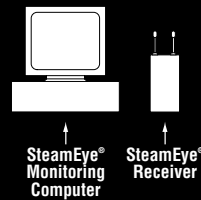


## Solution Source for Steam, Air and Hot Water Systems

Engineering system solutions by providing products, packaged systems, education, analysis and turn-key services.

# Armstrong

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Instructions for Use



**Armstrong®**  
Intelligent System Solutions™

STEAM • AIR • HOT WATER



Next

## CONDENSATE RECOVERY SYSTEMS

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

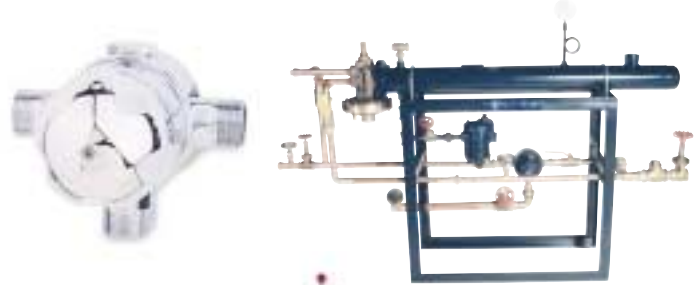
- Non-electric
- Condensate Pump Trap Packages
- Flash Recovery Vessels



## HOT WATER SYSTEMS

Armstrong's lines of instantaneous water heaters and Rada® thermostatic mixing valves meet all your hot water temperature conditioning applications.

- Flo-Rite-Temp™ Instantaneous Water Heaters
- Rada Thermostatic Mixing Valves
- Heat Transfer Packages



## WASHDOWN EQUIPMENT

Steamix® hose stations from Armstrong offer a maximum temperature rise set point and cold water failure shutdown for ultimate user safety. Armstrong hot and cold water hose stations include a thermostatic mixing valve for optimum flexibility, control and safety for applications where there is a central hot water supply. Accessories include a detergent injection system, hose reels, spray nozzles and extension wands.



## RADIANT HEATING

For steam and hydronic systems, Armstrong can provide a variety of products for use on convectors and thermostatically controlled hydronic or low pressure heat exchangers.

- Radiator Valves
- Radiator Air Vents
- T-wafer Thermostatic Replacement Capsules
- Radiator Traps



## COILS

Armstrong makes a line of steam/liquid and cooling coils in heavy-duty finned tube and lightweight plate fin configurations.

- Finned Tube
- Plate Fin
- Unit Heaters
- Tank Heaters



## HUMIDIFICATION

Armstrong conditioned steam humidifiers help achieve precisely controlled, trouble-free steam humidification. A variety of models are available to meet any humidifying application.

- Direct Steam Injection
- Gas Fired
- Electronic
- Fogging
- Steam to Steam



## PRESSURE/TEMPERATURE REGULATING



Armstrong pressure reducing valves and temperature regulators help you manage steam, air and liquid systems safely and efficiently. They ensure uninterrupted productivity by maintaining constant pressure or temperature for process control.

- *Direct Acting*
- *Piloted*

## STEAM TRAPS



Steam specialists for more than 100 years, Armstrong makes a full line of steam traps with a variety of materials and connector styles. Unique applications can also be solved with special trap variations.

- *Inverted Bucket*
- *Controlled Disc*
- *Thermostatic*
- *Bimetallic*
- *Differential Condensate Controller*
- *Float & Thermostatic*
- *Thermostatic Wafer*
- *Clean Steam Thermostatic*
- *Superheat*

## LIQUID DRAINERS



Armstrong float type drain traps are designed for draining heavy liquids from gases or light liquids (dual gravity drainers). These liquid drainers can operate to 1,800 psig or specific gravity down to 0.40. Styles include:

- *Polysulfone – See-thru*
- *Free Floating Lever*
- *Snap Action*
- *Fixed Pivot*
- *High Leverage*

