



Case Study

Client - Automotive Part Casting Manufacturer, Kentucky, USA

Project – Aluminium Furnace Air Pre-Heater

As part of its energy review this global Multi national sought a means by which it could reduce its aluminium furnace running costs. After a period of technical consultation an Econotherm® GA 330 Gas to Air smooth pipe heat exchanger was selected for the installation.

The original business case was approved on the basis of a \$100K per annum saving against a total estimated project costs of \$168K. The installation was successfully completed in March 2006 by local contractors operating to an Econotherm® outline design.

The smooth pipe GA exchanger offers many benefits in this high particulate exhaust environment which include –

- Low fouling susceptibility - due to smooth Non finned design
- Ease of maintenance – pipes can be simply removed for cleaning (see illustration)
- High reliability – through multiple redundancy design as each pipe operates independently so that a single pipe failure (in itself a rare event) will not incapacitate the unit



Figure 1 - Econotherm® GA units can be easily cleaned by simple pipe removal



The overall installation design needed to be failsafe such that production would not be affected in the event the recovery unit needed to be switched off.. To address this challenge Econotherm® engineers specified a solution which allowed the unit to be simply by-passed for routine maintenance events using an innovative cost effective approach that avoided the need for costly exhaust diversion valves.

A further challenge was the very small available space in the proximity of the furnace heat source. Econotherm® engineers addressed this through a design that accommodates the entire recovery unit installation outside of the production facility as seen in the illustration below.

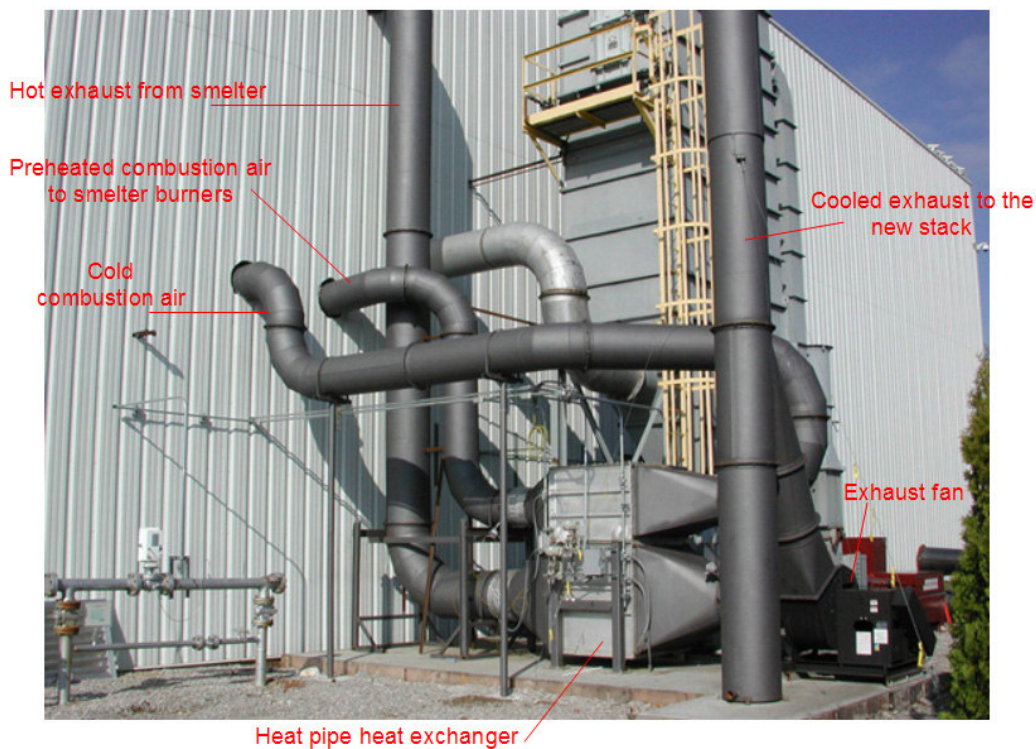


Figure 2 - External GA unit installation

In the event operational measurement against the pre-installation baseline indicated an annual saving in the region of \$150K a figure 50% in excess of the original project target. This excellent result delivered a total payback period for the project of 13 months. Based on the success the client has now placed an order for 2 more exchangers.



Technical Data

Exhaust Temp In	400 C
Exhaust Temp Post Recuperator	266 C
Combustion Air Temp In	30 C
Combustion Air Temp To Burners	246 C
Exhaust Mass Flow	12,000 Kg/h
Combustion Air Mass Flow	6,374 Kg/h
Energy Recovered	528 KW
Recovered Energy Value	\$155K Per Annum
Project Cost	\$168K
Payback Period	13 Months