



ENERGY EFFICIENCY PROJECT DEVELOPMENT VAS/DEPP3 Programme

IMPROVING STEAM, COMBUSTION, AND WASTE HEAT RECOVERY SYSTEMS AT A CONSTRUCTION MATERIALS ENTERPRISE

Sector: Construction materials
Energy focus: Waste heat recovery

At this advanced construction materials plant—specializing in autoclaved aerated concrete (AAC) and processed fly ash—thermal inefficiencies were driving up fuel costs. The facility faced a specific challenge: exhaust gas from the fly ash and sand drying furnace was leaving the system at high temperatures of 120-130°C. To protect the downstream bag filters from heat damage, operators were simply diluting this exhaust with cold outside air. This completely wasted the thermal energy, while the plant's boiler continued to burn massive amounts of fuel to heat cold make-up water.

Through the feasibility study, the enterprise decided to invest in a closed-loop thermal solution: **installing a continuous circulating economizer to capture waste heat from the drying furnace to preheat the boiler's feedwater**. This system captures the wasted heat and transfers it directly to the boiler's make-up water, safely cooling the exhaust gas to 90°C in the process.

Once implemented, this targeted upgrade will:

- Recover wasted heat to save **691 tons of boiler fuel annually**;
- Cut operational energy costs by **over 1 billion VND per year**;
- Achieve a rapid simple payback period of just **19 months**.

FINANCIAL PERFORMANCE SUMMARY



ESTIMATED
INVESTMENT

~1,590
MILLION VND



SIMPLE PAYBACK
PERIOD

~1.5
YEAR

ENERGY BENEFITS



ANNUAL ENERGY
SAVINGS

~691
TONS OF FUEL/YEAR



ENERGY COST
SAVINGS

~1
BILLION VND/YEAR

NON-ENERGY BENEFITS

- **Maximized Equipment Lifespan:** Reduces boiler load and extends the lifespan of heating systems.
- **Slashed Maintenance Costs:** Safely cools exhaust gas, eliminating heat damage and reducing dust filter maintenance.
- **Greener, Safer Operations:** Eliminates thermal pollution, creating a safer, cooler working environment for staff.
- **Strengthened Market Position:** Lowers overall production costs, enabling highly competitive pricing for unburnt bricks.



WHY THIS CASE MATTERS?

Processing fly ash and unburnt bricks is highly energy intensive. This case proves the immense financial and environmental value of cross-system heat recovery. By capturing waste heat from a drying furnace and repurposing it to preheat water for an entirely separate boiler system, the enterprise creates a highly efficient, close-loop thermal cycle. The solution is highly feasible, low-risk, maximizes resource efficiency, and supports the construction materials industry's transition toward a circular production model.

EXPLORE SIMILAR OPPORTUNITIES

For more information and additional case studies, please visit:



**Vietnam – Denmark
Energy Partnership Programme
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**Energy Efficiency
Center of Excellence**



This case was developed under the Voluntary Agreement Scheme (VAS) for the Vietnamese Industrial Sector, part of the DEPP3 Programme (Vietnam – Denmark Energy Partnership Programme Phase III).

VAS supports industrial enterprises in identifying, preparing, and implementing bankable energy efficiency investments through structured audit, pre-feasibility and feasibility assessment processes.