

Boilers

- ◆ Preheat combustion air with waste heat
(22 0C reduction in flue gas temperature increases boiler efficiency by 1%).
- ◆ Use variable speed drives on large boiler combustion air fans with variable flows.
- ◆ Burn wastes if permitted.
- ◆ Insulate exposed heated oil tanks.
- ◆ Clean burners, nozzles, strainers, etc.
- ◆ Inspect oil heaters for proper oil temperature.
- ◆ Close burner air and/or stack dampers when the burner is off to minimize heat loss up the stack.
- ◆ Improve oxygen trim control (e.g. -- limit excess air to less than 10% on clean fuels).
(5% reduction in excess air increases boiler efficiency by 1% or: 1% reduction of residual oxygen in stack gas increases boiler efficiency by 1%.)
- ◆ Automate/optimize boiler blowdown. Recover boiler blowdown heat.
- ◆ Use boiler blowdown to help warm the back-up boiler.
- ◆ Optimize deaerator venting.
- ◆ Inspect door gaskets.
- ◆ Inspect for scale and sediment on the water side (A 1 mm thick scale (deposit) on the water side could increase fuel consumption by 5 to 8%).
- ◆ Inspect for soot, flyash, and slag on the fire side (A 3 mm thick soot deposition on the heat transfer surface can cause an increase in fuel consumption to the tune of 2.5%.)
- ◆ Optimize boiler water treatment.
- ◆ Add an economizer to preheat boiler feedwater using exhaust heat.
- ◆ Recycle steam condensate.
- ◆ Study part-load characteristics and cycling costs to determine the most-efficient mode for operating multiple boilers.
- ◆ Consider multiple or modular boiler units instead of one or two large boilers.
- ◆ Establish a boiler efficiency-maintenance program. Start with an energy audit and follow-up, then make a boiler efficiency-maintenance program a part of your continuous energy management program.