TIP SHEET:
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Heat Recovery Helps Your Bottom Line

In many boiler systems, the greatest single cause of heat loss is flue gas exiting through the stack. Reducing this loss is important to increase boiler system efficiency and reduce operating costs. The following are some of the heat recovery options available for boilers today:

A **boiler stack economizer** can reclaim BTUs from the combustion process and transfer them to the boiler feedwater. Utilizing these BTUs reduces the amount of heat energy required for the burner to raise the temperature of its fluid to the respective boiling point within a pressure vessel.

Based on a consistent firing rate, operating pressure and constant ambient temperature, a general rule is that for every 40 degrees the stack temperature is reduced, a full percentage point of fuel savings is gained. With the correct application, a stack economizer can increase a boiler's efficiency by 5 to 9% depending on feedwater conditions.

Stack economizers can be non-condensing or condensing. A single-stage condensing economizer saves fuel by capturing waste heat that would otherwise exit through the stack and using it to preheat virtually any cool liquid stream (e.g., make-up water, process water, hot water preheating). A single-stage economizer increases the amount of heat recovered by capturing both sensible and latent heat. The internal gas bypass can be used to maintain water temperature when too much heat is available.

A 2-stage condensing economizer captures heat through both a traditional stack economizer section and a condensing section. Both the single-stage and 2-stage condensing economizers condense only on natural gas. The single-stage economizer can be used for steam or hot water applications, whereas the 2-stage economizer is designed only for steam applications.

A flash tank economizer recovers heat and steam, which can then be recycled and used as is or used to heat new feedwater, thus saving fuel and money. This system can pay for itself within a few months with fuel savings resulting from recycled heat that would otherwise be wasted through exhaust.

A blowdown heat recovery system recovers up to 90% of heat typically lost to blowdown. Blowdown is necessary for proper boiler maintenance; however, energy is lost every time it's done.

Continuous boiler surface blowdown heat recovery (BDHR) is the most effective method of purging destructive solids from any steam boiler system. It also recovers heat from high-temperature blowdown and transfers it to the incoming cold make-up water to maximize boiler efficiency. A blowdown heat recovery system will typically result in a payback within a few months due to fuel savings. Blowdown heat recovery units are available for boilers of all sizes, including multiple boilers.

To learn how to integrate heat recovery into your boiler system, contact your local Cleaver-Brooks representative or visit cleaverbrooks.com.