Bulletin AHTG-170-A

Armstrong Steam System Solutions for Combustion Air and Heat Rate Improvement

Solutions Through Experience

Energy efficiency and heat rate in the power industry go hand in hand. With insight born of necessity, companies are beginning to grasp that energy conservation is an interrelated network of tasks. A matter of coordinating the performance of various components functioning within a total steam system.

Armstrong understands:
- Heat Transfer
- Steam Supply & Condensate Return Systems
- Steam System Optimization
- Energy Management Efficiency
- Design & manufacturing of reliable combusion air preheating coil systems.

Armstrong's Heat Transfer Group has:
- 50 plus years of experience in manufacturing coils
- 100 years of expertise in providing steam trapping, air venting, and condensate drainage solutions.

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.

Although the cost of fossil fuels fluctuates, Armstrong can help you use it more efficiently. Our experience and total coil air preheating capability can be the beginning of your transition from simple energy consumption to maximizing your boiler combustion preheat system's effect on improving heat rate.

Armstrong®
Intelligent System Solutions™
STEAM • AIR • HOT WATER

Armstrong Steam System Solutions

Steam Air Preheat Coil System Specialists

Unifying all the parts of the Armstrong steam coil package is the solid experience of steam specialization. For nearly three-quarters of a century Armstrong has solved virtually every imaginable problem in steam trapping. In the process we've amassed a substantial body of knowledge. Even if you are not utilizing steam traps, or properly trapping or draining your air preheat system, we can help by applying our knowledge. **Today, our combustion air preheat coil-building experience merges with the expertise which has made Armstrong steam specialists for decades.** Practical knowledge and technical know-how accumulated in years of trapping steam coils complement custom engineering and manufacturing capability. **Review of critical energy savings opportunities and heat rate improvements utilizing flash steam from high pressure air preheat system condensate is also our specialty. The result? Preheat coils specifically designed for the rigors of power plant applications.** Whatever the individual need, depend on Armstrong's quality, versatility and manufacturing experience to fill it.

Problem Solvers

Many manufacturers offer steam coil solutions. But, to many of them problem solving means installing a less then Best-In-Class replacement, resulting in an ineffective, or reduced life-cycle coil.

Armstrong considers the entire system, not just simply duplicating the coils within it. Often the tubes and fins of coils available to the power industry today are of commercial grade, not built **in accordance with ASME Section VIII, Div. 1 design and welding guidelines** and are constructed of relatively light weight material unless specifically upgraded by the power/utility plant end user. Fins may be easily damaged, and the tubes and tube-to-header joints fail due to fluctuating high pressures, superheat and corrosive atmospheric conditions. Replacement with another unsuitable, light duty coil merely renews the purchase-fail-blank/replace routine.

Flexibility - in material, engineering and construction **is the key to Armstrong's problem solving. We understand that every industry has its own problems. That's why we carefully match coil characteristics to specific applications. Often coils fail due to improper installation and condensate drainage. Armstrong is the only coil manufacturer with the knowledge and experience to evaluate these factors as essential parts of problem identification and solutions. We're experts at proper installation, trapping, air venting and vacuum relief. Our steam expertise is the key to identifying and solving your coil problems. And it's why only Armstrong provides quality steam coils - plus the installation and trapping guidance and assistance to maximize their efficiency in your total system.**

Custom Engineering

Just as broad knowledge and experience aid in identifying problems, the versatility to custom engineer coils helps to solve them. Replacement with **Armstrong combustion air preheat coils can save you money because the company meets your special needs with custom heat transfer equipment designed specifically for your individual application.** Preheat coils can be dimensionally duplicated to meet your exact requirements.

Full-service flexibility also means **Armstrong can manufacture coils in a wide range of sizes and in a variety of metals and alloys, including steel, stainless steel, copper, copper-alloy and other metals. Armstrong** provides complete technical and design services for extended surface heat transfer equipment and **welcomes the opportunity to provide advice in the early planning stages of customers' projects.**

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 standard pre-heat coils include:

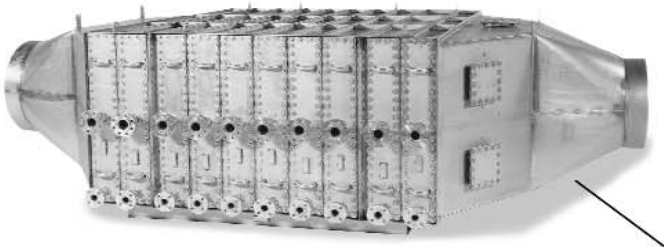
- Fins - spiral wound aluminum Keyfin (embedded) 0.020" min. thickness
- Tubes - 1" OD 12 ga. steel (A-214 ERW)
- Headers - Heavy Wall
- Mono-metallic construction in all wetted parts, reducing the probability of galvanic corrosion.
- Coil Casings - Min. 14 or 12 ga. Galvanized Steel or Stainless Steel
- Outer Casings - Drawer Type Construction with Airtight Outer Casings for ease of coil removal or field replacement.
- Design and Construction in accordance with ASME Section VIII Div. I. **All Armstrong coils are built to this standard whether required or not** (unlike many other manufacturers)
- U Stamp available on request.
- Special materials, and coatings also available

Whether you need a standard replacement coil or custom-built unit, you'll get the same built-in quality.

