

Working fluid filtration for heat exchangers

Eaton's DCF-3000 mechanically cleaned filter protects heat exchangers

In a wide range of industrial processes, plate heat exchangers are used to transfer heat from one fluid to another. They are designed with multiple layers of flat plates, corrugated on a frame, forming a series of channels in which two liquids of different temperatures flow separately from one another. As the warm fluid passes through the exchanger, the plates absorb the heat and efficiently transfer it to the cooler fluid running through the exchanger in parallel. The heat transfer fluid is often a mixture of brine and ammonia, which are ideal heat-transfer media due to their low freezing points and low vapor pressure. However, particles generated from internal pipe erosion can cause contamination of the working media. This can result in fouling or clogging of the heat exchanger, which prevents the process liquids from reaching their required temperature. Detached pipe scale can also cause damage to downstream system components, control valves and pumps. Effective and reliable filtration is, therefore, critical to the function of process equipment.

Eaton's high-performance DCF-3000 mechanically cleaned filter effectively protects specialty plate and frame heat exchangers and downstream equipment. Filter elements with 1/8" perforations provide the ideal retention rate to prevent plugging and fouling. The DCF-3000 operates at temperatures up to 200°C, as well as in chiller applications. To ensure that the highest standards of safety and quality are met, this filter is constructed using grade 316 stainless steel and meets both the ASME BPVC Sec. VIII Div. 1 code and AD2000/EN13445/PED standards, depending on requirements. The DCF-3000 is an automated filter, which requires very little supervision and reduces the downtime required to clean the heat exchangers. This filter also ensures very little product loss by ejecting the waste in a highly concentrated form, further saving costs on treatment and disposal of working media.

Filter element options

Eaton's mechanically cleaned DCF filters are available with two filter element options that cater to different filtration requirements.

The perforated filter element features a robust perforation pattern for the complete removal of larger solids. These elements are ideal for straining large volumes of fluids, available in 1/16", 1/8" and 1/4" perforations.

The slotted wedge wire element is suitable for retaining much finer particles. Its wedge wire is honed perfectly circular to guarantee contact with the cleaning disc, allowing for filter fineness down to 15 µm.



Perforated filter element

Slotted wedge wire filter element

	Specifications DCF-3000
Flow rates (at 100µm)	Up to 1,100 gpm/h (250 m³/h)
Operating pressure	30–150 psi (2–10 bar)
Operating temperature	Max. 400°F (200°C)
Viscosity	Water-like up to 500,000+ cps
Standard retention	<ul style="list-style-type: none"> Perforated filter elements 1,575–6,350 µm Slotted wedge wire screens 15–1,100 µm
Vessel material	316 stainless steel
Cleaning discs	POM (Delrin®), PEEK

