# FLASH STEAM HEAT RECOVERS
# FRECO

DESCRIPTION

The ADCATherm FRECO flash steam heat recovery units are designed to facilitate heat recovery from flash steam, condensate or both.
The system is specially recommended for heating a continuous flow of fluid, such as make-up water to a boiler feed water system.
Non-continuous flow applications may require additional recirculation, relief valves, or other devices, to avoid system damage due to overheating and consequent overpressure.

It is known that the condensate return and its recovery are beneficial and ensure a remarkable energetic efficiency. However, the condensate, which is initially at high temperature, ends up expanding and losing most of its energy through the formation of flash steam. On the other hand, feed water temperatures higher than 90 ºC to the boiler feed pumps when coming from atmospheric vessels will normally cause cavitation with all the consequent damages.
The FRECO system prevents this problem since it is installed downstream of the pumps, using the high pressures which can be found there, allowing condensate heating above 100 ºC, without boiling, and naturally eliminating the chances of cavitation.

OPTIONS: Different types of materials and designs available, according to the application.
Atmospherically vented units, to avoid extra backpressure in the condensate return system.

USE: Steam, water, hot condensate and other fluids compatible with the construction.

ORDER REQUIREMENTS:
Condensate flow rate and temperature.
Make-up water flow rate and temperature.
Operating pressures.
Steam boiler(s) capacity and operating pressure(s).

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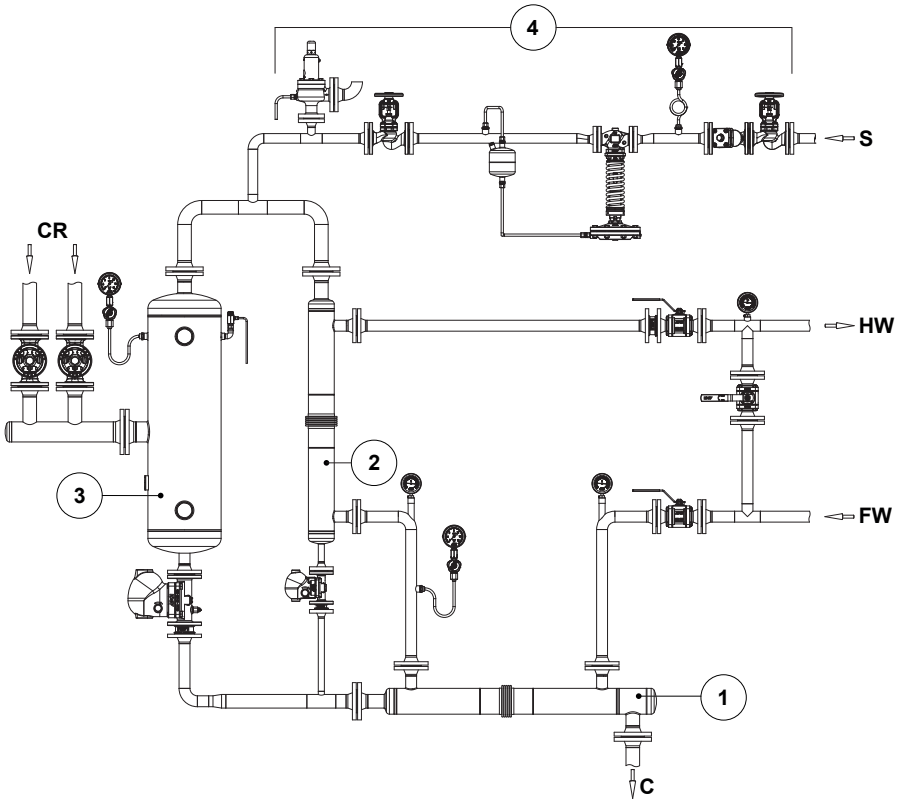
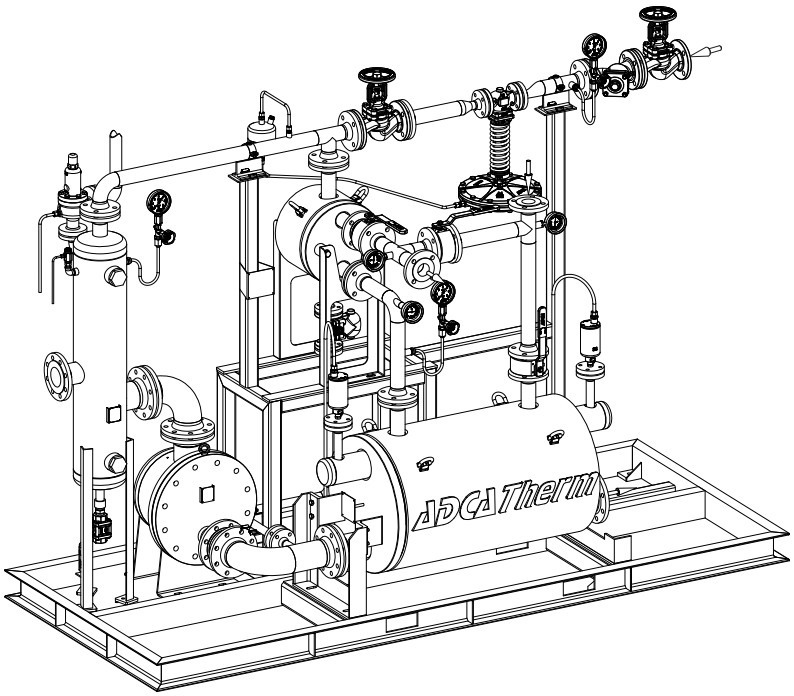



OPERATION

The process begins with condensate return (CR) expanding within a flash vessel (3), where flash steam is separated and directed to the primary side of a heat exchanger (2). The remaining condensate then flows into the primary side of a second heat exchanger (1) for further thermal optimization.
Simultaneously, pressurized feedwater (FW) is introduced through the secondary sides of heat exchangers (1) and (2), allowing it to absorb heat before being routed to an economizer or directly into the steam boiler. By the time condensate (C) is discharged from heat exchanger (1), its temperature is controlled, ensuring it does not overheat the feedwater so it can be safely recovered to the feedwater tank. To address fluctuations in condensate return flow to the flash vessel, a pressure-reducing station (4) can be incorporated. This component regulates live steam (S) pressure and maintains stable conditions on the primary side of heat exchanger (2), by providing the flow rate differential.





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