## AIR VENTS



Armstrong's float type and thermostatic air relief traps are designed to remove gases from liquids down to 0.40 specific gravity and for removal of non-condensable gases from steam systems. Styles include:

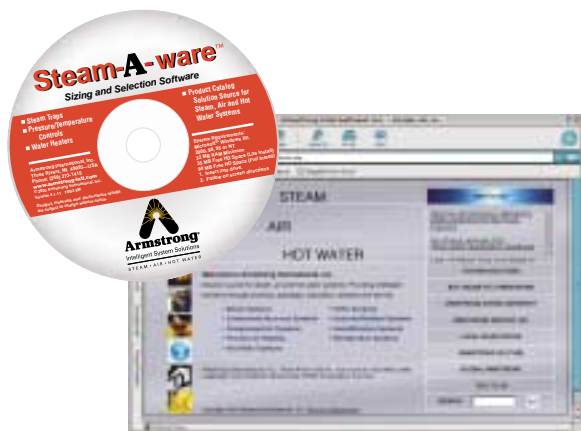
- *Polysulfone – See-thru*
- *Free Floating Lever*
- *High Leverage*
- *Thermostatic*
- *Fixed Pivot*

## STRAINERS



Armstrong offers Y-type pipe strainers in a wide choice of sizes and materials to meet the bulk of all pipeline straining requirements.

## STEAM-A-WARE™



Steam-A-ware™ sizing and selection for steam, air and hot water systems. Includes steam traps, pressure reducing valves, control valves, temperature regulators and water heaters of various types, sizes and configurations for any application. Easy-to-use Steam-A-ware allows you to store multiple product specifications in a schedule and access Armstrong's library of materials from the CD or the Web.

[www.armstrong-intl.com](http://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.

\*Windows is a registered trademark of Microsoft.

## NEW PRODUCTS

### TRAP VALVE STATION

The TVS 4000 Series Stainless Steel Trap Valve Station enhances your capability to check trap operation and offers a built-in method to block and bleed traps. It has two piston-style isolation valves, a test valve and an integral stainless steel strainer with blowdown valve. The TVS 4000 connector accommodates inverted bucket, thermostatic, thermostatic wafer and disc traps. Saves on energy, installation and maintenance.



TVS 4000



SH-Series  
Bimetallic Steam Traps

### BIMETALLIC STEAM TRAP

SH Series Bimetallic Steam Traps adjust automatically to changing conditions. The SH Series operates at pressures to 900 psig and is capable of operation on low-load applications. Available in carbon steel or stainless steel. Inline repairable.

### STEAMEYE® STEAM TRAP MONITORING

SteamEye® keeps an eye on your steam traps 24 hours a day, every day. Radio frequency monitoring of steam traps gives you immediate, accurate insight into trap performance.



SteamEye®



Non-Electric Pump  
Retrofit Assembly

### NON-ELECTRIC PUMP RETROFIT ASSEMBLY

Maintenance is a snap with the Armstrong Non-Electric Steam/Air Powered Pump Retrofit Assembly. Stainless steel valves can be cleaned or replaced without cap removal. Inconel X-750 springs eliminate spring breakage. Assembly resists wear and corrosion for long, dependable life.



Stainless Steel  
Sump Ejector

### STAINLESS STEEL SUMP EJECTOR

Drain unwanted water from steam pits, steam tunnels or enclosed spaces with this new sump ejector. Compact, all-stainless steel design is unlike anything else on the market today, and will ensure long life in harsh environments.

### 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.



Duramix™

## NEW PRODUCTS



Condensate Cooler



Control Valve



1-AVCW



Flo-Direct® Direct  
Contact Gas-Fired  
Water Heater



Rada® Electronic Mixing Center (EMC)

### CONDENSATE COOLER

This device mixes hot condensate or hot water with a cold water supply to reach acceptable discharge drain temperatures as required by law. Pre-assembled package is suitable for any plumbing system.

