic

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

Adjustment factors include clinker/cement output, mill run hours, raw material moisture, pressure difference, ambient temperature and outage status.

Production KPI

kWh/t clinker, kWh/t cement

Process Data

Airflow, pressure, differential pressure, temperature

Diagnostics

Inefficiency, vibration, baseline deviation

Settlement

Baseline, actual, adjusted savings

Rollout Path

Recommended first pilot: cement mill fan, baghouse fan or cooling water pump. Clear boundary and easy savings verification.

01

Data Collection

12 months of power,
output, DCS history and
nameplates

02

Site Audit

Positions, pressure
drop, curves,
instruments and
electrical conditions

03

Proposal

eHouse configuration,
EMS points, investment
and savings model

04

Build & Operate

Installation, EMS go-live
and monthly savings
share

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