

AUTOMATIC BACKWASH SYSTEM (ABS)

for

PLATE AND FRAME HEAT EXCHANGERS

Accumulation of debris, sediments, as well as other types of micro and macro foulants within the plate and frame heat exchanger is nothing new.

WSA Engineered Systems has the solution...

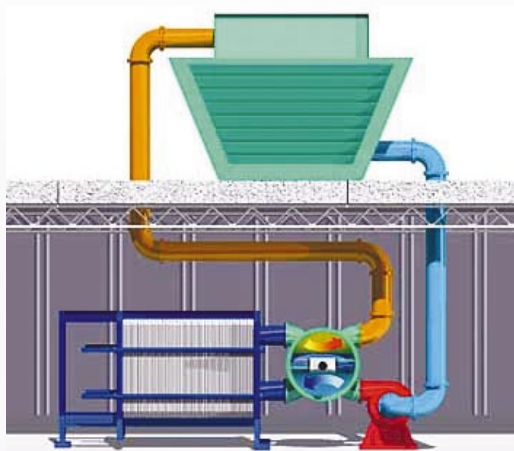
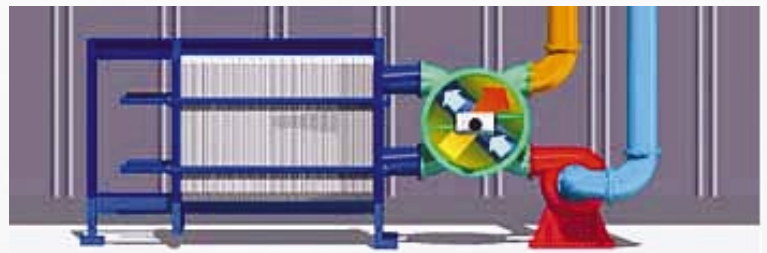
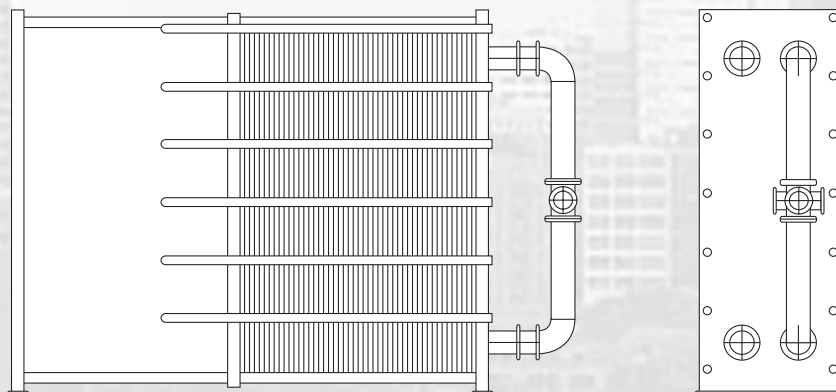


figure 1



Available in X-type and H-type nozzle configurations, shown above is the H-type flow diverter in the standby normal flow position

The H-type flow diverter, shown above, in the reverse flow position. Full flow backflushing of the heat exchanger prevents micro foulant buildup and prevents plugging of the flow pathways.



...It's Clean and Simple

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Problem:

The deposit of fine matters, such as sand, silt, mud, as well as dead organic matters reduce the flow through the heat exchanger and interfere with the designed water distribution and flow pattern, as well as the required water velocity between the plates. Clogging of the water inlet nozzles by large matters such as twigs, stones, seaweed, fish, shrimp, cooling tower fill, etc. also negatively impacts the water flow through the plate and frames. The result is reduced heat transfer coefficient, reduced efficiency, reduced performance, increased bottle necking, increased shut down and increased maintenance.

Solution:

Traditional pre-filtration can only remove larger particles. Fine particles such as silt, sand, mud, dead organic matter, etc. still enters the plate and frame exchanger and accumulates inside of the unit and between the plates, causing plugging, as well as promoting scaling and pitting of the plate.



To avoid sedimentation and plugging, plants often install a series of valves and cross over piping to allow manual backflushing of the plate and frame or periodically shut down and open the unit for manual cleaning. Both options are time consuming and expensive. Over 30 years ago, WSA Engineered Systems, Inc. developed the concept of a uniquely designed single flow diverter valve that is easy to install and automatically, at

preset intervals, allows the on-line and automatic backflushing of the plate and frame exchanger.

Result:

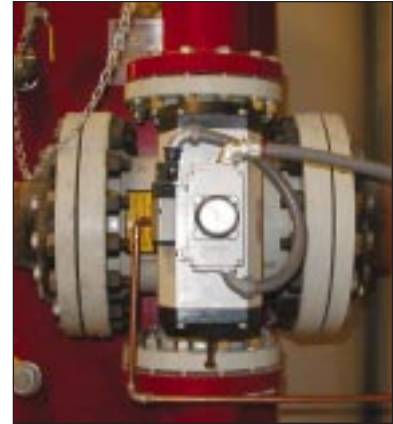
The use of WSA's Automatic Backwash System (ABS) with our on-line single flow diverter valve provides for automatic backflushing without any involvement from plant personnel. The results are:

- Clean plate and frame exchanger at all times
- Increased performance and efficiency
- Increased heat transfer rate
- Increased equipment life
- Reduced maintenance costs
- Reduced operating costs
- Reduced shutdown

How WSA's Automatic Backwash System (ABS) Works

The WSA system consists of a single uniquely designed flow diverter valve that is installed within the supply and return water line to and from the exchanger. The diverter valve is available in a variety of configurations to match any field-piping layout. It can be installed within the main cooling water supply and return header line or on the plate and frame exchanger between the two inlet and outlet nozzles.

During normal flow the flow enters the valve and into the exchanger's inlet nozzle. From the exchanger's outlet nozzle, the flow exits and enters into the valve housing and into the cooling water return line (see figure 1). Once every four hours, or as often as the plant decides, the flow diverter valve enters into the backflush mode.



The direction of the flow into the valve (supply from the pump) and the direction of water flow out of the valve (return to the discharge line) always remains the same. However, the flow direction within the diverter valve is crossed over and the flow direction between the inlet and outlet nozzles of the exchanger is switched. The exchanger is backflushed and cleaned from any sediment and foulant. The exchanger remains in the backflushing mode for less than one minute. During this period the flow is never reduced or stopped. The exchanger remains

in full operation at all times. Once the backflushing period is completed, the diverter valve returns to its normal flow position and restores the normal direction of the water flow through the exchanger. The diverter valve includes a pneumatic or electric drive mechanism. The cycle and period of backflushing is controlled by a fully automated control panel that is wall mounted locally.

For further information, an on-site presentation, or system proposal, please contact us or visit us on the web at: www.wsaes.com.

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