### CONTROL VALVE

The Armstrong Control Valve gives you flexibility to apply the right valve to an application. It fills the void left by expensive industrial valves that can't deliver the control you need. The pipe size range is 1/2" to 1-1/2".

### 1-AVCW OZONE AIR VENT

The 1-AVCW Air Vent is designed for ozone applications. Its see-thru body lets you easily check its operating condition. You can quickly react to a condition before it becomes a problem.

### FLO-DIRECT® DIRECT CONTACT GAS-FIRED WATER HEATER

The most advanced unit on the market today, the Flo-Direct® Series Gas Hot Water Heater operates at very low pressure and is suitable for a wide variety of hot water applications. Expect lower fuel costs.

### RADA® ELECTRONIC MIXING CENTER (EMC)

The EMC maintains recirculated hot-water control within 2°F across a full diversity of flow and operates with no minimum system "draw-off" requirement. The EMC offers a programmable high-temperature system flush for Legionella abatement, and low-temperature energy conservation mode, along with PC and building automation system interface capability. Dual operation "set" and "actual" temperature display with integral "out-of-range" alert feature provides easy, effective commissioning, adjustment, and system monitoring – even from a remote location.

### ARMSTRONG COOL-FOG SYSTEMS

Fogging systems offer energy-efficient, environmentally safe and economical ways to control injection of compressed air and water into air handling systems that provide humidity and evaporative cooling. Combining Armstrong's decades of humidification leadership with the fogging system expertise of the former Cool Fog Systems Inc., Armstrong Cool-Fog products integrate easily with almost any system, whether your air handler is VAV, constant volume or airside economizer.



Fogger Control Panel

Fogger Assembly

### HUMIDICLEAN™ SERIES HC-4000 HUMIDIFIER WITH IONIC BED TECHNOLOGY™

The HumidiClean™ electric humidifier includes five disposable inserts made of a fibrous medium. Called ionic beds, these devices attract solids from the boiling water, preventing the solids from plating out on the heating elements or on the tank walls. Tank cleaning is minimized, and effective service life is extended.

### EHU-700 ELECTRIC STEAM HUMIDIFIER

No other electric humidifier does a better job of stabilizing and simplifying humidity control. Only Armstrong offers full modulation and a patented self-regulating maximum output feature. When you install an Armstrong Series EHU-700 you get accurate, automatically adjusted humidity control that's virtually hands-free.

• EHU 600



HumidiClean™ with Ionic Beds

EHU-700

### SERIES 9000 HUMIDIFIER

The Series 9000 direct steam injection humidifier provides precisely controlled, trouble-free steam humidification. These units distribute steam and give you precise control to accurately maintain the required level of relative humidity. Available in a range of selections to meet various capacity requirements, Series 9000 units offer uniform vapor distribution and rapid, complete absorption. They maintain quiet operation and require minimal maintenance.

### SERIES 1000 ALL STAINLESS STEEL HUMIDIFIER

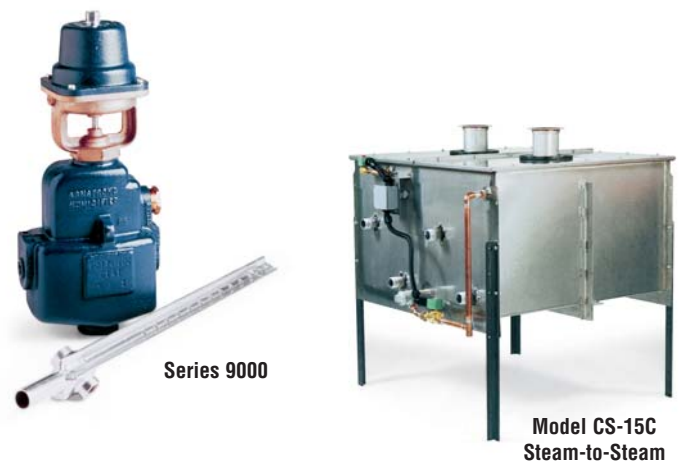
A steam separator type humidifier for use in sensitive environments where pure, demineralized, deionized or distilled water is used to generate clean steam. Designed for applications where all steam and condensate piping is stainless steel, the Armstrong Series 1000 delivers precisely controlled, trouble-free steam humidification. Stainless steel construction prevents problems caused by corrosion and subsequent carry-over of corrosion by-products.

