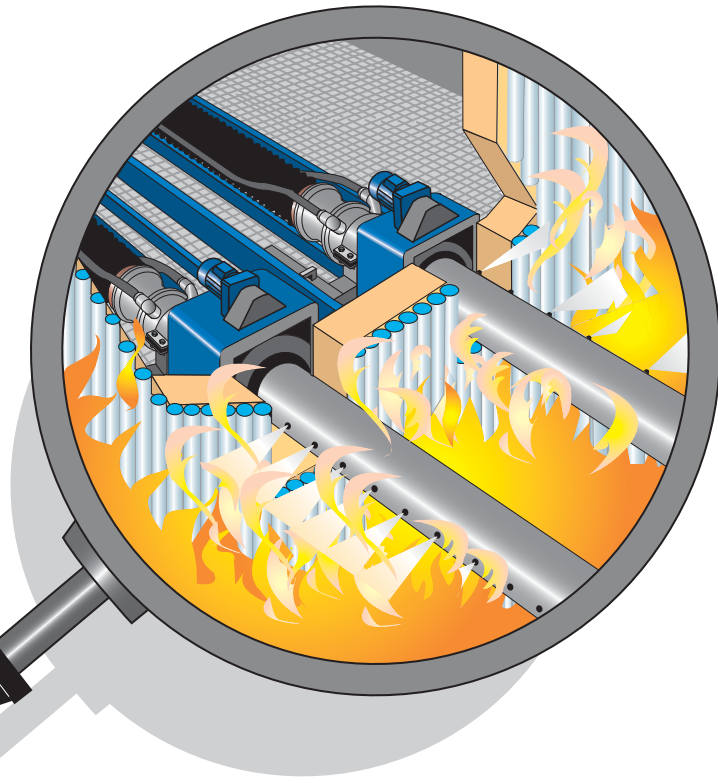


THE ECOTUBE[®] SYSTEM



- An innovative means of optimising combustion processes!
- A technique that generates unique economic advantages in terms of reduced emissions, operating and maintenance costs!

The Ecotube[®] system represents an innovative cost-effective optimisation tool for combustion processes and principally comprises retractable lances - Ecotubes - that are equipped with injection nozzles. Various agents can be introduced through the nozzles at high pressure and velocity into the furnace media. The Ecotubes are strategically positioned within the furnace enabling the injected agents to create a radically improved mixing of the combustion products, resulting in destruction of laminar gas columns and the formation of completely mixed turbulent flow patterns.

Ecotube® system advantages by comparison with other emission abatement techniques:

- Engineered for retrofit applications
- Lower plant operation costs
- Radically improved turbulence and mixing of combustion gases
- Reduced NO_x, CO, SO_x, HCl and particles in the flue gas
- Lower stoichiometric ratio (less excess air) in the furnace
- Increased thermal efficiency
- Increased load capacity
- Lower ID fan motor absorbed power
- Reduced boiler-wall metal corrosion
- Reduced erosion of boiler convective surfaces
- Minimum unit down time (3-4 days) needed for installation
- Lower maintenance costs
- No large ducts or furnace modifications required

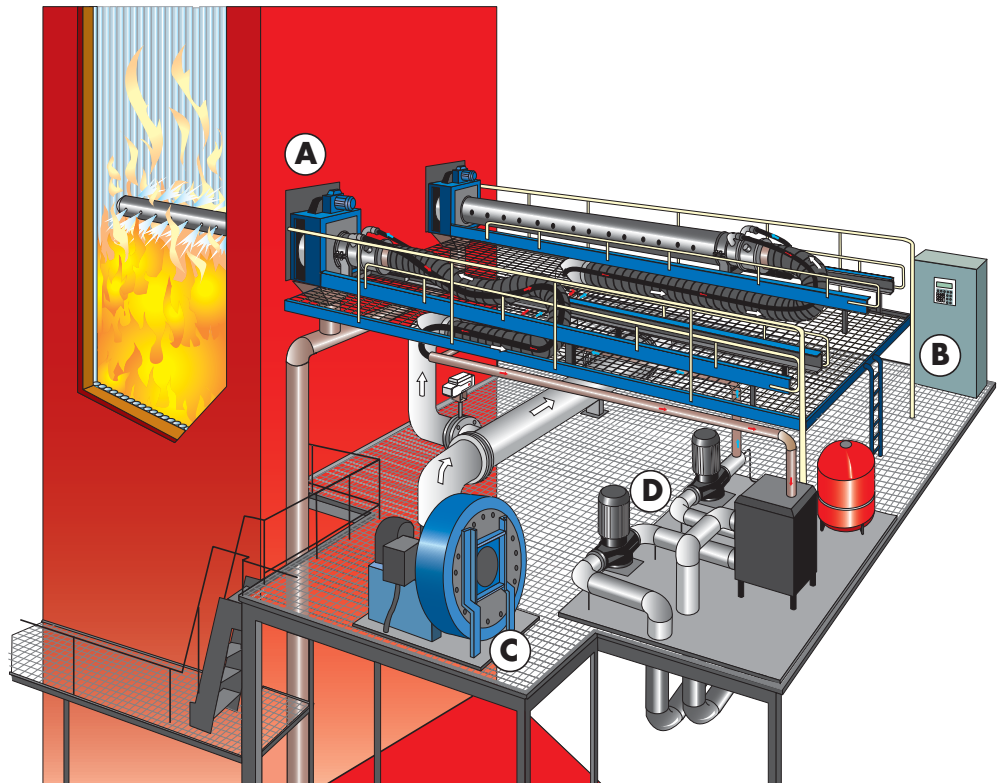
Four unique basic packages designed for every application:

- A Ecotube assemblies
- B Control system
- C Air supply system
- D Cooling water system



Each Ecotube is fitted with:

- transmission drive to insert and retract the Ecotube
- cleaning mechanism for automatic removal of furnace deposits from the Ecotube surface



A plc based monitor and control system enables unmanned automatic operation which is relayed to the regular control room for alarm and monitor functions.



A dedicated high pressure process air system comprising skid mounted fan, ductwork and adjustable Ecotube distributed nozzles provides the increased flue gas turbulence and mixing within the furnace.



The cooling water system which enables the Ecotubes to operate continuously within the furnace comprises a pump, a heat exchanger and auxiliary equipment. Extracted energy can be utilised for various purposes within the plant energy system.

