

FIN COIL RECOVERY SERIES

The FCR is a custom-designed heat exchanger which can be applied in confined areas, and is offered in stainless steel, carbon steel, or AL-FUSE™ finned tubing. Design flexibility allows specific engineering requirements to be met such as fin spacing for fouling conditions and low gas pressure drops.

COMBUSTION SOURCES

Steam boilers, hot water boilers, hot oil heaters, combustion sources with round stack diameters 4"-36" and a maximum liquid flow rate of 50 gpm.

FEATURES

- Internal thermal expansion design
- Cylindrical heat transfer coil(s) design
- Mounting flanges for bolting to mating flanges
- Quick release tension latches
- Stainless steel internal bypass
- Condensate drain catch ring assembly
- Hinged stainless steel access door panels

**Custom designed
to meet space and
performance
demands**



**FCR shown with
optional sootblower
assembly**

OPTIONAL EQUIPMENT

- Exclusive manual or timed automatic ring-type sootblower assembly
- Stack corrosion control assembly including temperature-regulated modulating exhaust gas bypass and remote indicators
- Circulating pump kit to maintain desired liquid flow rate
- Vertical pressurized storage tank, to create a "bulge" or temporary heat sink in the event of no-water-flow conditions
- Feedwater preheater corrosion control assembly designed to maintain the desired water inlet temperature to the economizer - preventing cold-end corrosion at the heat transfer surface



WASTE WATER TREATMENT PLANT, Fond du Lac, Wisconsin
(2) FCR-1J2D25ALS each recovering Btu from (2) 150 BHP steam boilers; Reducing 700°F @ 1603 SCFM to 246°F; Raising 18 gpm boiler feedwater entering at 100°F to 201°F.

Boiler Exhaust Application

- Capacity: 50 – 10,000 SCFM
- Entering gas temps: to 1,400°F
- Heat sink types: Boiler feedwater, makeup water, process water, potable water, thermal fluids, run-around systems

FCR: SPECIFICATION

A general specification, shown as a guide for design & construction. (see *Engineering Sales Manual* for detailed specification data sheets)