### STEAM-TO-STEAM HUMIDIFIER

Steam-to-steam devices in the CS Series use boiler steam to produce clean steam from untreated water. Easy to install and simple to clean, Armstrong steam-to-steam humidifiers have all the benefits of steam humidification without the concern of boiler water carry-over.

### STEAM-TO-STEAM WITH IONIC BED TECHNOLOGY

This steam-to-steam device has all the benefits of Armstrong steam-to-steam humidifiers – easy to install, simple to clean – plus the innovative Ionic Bed Technology™ at the heart of all HumidiClean humidifiers.



Series 9000

Model CS-15C Steam-to-Steam



Model CS-13CB Steam-to-Steam with Ionic Beds

Series 1000



**GFH Gas-Fired HumidiClean™ with Ionic Beds**

**GAS-FIRED HUMIDICLEAN™ WITH IONIC BED TECHNOLOGY**

Operating costs are reduced with the GFH Series Gas-Fired HumidiClean humidifier from Armstrong. HumidiClean's innovative Ionic Bed Technology reduces operating costs even more by reducing the labor and downtime associated with cleaning humidifiers. The GFH Series uses natural gas or propane for economical operation. And the HumidiClean is designed for ease of use; it's adaptable to various water qualities, and service life cycle and tank drainage are field-adjustable. The GFH Series is CSA-certified and CGA-approved.



**ManiPack**

**MANIPACK**

Armstrong ManiPack is a pre-assembled, steam jacketed, distribution manifold bank made specifically for air handling units. The ManiPack is for applications that require a direct steam injection humidifier such as the Series 9000 or 1000. Designed for economy and ease of installation, the ManiPack includes convenient mounting tabs for easy attachment, optional all stainless design for D.I. service, no black iron piping and standard interchangeable parts.



**Steam Jacketed Dispersion Tube**

**STEAM JACKETED DISPERSION TUBE (SJDT)**

The Armstrong SJDT is an all stainless steel dispersion tube with the unique ability to accept steam from atmospheric steam-generating humidifiers. The SJDT uses a portion of the steam to "jacket" the entire length of the tube, keeping the dispersion tube hot, even during periods of low demand. This "jacketing" effect improves the quality of steam discharge and reduces the chance for spitting or dripping in your air handling system.

- EHU
- Gas-Fired
- Steam-to-Steam
- HumidiClean



**HumidiPackPlus®**

**HUMIDIPACK® AND HUMIDIPACKPLUS®**

A prefabricated steam humidifier system, the Armstrong HumidiPack® comes ready for insertion into the duct. For use on pressurized steam, the system includes a steam control valve, strainer, steam trap and header drain trap. The HumidiPack accepts steam, separates entrained moisture from it and admits it into a duct or air handler airstream via the dispersion tube. HumidiPackPlus® combines a shortened non-wetting distance with steam-jacketed "active" tubes. The result is a dry, uniform discharge of steam for nearly any application with a steam source from a pressurized central supply.

