

Filtration for Reuse of Hydraulic Fracturing Water

Eaton MCS mechanically cleaned strainers efficiently filter hydraulic fracturing water to significantly reduce wastewater



Hydraulic fracturing, also known as fracking, generates substantial quantities of produced water. The contaminants that resurface alongside the extracted natural oil and gas can pose significant hazards, limiting the potential for further use of the water. Well operators typically encounter a choice regarding the management of this produced water: they can either transport it offsite for treatment and disposal, or they can implement an onsite filtration system. The latter option presents a more sustainable and cost-effective solution, enabling the reuse of produced water in subsequent fracking processes. These reuse opportunities include the initial hydrofracturing of a new well, and reinjection for stimulating hydrocarbon production in aging wells. Effectively filtering spent hydraulic fracturing water allows operators to not only ensure the protection of high-pressure injection pumps, but also prevent the well's geological formations from becoming obstructed.

Eaton's MCS mechanically cleaned strainers are engineered to conserve valuable fresh and process water and protect costly equipment from debris. These high-flow strainers have the capacity to process the substantial flow rates required for fracking operations while offering minimal purge volumes, allowing operators to save on the cost of make-up liquids and chemical treatments. The MCS strainers feature fast cleaning magnetically coupled actuation technology that does not require an external drive shaft or dynamic seals, which minimizes the risk of leakage. This reduces the need for media changeout, associated product loss and disposal requirements. As an automatic self-cleaning filter system, the MCS not only limits operator exposure to produced water but supports a continuous process flow, optimizing equipment uptime.

The MCS strainers, with a flow rate of up to 340 m³/h, exhibit minimal volume loss through the purge function. The purge valve opens for a short duration, usually less than one second. Compared to standard backwash filters, the MCS purge flow contains a smaller volume of fluid with a higher concentration of solids. This provides multiple benefits.

- Protection of pumps and well porous rock formations
- High flow through the filter with little fluid loss during purging
- Reduced purge water quantities as compared to backwashing filters, leading to lower treatment costs
- Sealed design without dynamic sealings minimizes exposure to aggressive service fluids
- Easy to inspect and maintain design, with multiple

Specifications MCS mechanically cleaned strainers

		MCS-1500	MCS-500
Flow rates	Up to 340 m ³ /h at ≥ 150 µm		
Operating pressure	2–10 bar		
Operating temperature	Max. 82°C		
Design	AISI 316L stainless steel with ergonomic inline 45-degree inclination		
Filter element options	<ul style="list-style-type: none"> • Perforated filter elements (sizes: 1.6, 3.2 and 6.35 mm*) • Slotted wedge wire screens (filter fineness: 1,140 to 15 µm) 		
Cleaning	<ul style="list-style-type: none"> • Automatic, mechanical self-cleaning • No external backwashing sources required 		
Maintenance	Simple due to few moving parts and without special tools		
Control systems	<ul style="list-style-type: none"> • PLC or Smart Relay controls deliver programmable stand-alone performance • Eaton solutions range from EasyE4 Relay to superior HMI PLC control packages* • Integration into the process control system possible 		
Utilities	Actuators are operated with compressed air		

* Other options upon request