



**Armstrong<sup>®</sup>**

**ARMSTRONG  
BOILER AIR PREHEATING**

TOTAL INTELLIGENT SYSTEM SOLUTIONS

## Quality Construction

### “Designed to Perform & Built to Last”

Armstrong Preheat Coils outlast thin-finned and thin-walled lightweights because of superior engineering and robust construction. Thicker tube walls and fins provide greater resistance to coil damage and wear from high pressures, temperatures and corrosive conditions.

#### Armstrong’s Typical Heavy Duty Air Heater Specifications:

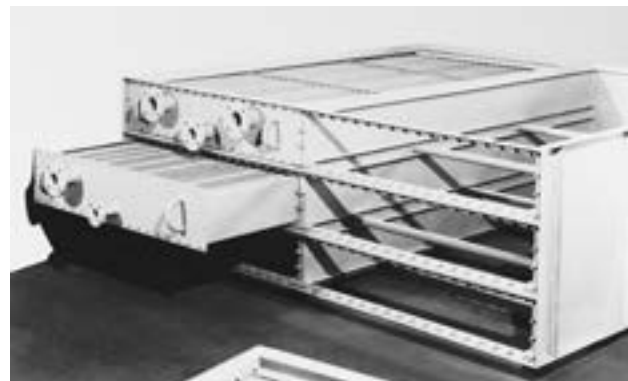
- Fins - Keyfin - Embedded, Spiral Wound Aluminum or Copper
- Fin Thickness - Minimum 0.020” thickness or optional 0.030” Heavy Keyfin
- Tubes - 1” OD x 12 Ga Carbon Steel or 14 Ga St.Stl. (1-1/2” OD Available)
- Inner Tubes - 1/2” - 7/8” OD Carbon or St. Steel (no perforations or holes)
- Headers - Heavy Wall (Carbon Steel or St.Steel) Fabricated
- Tube/Header Joints - All Welded - Multi-Pass Full Penetration
- Tube Sheets - NC Machined, and Chamfered Tube Holes - Heavy Gauge
- Mono-Metallic Construction on all wetted parts reducing potential for galvanic corrosion
- Coil Casings - Min 14ga or 12 Ga Galvanized Steel or St. Steel
- Outer Casings - Drawer Type Construction with Airtight Outer Casings for ease of coil removal or replacement
- Cleanout/Inspection/Access Spacer Sections - Available on request
- Inlet/Outlet Transitions - Per Specification
- Pre-Piped Options - On Application
- Extended Warranties - Available on Application
- Design and Construction in Accordance with ASME SECTION VIII Div. 1. (All Armstrong 6000 Series Coils are built to this standard whether or not ASME is required - unlike other manufacturers).
- U Stamp Available on request
- Special Materials and Coatings available on request
- Manufacturing done in Armstrong factories, not subcontracted. Armstrong controls all QA/QC in-house.

Whether you need a standard replacement coil or custom-built unit, you’ll get the same built-in quality. During construction each section of the coil is checked for compliance with detailed, written QA/QC procedures available for your review. And, finally the complete coil is tested hydrostatically to ASME standards.

Armstrong offers total steam expertise and manufacturing capability that can help you identify and solve coil problems. In addition, Armstrong’s steam system package approach is a blueprint for blending superior products, knowledge and judgment into plans for effective energy management and pinpointing Heat Rate improvements.