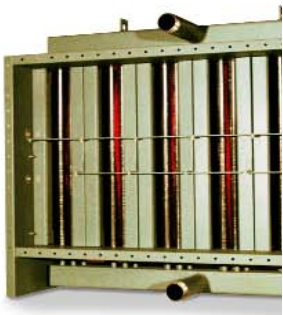
During construction each section of the coil is checked for compliance with detailed, written QA/QC procedures available for your review. And, finally the complete coil is tested hydrostatically to ASME standards.

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.

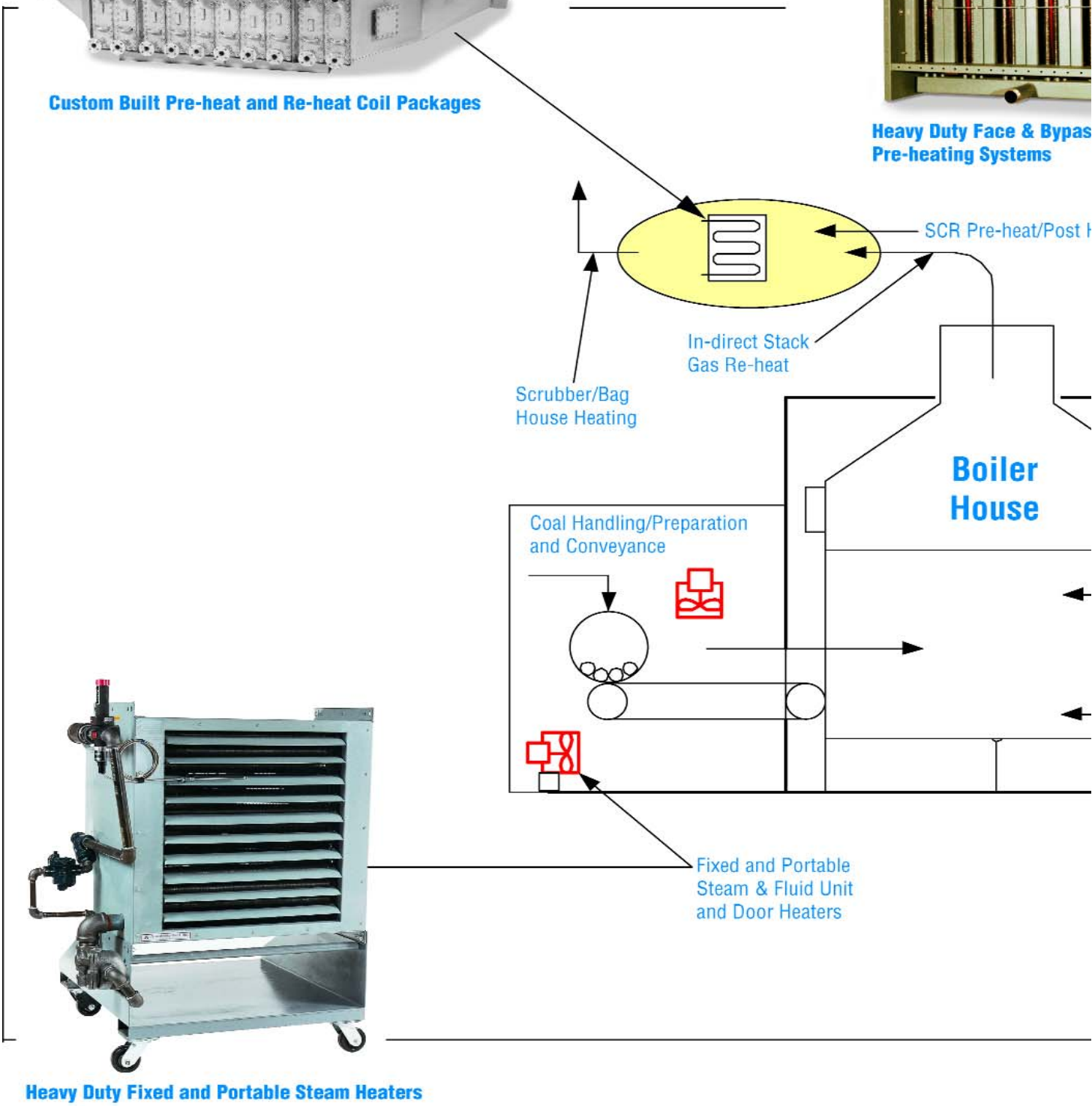
Armstrong's Heat Transfer Products and Services Meets Power Industry's Needs