1.0 General Design:

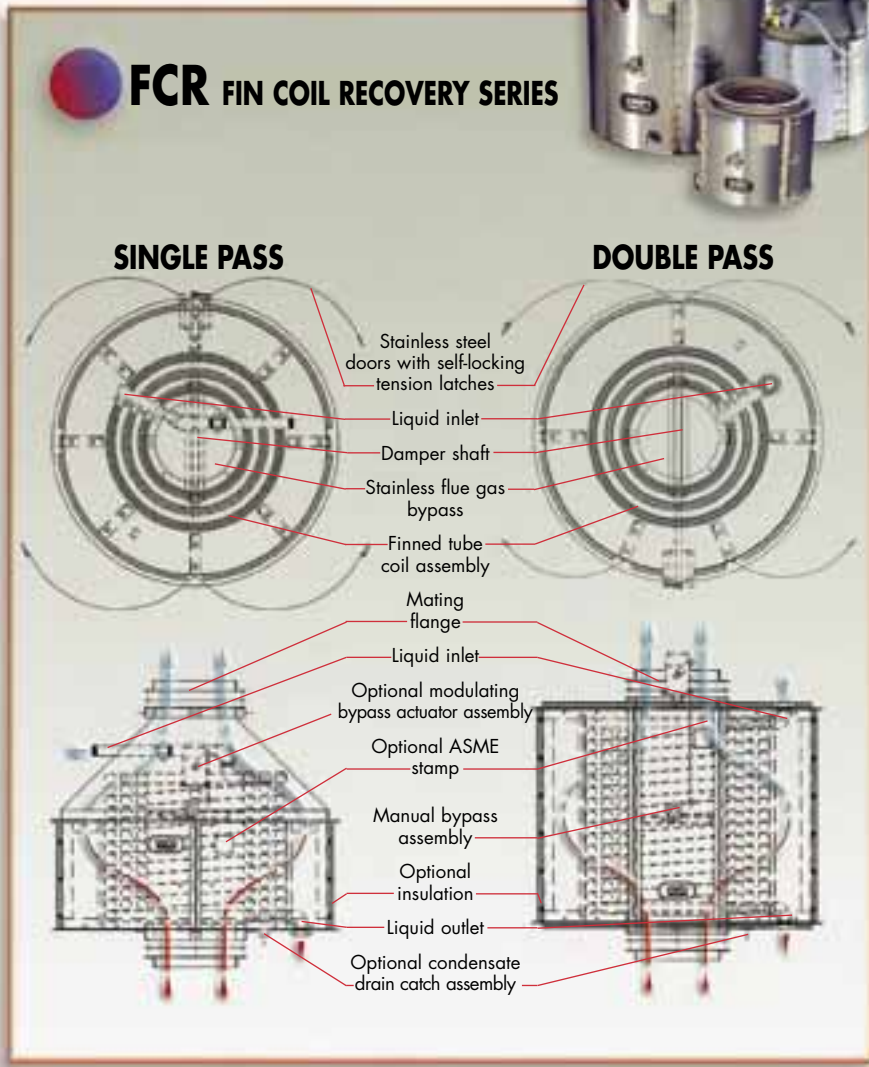
- 1.1 Furnish and install economizers on each of the combustion sources (boilers, hot water heaters, hot oil heater, fume incinerator, etc.) as designed and manufactured by Cain Industries, Inc.
- 1.2 The Economizer shall be a light weight design for easier installation, cylindrical with counterflow heat transfer design manufactured and tested in accordance with the requirements of Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code, and is stamped to a minimum 250 PSIG design pressure.
- 1.3 Each Economizer shall be designed to include as standard, a stainless steel, internal, Flue Gas Bypass Diverter to provide for full emergency by-pass, requiring no additional ductwork for controlling:
 1. Stack corrosion, 2. Turn down performance, 3. Back pressure.
- 1.4 Each Economizer shall have continuous hinged, gas-tight, stainless steel inspection panels, which provide for complete access to the entire heating surface for inspection and/or cleaning. The inspection panels shall be secured by adjustable, quick release tension latches and no tools shall be required for the opening of the inspection panels.
- 1.5 Heat Recovery unit shall be either a single, multiple, or parallel coil design and must be completely drainable when mounted vertically.
- 1.6 Header manifolds where used shall be SA53 GrB schedule 80 or SA105, connections shall be screwed or flanged as specified.
- 1.7 Exterior surfaces other than stainless steel shall be primed and painted with a high temperature metallic paint rated for 1000°F.

2.0 Construction:

- 2.1 Design Pressure (water side): 250 PSIG @650°F.; Test Pressure: 375 PSIG; Max. Flue Gas Inlet Temperature: (see below); Design Pressure (exhaust side): 10 inches water column
- 2.2 Tube & Fin Designs:
 - SA178GrA ERW x 1.0" OD x .085" wall thks with carbon steel .030 Fin thks x .50 Hgt Nickel Brazed/welded to the tube. (Max. Flue Gas Inlet Temperature: 1250°F)
 - TP316L x 1.0" OD x .065" wall thks. with aluminum .020 fin thks x .50 hgt AL-FUSE™ bonded to the tube. (Max. Flue Gas Inlet Temperature: 750°F)
 - TP316L x 1.0" OD x .065" wall thks. with 304 stainless steel .020 Fin thks x .50 Hgt Nickel Brazed/welded to the tube. (Max. Flue Gas Inlet Temperature: 1800°F)
- 2.3 Headers: thickness: Sch 80; material: SA53 GrA and/or 2000# Forged Steel
- 2.4 Exterior surfaces shall be 10ga. A36 Carbon Steel seam welded and the inner casing shall be 304 stainless steel.

3.0 Optional System Component Equipment:

(see *Engineering Sales Manual* for optional equipment specifications)



PRINTING FACILITY, Lomira, Wisconsin
 (2) Model: FCR-1L2C16ALS each Recovering Btu from a 500 BHP steam boiler; Reducing 400°F @ 4205 SCFM to 252; Raising 34.5 gpm boiler feedwater entering at 120°F to 164°F.

BEFORE AND AFTER

A Cain Industries FCR boiler economizer can often be installed in-line with your existing stack, resulting in a relatively quick and cost-efficient installation process with minimal retrofitting, labor, materials and down time. Generally, because of their lighter weight and smaller size, the FCR requires little, if any, additional support (usually suspended from the ceiling). In applications where additional support is required, Cain Industries can offer a structural support stand. Economical in-line installation - another Cain Advantage.

