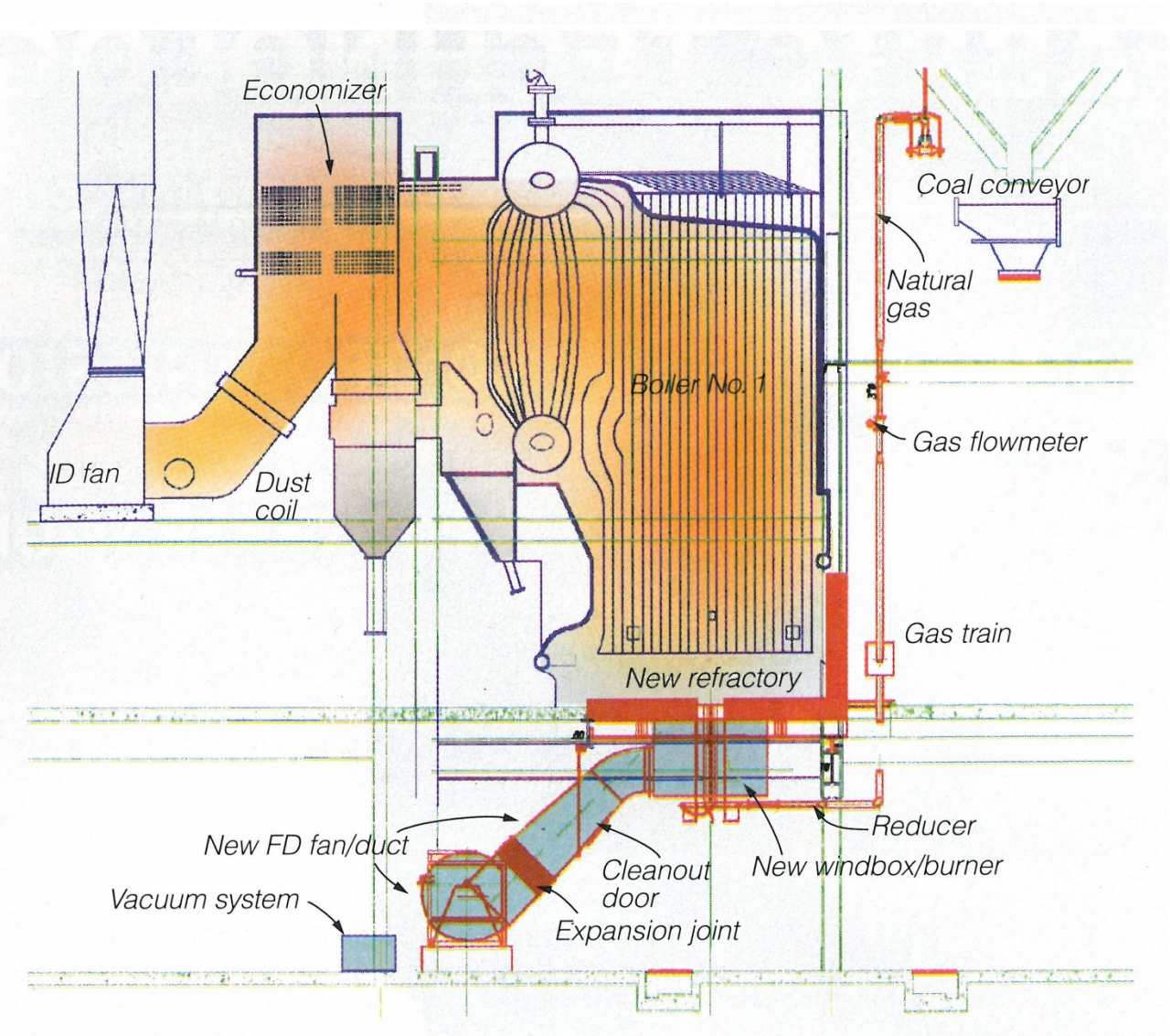
Why Convert Coal Fired Boilers to Vertically Up-Fired Natural Gas?



Lipten developed the vertical burner concept and has converted numerous boilers from coal to natural gas firing. Many facilities are upgrading their power plants by converting existing coal fired boilers to natural gas firing to:

- Eliminate coal storage problems. Future environmental requirements include provisions for contained storage systems for plant coal supplies in lieu of land-dumped storage.
- Eliminate operations and maintenance problems associated with coal handling.
- Eliminate operations, maintenance and environmental problems associated with ash handling.
- Improved operational flexibility. Stoker fired coal boilers typically have limited turndown capabilities.
- Improved boiler operating efficiency. Typically, coal-fired boilers operate with relatively high levels of excess air to ensure complete combustion. Further, since they operate with a balanced draft or slightly negative furnace pressure, there is usually a large quantity of "tramp air" infiltration into the furnace resulting in even higher excess air levels at the boiler outlet. (The furnace will still operate under a negative pressure after the conversion to gas; the difference is that most of the tramp air openings will be sealed with the conversion.) This excess air, not required for combustion of the fuel, is heated through the combustion process, with the heat lost as the flue gas exits the boiler stack. The net result, poor thermal efficiency.
- Reduced NOx, SO_2, CO and particulate emissions regulations. With the continued environmental focus on the reduction of emissions of nitrogen oxides (chemical compounds formed during the combustion of fossil fuels which react with volatile organic compounds and, in the presence of heat and sunlight, form ozone), many coal-fired plants are looking to convert to natural gas firing to meet future anticipated regulations. In addition, present and future emission requirements for coal-fired boilers include the addition or upgrading of backend cleanup equipment for reduction and control of particulate emissions. Baghouse, Precipitator, De-Noxing, and Scrubber systems are normally selected to reduce NOx, SO2 and particulate emissions, all of which have their positives and negatives with a major concern problem being reagent control, handling and disposal.

Advantages of the Vertically Fired Burner

- Optimum flame geometry for a specific furnace configuration
- Uniform heat flux throughout the furnace chamber
- Eliminate hot spots promoting improved water circulation patterns
- Increased boiler life
- Improved thermal efficiency
- Improved overall boiler performance
- Lower operating excess air levels
- Simplified operation and reduced maintenance costs
- No boiler vibrations
- Guaranteed zero flame impingement
- Significant reductions in NOx and Carbon Monoxide (CO) emissions

THE VERTICALLY FIRED BURNER UP CLOSE

Lipten's experience with Coal-to-Natural Gas Boiler Conversions generates superior efficiencies and ensures cost savings which are passed on to our clients. Our in-depth expertise in the integration of the required systems enables us to provide a cost effective, well-managed conversion; ensuring the functionality of the equipment and systems while avoiding schedule delays and cost overruns. Contact Lipten to discuss the conversion of coal boilers to natural gas vertical firing.