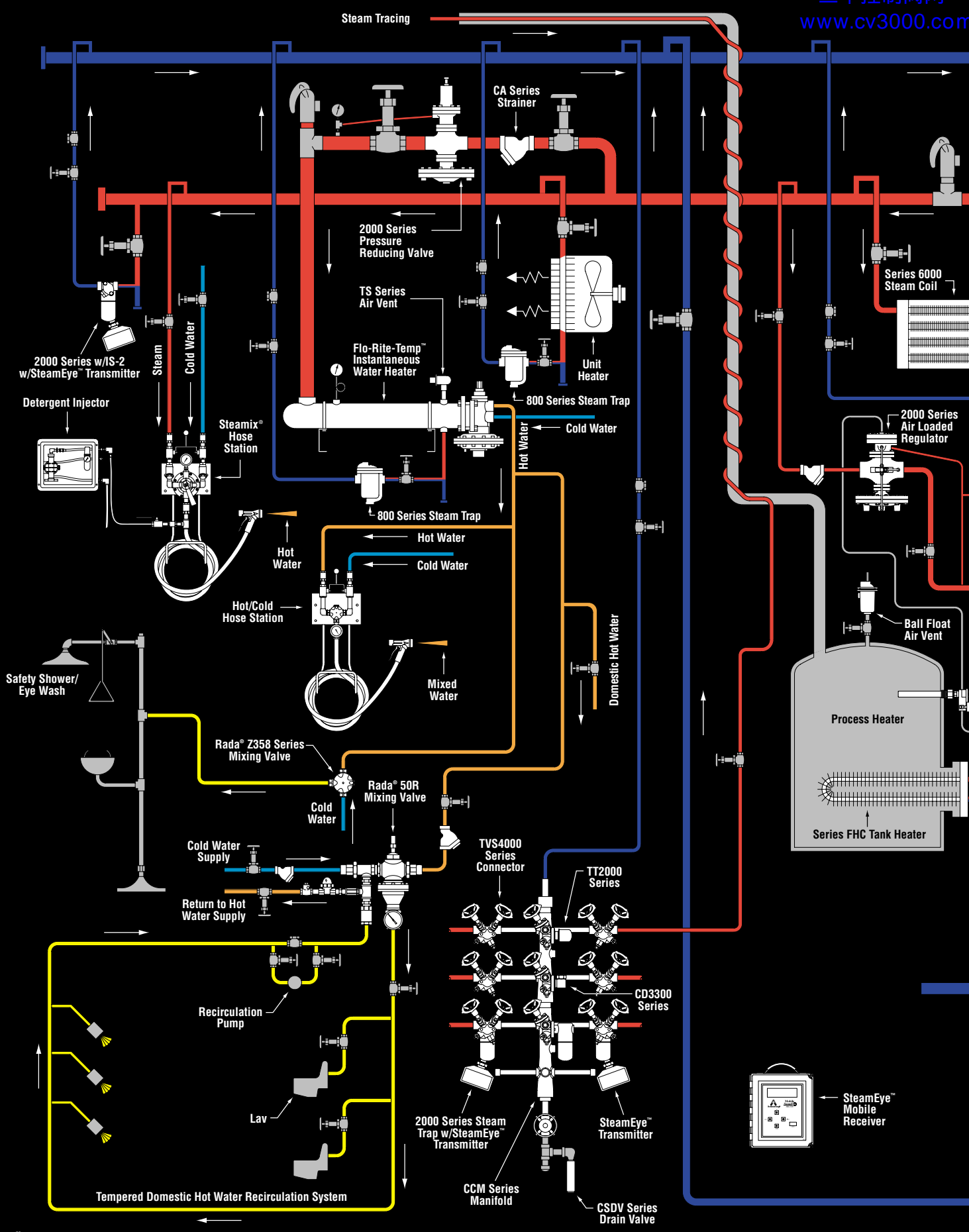


**HUMID-A-WARE™ SOFTWARE**

For detailed information on customizing humidification schedules and calculating non-wetting distances and humidification loads, refer to Armstrong's Humid-A-ware humidification sizing and selection software. It can be downloaded from Armstrong's Web site at [www.armstrong-intl.com](http://www.armstrong-intl.com).

**WEB SITE**

For nearly 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. Access [www.armstrong-intl.com](http://www.armstrong-intl.com).



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