



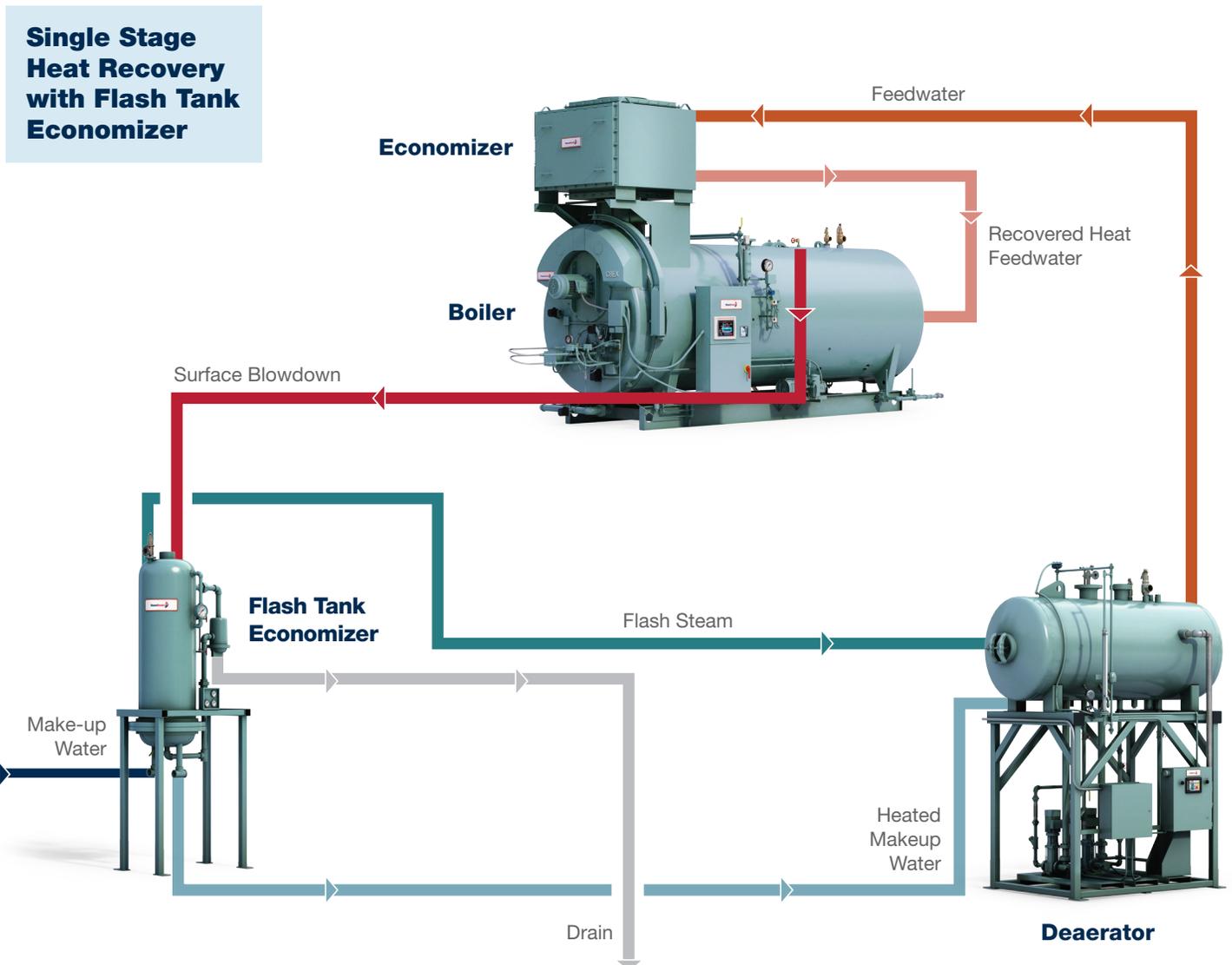
# HEAT RECOVERY

Reduced Energy Costs, Reduced  
Environmental Impact

# Heat Recovery integrated into your system

Cleaver-Brooks is the leading provider of complete boiler room solutions, including heat recovery. Our heat recovery products reduce energy costs and environmental impact by recovering waste heat or steam and using it for other system applications. This in turn helps your boiler system components work together to increase the life and overall efficiency of the entire boiler system. A fully integrated system incorporates the Cleaver-Brooks Hawk Control to monitor and control every aspect of your boiler system, including heat recovery.