Full Systems with Transitions

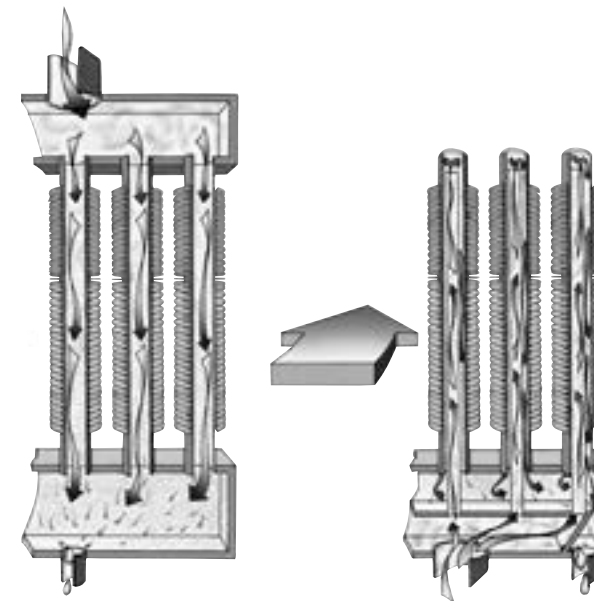


Drawer Type Air Preheat Coils

#### Solutions Through Experience.

For power, energy-from-waste and large industrial plants, producing electricity, generating steam, energy efficiency, air preheating and protection of important heat transfer equipment and systems, go hand in hand. Coordinating design and performance of various system components requires a review of the entire energy usage loop from turbine extraction, through air preheating, to condensate collection, return, and re-use of available flash energy and hot condensate.

Armstrong is also the only global manufacturer with the ability to supply key system components including steam supply control valves, heavy duty coils, condensate trapping, venting collection and return systems as well as flow measurement from the same corporate sourcing! This makes Armstrong your one-stop solution source!



Specialized Coil Designs



“KEYFIN” (embedded) Fin Tube

Combustion and boiler air preheating is no longer just a simple need to heat air to prevent dew point issues on tubular or regenerative air pre-heater surfaces. The advent of SCR’s, SNCR’s, WET/DRY SCRUBBERS – FGD’S, BAGHOUSE UPGRADES, AND STACK GAS REHEATING, have positioned the steam or fluid coil air pre-heater as a key component to the overall combustion efficiency and equipment life extension planning.

For more than a century, Armstrong has been synonymous with steam system innovation and solutions. Armstrong understands efficient generation and effective use of steam throughout the power/utility, energy-from-waste, large industrial boiler operations, from Coal/Fossil/Waste fired, through Biomass, Hog Fuels, Black Liquor Recovery (B.L.R.B.) and Fluid Bed designs to packaged fire tube boiler requirements.

Combustion air preheating heat source options we work with include, extraction or auxiliary steam source, thermal oils, glycol or hot water (from d/a etc.).

Armstrong leads the industry in rugged, robust coil designs that extend life of equipment and reduce downtime and lost energy production hours. With reduced staffing in most facilities, you can relax and focus on your base operations and be assured that the systems we provide will deliver years of continuous, optimized performance.

#### Armstrong partners are air preheat and coil system specialists.

Combine our combustion air preheat coil-building know-how with the expertise of a decades-old steam specialist and what do you get? Preheat coils specifically designed for the rigors of power plant applications.

#### Armstrong: The power to improve on every energy front.

Why add Armstrong to your energy team? Our applications expertise in the key areas of combustion air preheating and efficient use of extraction steam and flash recovery is well documented. Our steam trapping and condensate recovery/handling knowledge in both saturated and superheated steam applications extends over 100 years. Even your HVAC, plant heating/cooling and hot water requirements are within the scope of the products and services from Armstrong.

#### Armstrong is a problem solver.

At Armstrong, we consider the entire system. We don’t simply duplicate the coils within it. Flexibility—in material, engineering and construction—is the key to Armstrong’s problem-solving. We carefully match coil characteristics to specific applications, on a case-by-case basis.



**Pre-piped/Package Air Preheater Coil System**

**The Armstrong Custom Designed Pre-piped/Package Air Preheater shown above included:**

**Outer casing:** ¼” carbon steel plate with ¼” carbon steel structural and coil supports. Designed in sections to fit through overhead door and down narrow aisle ways. Flanged and drilled to match existing duct to bolt together on site. Capped cleaning ports for inline high pressure water wash down of the coil face. Flanged capped low point drains with piping extended to front casing drains wash down water from casing.

