WASTE HEAT RECOVERY

DESCRIPTION

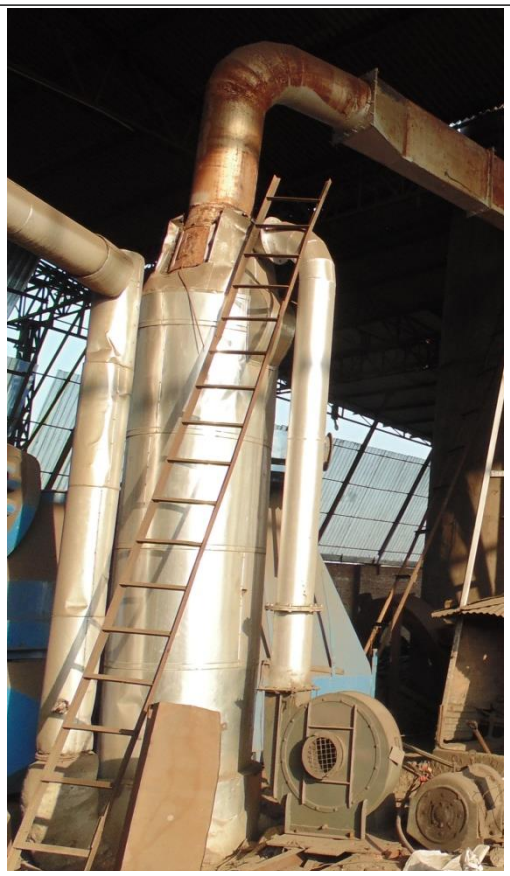
Waste Heat Recovery (WHR) for heat treatment furnaces is a well proven technology to recover and reuse the waste heat contained in the flue gases. Adoption of this technology in industrial applications would lead to improved thermal efficiency in the operation.

TECHNICAL DETAILS

Flue gases from Heat Treatment (HT) furnaces are waste gases exiting the furnace at high temperature (350-600°C). The heat in these flue gases can be recovered and used for applications such as:

- Combustion air pre-heating
- Pre-heating of fuel (furnace oil, coal, etc.)
- Hot water generation, steam generation, process heating applications.

The structure and design (shell & tube, shell & shell, heat pipes) of a WHR device is determined by parameters such as fuel type, quality & quantity of waste heat to be recovered and final application of recovered heat.



Source: WHR installation in case study company

CASE STUDY[1]

Application of WHR for pre-heating of combustion air and fuel (pulverised coal) has been successfully implemented by Punjab State Council for Science and Technology (PSCST) in re-rolling cluster in Mandi Gobindgarh, Punjab. In this cluster, the conventional shell & tube type recuperator was replaced with a modified shell-in-shell type design.

[1]PSCST http://pscst.gov.in/pscstHTML/reRoll.html; Punjab ENVIS Centre Newsletter, 10(4) 2012-2013; Personal communication PSCST

Company Profile	
Location	Mandi Gobindgarh, Punjab
Employees	25-30
Annual turnover	-
Main products	MS strips
Annual production capacity	9,600 tonnes

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WASTE HEAT RECOVERY

TECHNICAL BENEFITS

- Enhanced thermal efficiency
- Reduced fuel consumption (approx. 20%) due to pre-heated (200–250°C) combustion air & fuel available for firing
- Lower exit gas temperature
- Increased furnace throughput

ENVIRONMENTAL BENEFITS

- Reduced fuel consumption due to improved efficiency
- Reduced Green House Gases (GHG) emissions
- Reduced air pollution
- Reduced surroundings temperature and improved working conditions

FINANCIAL BENEFIT OF CASE STUDY

Investment amount	Rs. 2 Lakh
Estimated time to recover investment	53 working days
Fuel saving / day (@20%)	Rs.7,200

TECHNOLOGY BENCHMARKS / SUPPLIERS

- The design of the appropriate WHR equipment (recuperator) is specific to a particular company
- Systems are typically fabricated locally

FURTHER INFORMATION AND CONTACT

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