From the initial fuel inlet to the stack outlet, Cleaver-Brooks can fully design, engineer, manufacture, and integrate every detail of a boiler feed system. When you're looking for a quality boiler system with the lowest emissions and highest efficiencies, you're looking for Cleaver-Brooks.





# Condensing Economizer

Designed to reduce fuel use and costs by recovering heat from flue gases, that would otherwise be wasted, to preheat boiler feedwater. Cleaver-Brooks economizers are easily integrated to fit your boiler system, and each is built to our high standards. Three model configurations offer design flexibility to meet any application.

## C2X-HE

New exclusive technology providing maximum heat recovery. Efficiencies up to 94% can be achieved depending on boiler firing rate, makeup or process flow and temperature. The first in the industry to achieve such performance.

### Features

- Available for 100 – 800 HP Boilers
- Two-Stage Condensing
- Ideal for High-Percentage makeup water or separate hot water applications.
- Compact and light-weight design.
- Heat exchanger is easily accessible.



C2X-HE



# C2X Economizer

The C2X 2-stage condensing economizer captures heat through both a traditional stack economizer section and a condensing section. It can be utilized on boilers up to 2,200 HP. The lower section recovers energy by preheating boiler feedwater. The upper section preheats cool liquid streams, such as make-up water, process water or hot water preheating.

## Features

- For steam applications
- Separate upper and lower coils allow heating of two completely separate liquid streams without cross-contamination
- Tube core assemblies are individually removable tubes with aluminum fins (Al-Fuse), and are located behind hinged stainless steel doors for easy maintenance and tube replacement
- Exhaust gas bypass, interior shell, condensate drain, transition connections and all gas-side surfaces are 316 stainless steel to eliminate corrosion
- Condenses on natural gas only



C2X Economizer

# C1X Economizer

The C1X single-stage condensing economizer saves fuel by preheating virtually any cool liquid stream (make-up water, process water, hot water preheating) by capturing waste heat from a boiler stack. It 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.

## Features

- For steam or hot water applications
- 316 stainless steel exhaust gas bypass, interior shell, condensate drain, and transition connections
- Condenses on natural gas only

# Stack Economizer

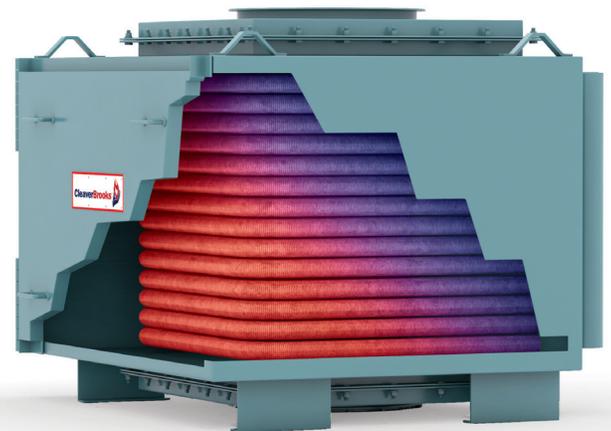
Designed to reduce fuel use and costs by recovering heat from flue gases, that would otherwise be wasted, to preheat boiler feedwater. Cleaver-Brooks economizers are easily integrated to fit your boiler system, and each is built to our high standards. Two model configurations offer design flexibility to meet any application. Either can utilize various heat exchange material options.