Custom Built Pre-heat and Re-heat Coil Packages



Heavy Duty Face & Bypas
Pre-heating Systems



Heavy Duty Fixed and Portable Steam Heaters

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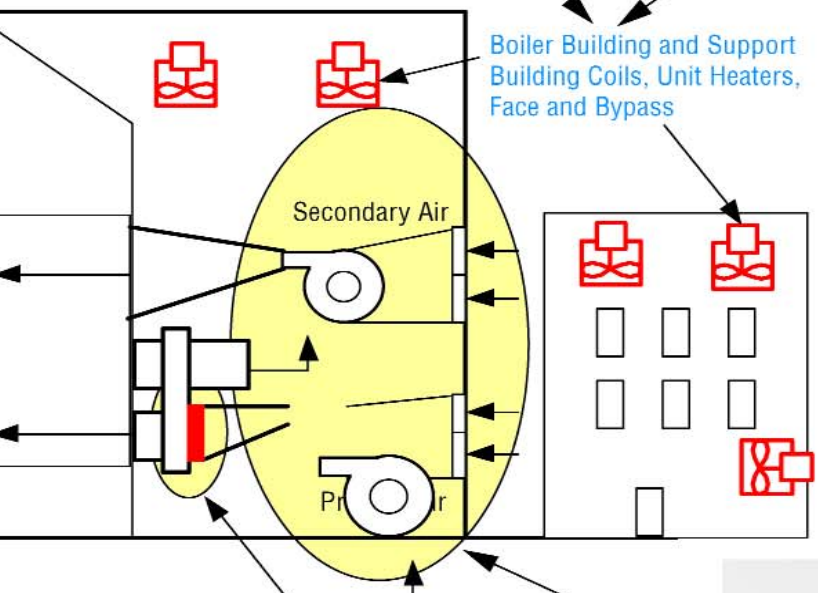
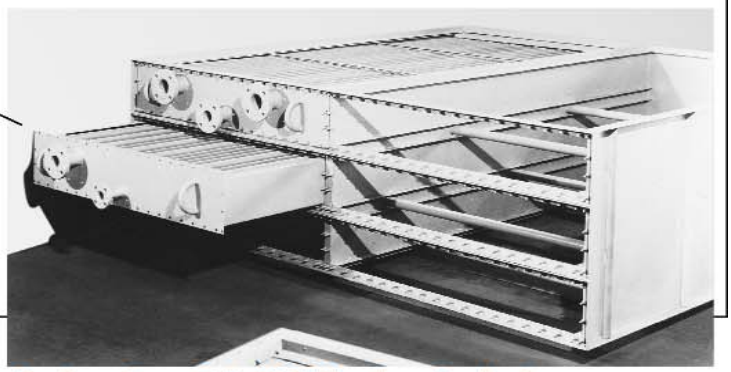
Heavy Duty Steam and Fluid Unit and Door Heaters

