Zero Flash

INDUSTRIAL STEAM

Pressurized and Atmospheric Deaerators

High Pressure Condensate System

High Pressure Condensate return systems that conserve energy by pumping hot water directly from the process into the steam boiler.

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Zero Flash
High Pressure Condensate System

Fuel Losses at various Pressures			
System Pressure psig	Volume lost due to Flashing %	Total Heat lost due to Flashing %	Fuel lost to replace lost heat** %
15 50 100	4 9 13	5 10 15	6 13 19
125 150 200	15 16 18	17 18 21	21 23 26
250 300	20 22	23 25	29 31

*Based on the replacement of the lost flash steam with makeup at 60oF.
** Based on the regeneration of lost heat in a boiler operating at 80% efficiency.

FEATURES

PACKAGED SYSTEM reduces installation costs, requires only service connections and one source of three-phase power to make system fully operational. Standard electronic level control and variable frequency drives insure reliable modulated operation.

MODULATED CONDENSATE FLOW to boiler automatically adjusts to variable condensing rates.

LOW NPSH PUMP is self-priming with rugged construction features. Air-cooler chamber separates and insulates the shaft seal chamber from the high liquid temperatures. TEFC motors and NEMA 4 panels are standard. Various pump options are available upon request.

ADVANTAGES

SAVES FUEL up to 30% by returning condensate directly to the boiler without flash loss.

INCREASES PRODUCTION by eliminating the traps for unrestricted flow from process.

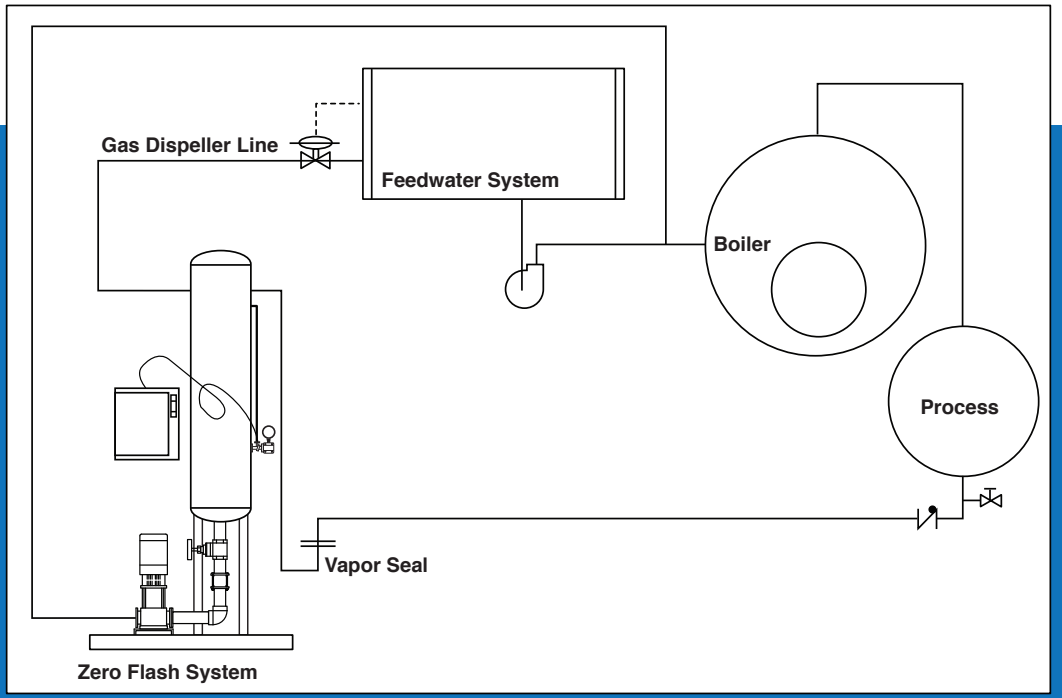
IMPROVES HEAT TRANSFER by continuously purging non-condensable gases from process.

ELIMINATES STEAM TRAPS for:

- Faster start-up
- Reduced maintenance
- Instant drainage
- Better process control
- Maximum production

PAYS BACK INVESTMENT, often within one year.

Components and Sizing



OPERATION

The ZERO FLASH Closed Loop System modulates high temperature condensate directly to the boiler bypassing the conventional boiler feed system.

This eliminates the costly steam plume which so visibly indicates a loss of fuel dollars.

Condensate flows unrestricted to the vapor seal and is lifted by differential pressure to the pump surge chamber. The level control modulates the pump discharge to the boiler in direct relation to the condensing rate of the process.

The ZERO FLASH System also continuously removes steam and noncondensible gases from the process equipment. These gases flow through the pump surge chamber which further enhances condensate flow. The steam is used in the feed water system to preheat new makeup.

Removal of non-condensible gases not only increases the effective heating surface, but also raises the average steam temperature of the process; the combined effect being substantially improved production.

The combination of trapless operation for unrestricted condensate flow, continuous non-condensible gas purge and flashless operation make the ZERO FLASH System a uniquely viable investment.

Energy Savings Estimate - 30,000 pph Process Load

Operating Conditions:

1. Average Process(Cooker) Load:	30,000 pph
2. Steam Pressure to Process:	100 psig
3. Hours of Operation:	4,000 hrs/year (2 shifts)
4. Average Fuel Cost:	$ 8.00 per Decatherm

5. Condensate Drains to Atmospheric Vessel:

Flash Loss = 13% (amount of condensate lost through vent)
Lost Condensate = 3,900 pph
Retained Condensate = 26,100 pph

Total Energy Lost per Hour of Operation = $39 per hour
Annual Energy Lost in Flashing Condensate = $156,000 per year

Additional Industrial Products

Steam Flow
.005 cc/Liter Pressurized
Recycling Deaerators

Spray Flow I I
.005 cc/Liter Atmospheric
Recycling Deaerators

Jet Spray
.005 cc/Liter Spray Type
Pressurized Deaerators

Blowdown Heat
Recovery Systems,
Blowdown Separators

Have questions or need help specifying this equipment? Email: engineering@industrialsteam.com
Need help with an existing system or parts? Email: techsupport@industrialsteam.com
Looking for a local representative? Email: sales@industrialsteam.com
Literature available for download at industrialsteam.com

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