## CRE Economizer

The CRE rectangular non-condensing economizer can be utilized on boilers up to 2,200 HP for boiler feedwater, make-up water, hot water or process applications. Multiple size options are available to optimize space constraints while maximizing heat recovery.

### CRE Features

- Individually removable finned tubes for easy maintenance and tube replacement
- Mounting during installation requires no pressure vessel welds within the shell
- Hinged stainless steel access doors
- Stainless steel internal exhaust gas bypass
- Accommodates all boiler design pressures
- Built-in bypass damper for flue gas temperature control
- ASME “UM” stamp standard, “U” stamp or “CRN” stamp are optional



*CRE Economizer*

## CCE Economizer

The CCE cylindrical non-condensing economizer can be utilized on boilers up to 250 HP for boiler feedwater, makeup water, hot water, or process water applications. Compact/lightweight design fits space constraints while maximizing heat recovery.

### CCE Features

- Compact and lightweight
- High-performance BTU recovery
- Hinged stainless steel access doors
- Stainless steel internal exhaust gas bypass
- ASME construction ensures high-quality design and manufacturing standards



*CCE Economizer*

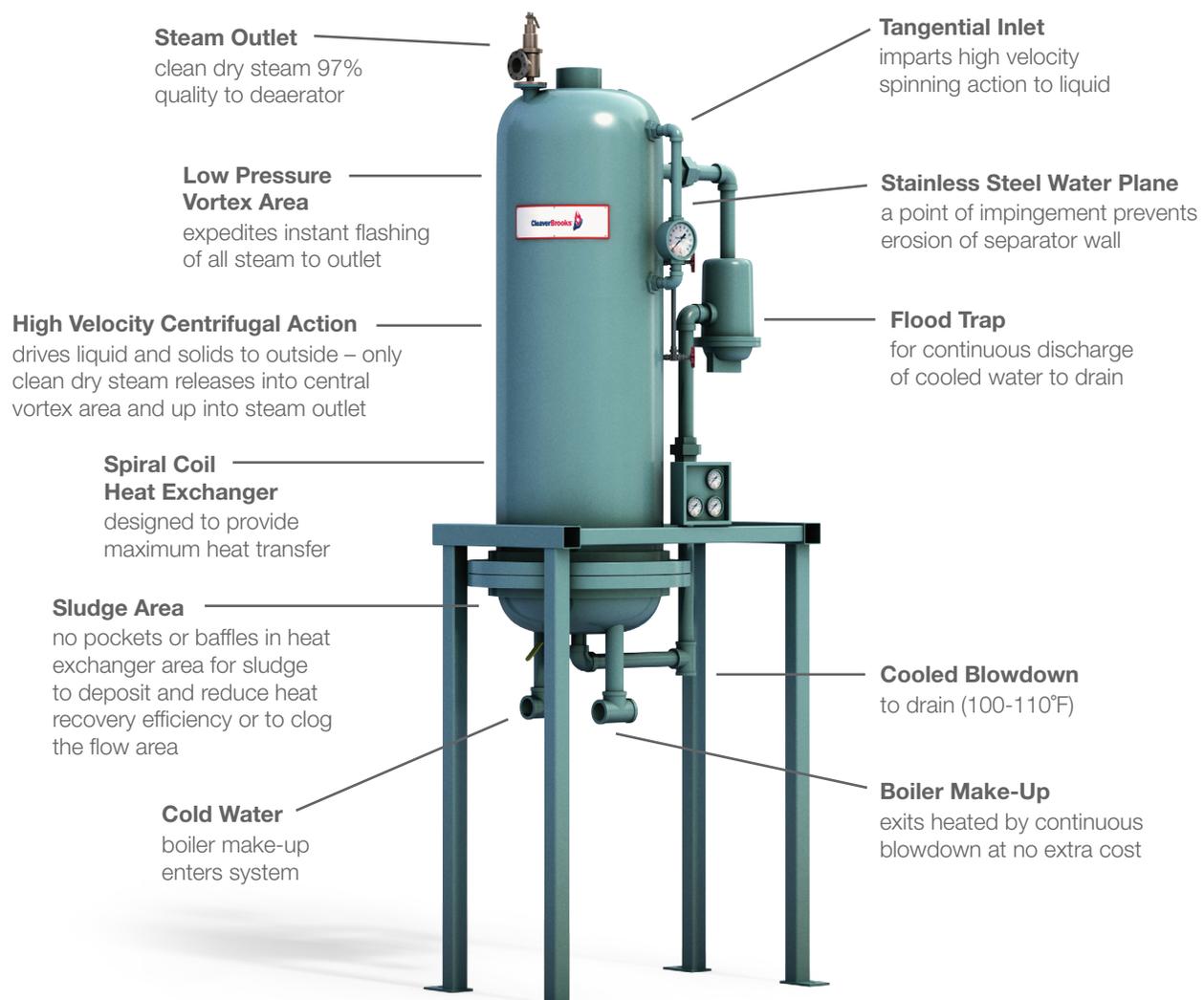


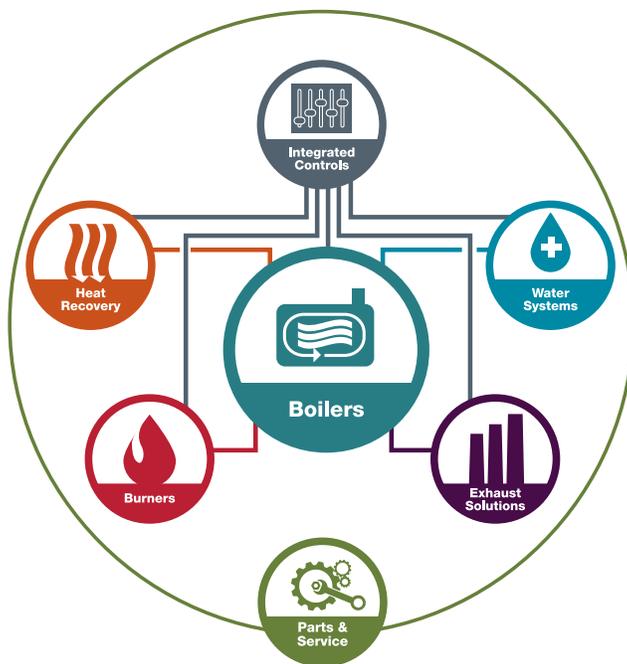