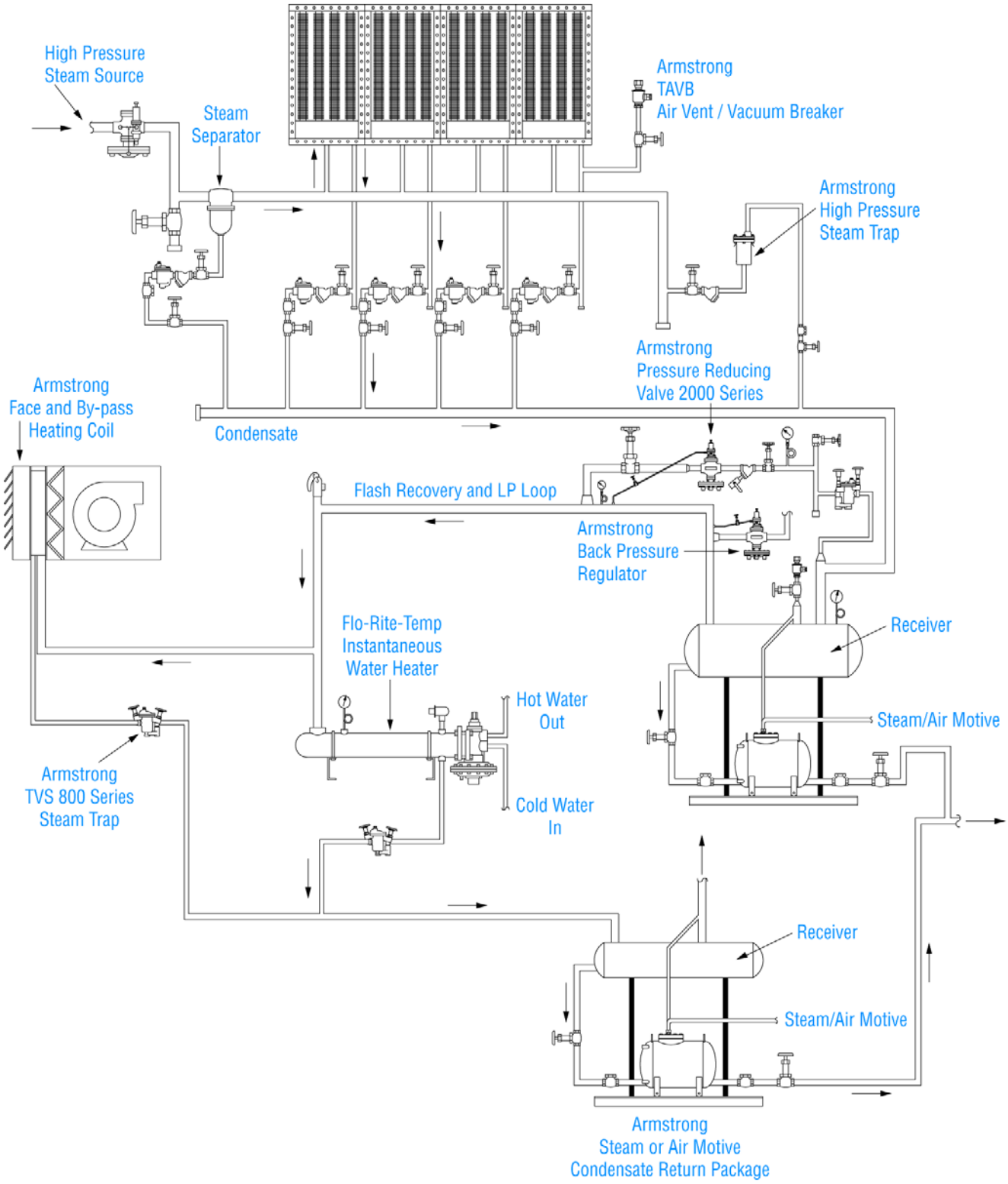




Custom, Heavy Duty Wall Mount and in-duct drawer type steam or fluid coil air pre-heaters

Steam System Solutions for Power Plant Air Preheating and Building Heating System New Design and Retrofit

Armstrong Heavy Duty Air Preheater System with Heat Recovery Loop Shown



Armstrong Products for Power Plant and Industrial Boiler Applications

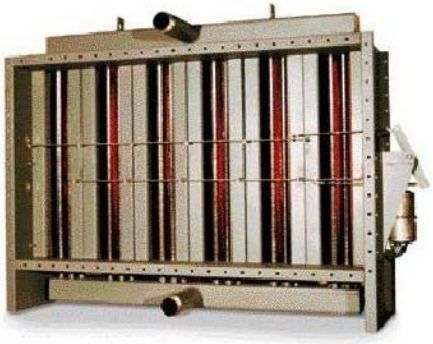
Condensate Recovery Systems

Armstrong's pumping traps offer all the benefits of returning condensate without the expensive maintenance common with electric condensate pumps.

- Non-electric
- Condensate Pump Trap Packages
- Flash Recovery Vessels

Superheat Steam Trap

SH Series Bimetallic Steam Trap for superheat conditions responds automatically to changing conditions. The SH Series has the ability to handle the large start-up loads associated with superheat applications and operates at pressures to 1,800 psig. Available in carbon or stainless steel. In-line repairable.



Duramix™ Face and By-Pass Heating Coil

The easy-to-install, easy-to-maintain Duramix™ Heating Coil controls air temperature while operating at full steam pressure. It has the quality, heavy-duty construction inherent in all Armstrong coils.

www.armstrong-intl.com

For more than 100 years in the steam business, Armstrong has been devoted to building stronger bonds through the sharing of information and ideas. That's why Knowledge Not Shared Is Energy Wasted® is our motto, promise and pledge to you. And it's why we founded Armstrong Steam University™. Use this site for quick research on steam, answers to steam system questions and comprehensive online steam system education.

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