**Coils:** Banks designed to minimize APD,, maximize LAT, cleanability and system life. Removable draw-type coils of Heavy .036 carbon steel “L” fin, 4 FPI on 1 NPS Sch 40 A-106B pipe. All Welded Construction with ANSI 300 RFSO Flanged Same End connections, 300 psig @ 600 F, Hydro tested to 500 psig, ASME Section VIII, div 1, “U” Stamped.

**Prepiped Steam Supply:** Steam supply piping to each individual steam coil. All welded to ASME code standards, ANSI Class 300 Flanged coil connections, All fittings slip on or butt weld per facility spec, All bolting and Gaskets per facility spec.

**Prepiped Condensate skid:** Armstrong TVS (Trap Valve Station) Inverted Bucket Steam Trap set for each individual steam coil. Armstrong TTF Stainless Steel Steam Air Vents for steam coils, Armstrong 11-AV Vent for liquid coils. All fittings socket weld per facility spec. with exception of NPT equipment. All bolting and Gaskets per facility spec. Piping support brackets for field mounting of skid, Condensate Headers prepiped with connections to Bank 1 Condensate (liquid) Coils,

**You can depend on Armstrong for custom engineering and quality construction.**

Coil problem: Armstrong solution. We can manufacture coils in a range of sizes and in a variety of metals and alloys, including steel, stainless steel, copper, copper-alloy and other metals. A blend of custom engineering and quality construction results in an extended life cycle for your combustion air or process system coil/service package with a focus on heat rate improvement for power generation applications.

Armstrong has a complete range of service options. Specialists from Armstrong can visit your location for walkthroughs and follow up with comprehensive system assessments. While there may be more than one course of action for you, we will recommend and—if you choose—implement the one(s) that will deliver the greatest benefit.

Although the cost of fuels fluctuates, Armstrong can help you use it more efficiently. Our experience and total coil air preheating system capability can be the beginning of your transition from necessary parasitic load preheating to maximizing your combustion air preheating system’s effect on improving overall system efficiency and reliability.

**CONTACT US TODAY!**



**Heavy Duty Steam and Fluid Unit Heaters & Door Heaters**



**Flo-Rite-Temp Instantaneous Water Heater**



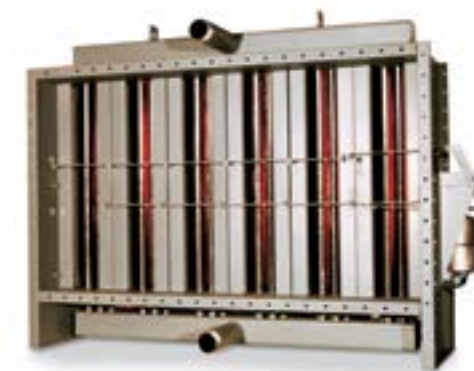
**Condensate Recovery Systems**



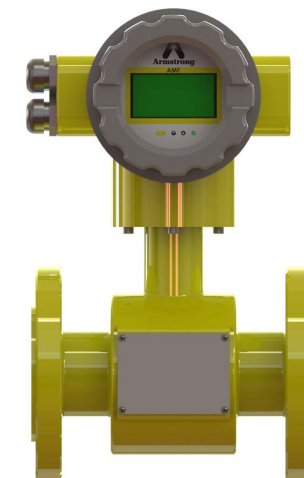
**VERIS Accelabar® Flow Measurement Steam, Liquid, Gas**