# Flash Tank Heat Recovery

The Cleaver-Brooks AHR flash tank economizer recovers heat and steam, which can then be recycled to be used as-is or used to heat new feedwater, thus saving fuel and money. This system quickly pays for itself with fuel savings resulting from recycled heat that would otherwise be wasted through exhaust. Our flash tank is a coil-type, flash tank heat exchanger. It is a compact, low-cost alternative to the shell-and-tube design.

## Features

- Heat recovered as flashed steam
- Efficient baffling separates the dirty blowdown water from the clean steam
- Transfers the remaining heat normally lost during blowdown to the cold makeup water as it flows to the feedwater heater
- ASME-approved and stamped flash tank and a blowdown heat exchanger





## The Power of Total Integration goes beyond heat recovery.

For more than 80 years, Cleaver-Brooks has built a reputation for innovation in the boiler solutions industry. We remain committed to introducing technology and products that enable a more energy-efficient and environmentally friendly generation of steam and hot water.

When you come to us for a fully integrated heat recovery solution, you can know that each element is created to the highest standards and all will work seamlessly together to give you a highly efficient and reliable solution for protecting your boiler system. To learn more, please call us at 1-800-250-5883 or visit us online at [cleaverbrooks.com](http://cleaverbrooks.com).



221 Law Street Thomasville GA 31792  
414-359-0600 · [info@cleaverbrooks.com](mailto:info@cleaverbrooks.com)  
[cleaverbrooks.com/heatrecovery](http://cleaverbrooks.com/heatrecovery)