

Case Study: **Heat / Energy Recovery – Flue gas**

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Background:

While conducting energy audit for the steel industry; the energy loss through flue gases of furnaces was observed to be abnormally high.

Operating Scenario:

The operating system comprises

- The annealing furnace was maintained at about 1000 °C.
- The furnace was provided with small opening to exhaust the flue gas.
- The temperature of flue gas was over 950 °C.
- The combustion air temperature was just about 30 °C.

Energy Conservation Measures:

The above concerns and issues were addressed by taking the following measures.

- Installing recuperator to pre-heat the combustion air to about 300 °C, as a first stage.
- Installing a suitable chimney to monitor and control draught.
- Installing heat recover unit to generate hot water at about 110 °C to augment the existing hot water generator.

Outcome:

- The natural gas consumption of the furnace reduced by around 10%.
- The natural gas consumption of hot water generator reduced by 80%.

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