**VERIS Verabar® Flow Measurement Steam, Liquid, Gas**

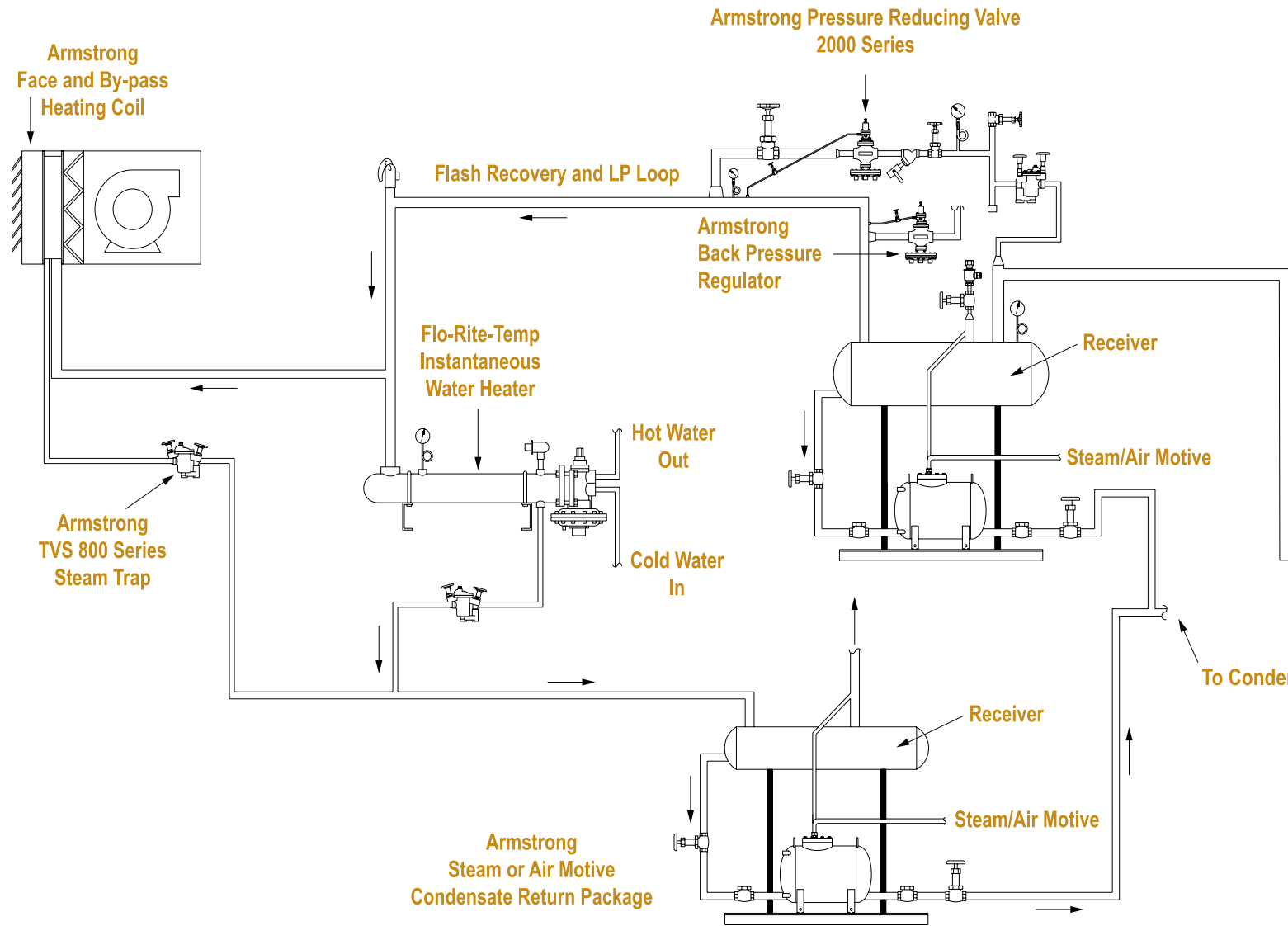


**Heavy Duty Face & Bypass Steam Coil Pre-Heating Systems**

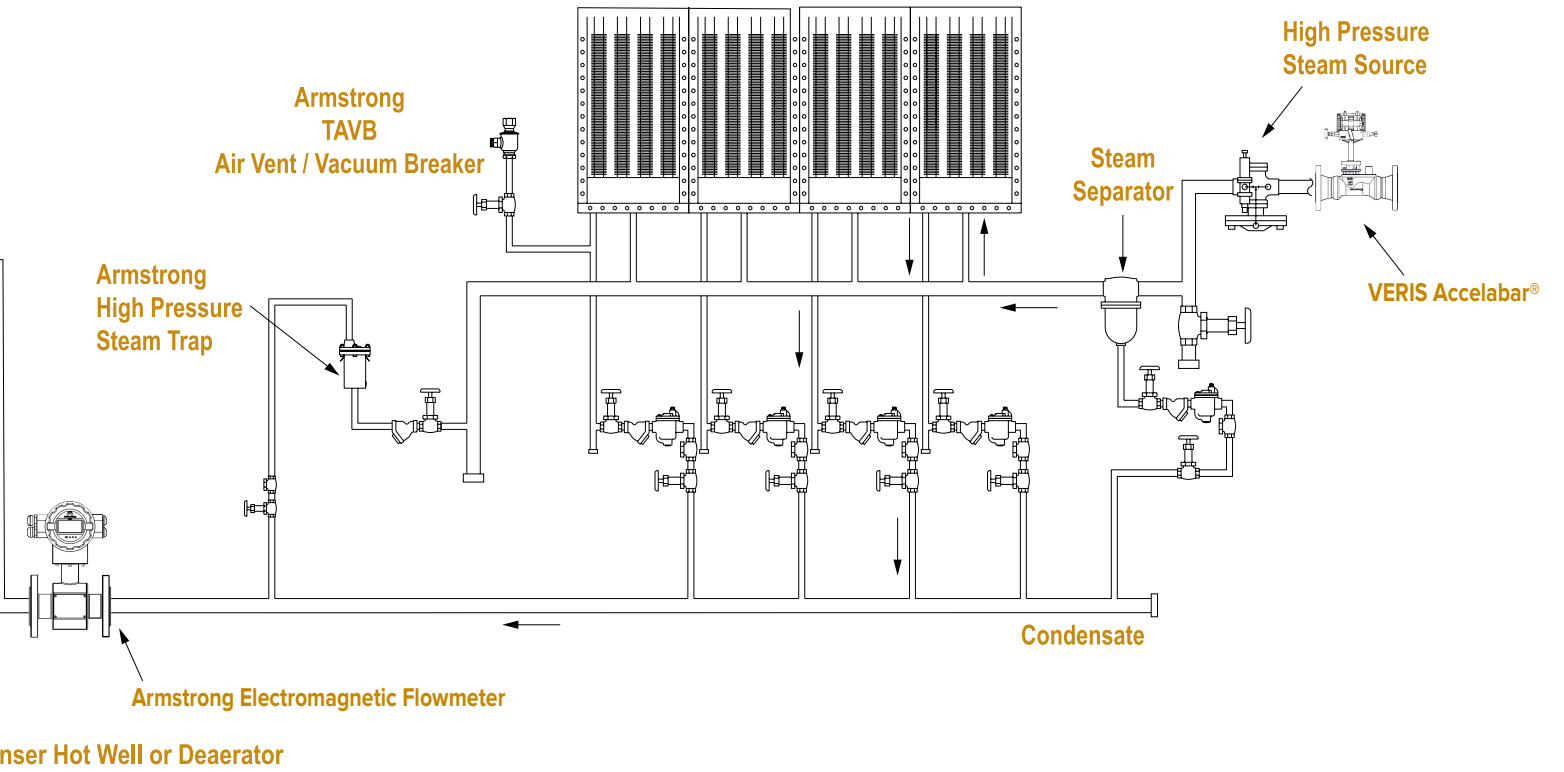


**Armstrong Electromagnetic Flow Meter**

## Auxiliary Use of Flash Steam Recovery from Boiler Air Preheating



## Boiler Air Preheating Best Practices - Piping, Drainage, Venting



**If you are NOT following Best Practices, you may not be getting the Most out of your Air Preheating System!**



INTELLIGENT SOLUTIONS IN STEAM, AIR AND HOT WATER

**Armstrong Heat Transfer Group**

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