ENERGY EFFICIENCY PROJECT DEVELOPMENT

CASE STUDY: NATSTEELVINA CO.,LTD

→ FROM IDEAS TO MATURE EE PROJECT

Company/Factory: NatSteelVina Co.,Ltd

Sector: Steel production

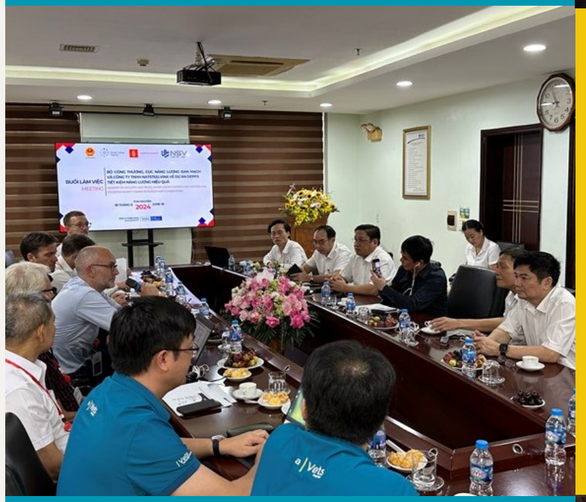
Brief information:

Main products:

- Steel bars, steel coils.

NatSteelVina's capacity

- Total area: 28,515 m2
- Production capacity: 200,000 tons of products/year



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ENERGY AUDIT

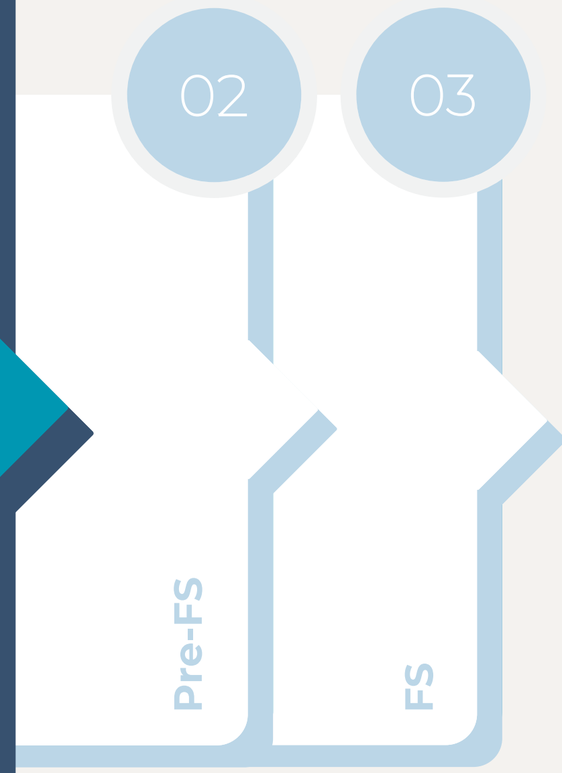
Opportunity 1: Optimizing the combustion process of the billet reheating furnace

The solution can significantly reduce annual fuel consumption, contributing to lower operating costs and increased company profitability.

- FO oil consumption in 2022: 5,000 tons
- Savings rate after implementation: 2.8%
- Fuel saved annually: 140 tons/year.

Opportunity 2: Utilizing waste heat from exhaust gases

- This solution can enhance the production volume and quality of finished steel products while saving energy.



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Selected opportunity	Optimizing the combustion process of the billet reheating furnace	
Priority solution	Upgrade and optimize the control system for the billet reheating furnace combustion process	Recovering waste heat from exhaust gases to cool feedwater for the steel rolling line
Investment	3,500,000,000 VND	14,340,000,000 VND
Annual cost savings	3,850,000,000 VND/year	2,400,000,000 VND/year
Lifespan	10 years	10 years
Simple payback period	11 months	6 years
Discount rate	10 %	10 %
Internal rate of return (IRR)	74.4 %	12.7 %
Net present value (NPV)	3,300,000,000 VND	1,830,000,000 VND
Benefit/cost ratio (B/C)	1.9	1.1

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Project: Upgrade and optimize the control system for the billet reheating furnace combustion process

- Key findings:
  - Enhances the performance of the furnace thermal control system, saving energy and improving production and business efficiency.
  - The project helps the company save fuel, reduce material loss during combustion, and increase the output of finished steel products.
  - Both options are financially and technically feasible.
- Energy efficiency benefits:

Option	Upgrade using PLC cabinets integrated with existing control cabinets	Replace the billet reheating furnace combustion control system with a new PLC cabinet
Investment	3,540,000,000 VND	4,865,000,000 VND
Total energy cost savings	3,840,000,000 VND/year	3,840,000,000 VND/year
Simple payback period	11 months	15 months
Benefit/cost ratio (B/C)	1.9	1.4

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Project: Upgrade and optimize the control system for the billet reheating furnace combustion process

- Non-energy benefits:
  - *Improved product quality:*
    - ✓ Cleaner billet surfaces
    - ✓ Higher dimensional accuracy
  - *Production cost savings:*
    - ✓ Reduced reprocessing costs
    - ✓ Fuel savings
    - ✓ Extended equipment lifespan
  - *Enhanced production efficiency:*
    - ✓ Increased production speed
    - ✓ Reduced maintenance time
  - *Environmental impact reduction:*
    - ✓ Lower emissions
    - ✓ Reduced solid waste
  - *Increased competitiveness:*
    - ✓ Improved reputation and brand image
    - ✓ Enhanced ability to meet customer demands

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Risks:

- Technical risks
- Project management risks
- Security and safety risks
- Training and personnel risks
- Logistics risks
- Operational and maintenance risks

Mitigation strategies:

- Develop detailed planning
- Strict cost control
- Staff training
- Select reputable partners
- Ensure confidentiality
- Conduct regular inspections and maintenance

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