

Economizers

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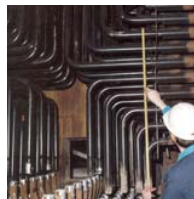
Economizers and [air heaters](#) perform a key function in providing high overall boiler thermal efficiency by recovering the low level (i.e. low temperature) energy from the flue gas before it is exhausted to the atmosphere.

For each 40F (22C) that the flue gas is cooled by an economizer or air heater in a conventional boiler, the overall boiler efficiency increases by approximately 1%. Economizers recover the energy by heating the boiler feedwater; air heaters heat the combustion air.

Air heating also enhances the combustion of many fuels and is critical for pulverized coal firing to dry the fuel and ensure stable ignition.

Economizers are basically tubular heat transfer surfaces used to preheat boiler feedwater before it enters the steam drum (recirculating units) or furnace surfaces (once-through units). The term economizer comes from early use of such heat exchangers to reduce operating costs or economize on fuel by recovering extra energy from the flue gas.

Economizers also reduce the potential of thermal shock and strong water temperature fluctuations as the feedwater enters the drum or waterwalls. The economizer is typically the last water-cooled heat transfer surface upstream of the air heater.



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