



External Communication						
Date:	7/27/2016	Customer:			Process	Evaluation
<input checked="" type="checkbox"/> Product <input type="checkbox"/> Process:		DSU-H	Lot #	PI15/0251	Part #	70-0285
Subject:	Evaluation of 2 DSU-H filters from					
<b>Message:</b>						
<p>An evaluation was performed on 2, DSU-H filters that were installed at [REDACTED]. Flow rate and backwashing was performed on both filters.</p> <p>The first step was to connect the filters to a lab sink, prime them, and then run water through the filters at 50psi. The flow rates were then taken for one minute. The flow rates for the [REDACTED] filters were 1 L/min and 1.5L/min respectively. This is a 90% decrease and an 85% decrease in flow rate respectively in comparison to the expected flow rate of a DSU-H filter, which is 10L/min.</p> <p>The next step was to backwash the filters which is done by connecting the filter outlet to the lab sink instead of the inlet side as done for flow rate testing. The water exiting on the inlet side was then captured for both filters. Image 1 shows the backwashing results as the 2 containers on the left are the unfiltered water from the backwash, and the 2 containers on the right are the filtered water that was captured during flow rate testing. Image 1 clearly demonstrates the measurable difference the DSU-H filters made as the water is clear in stark comparison to the unfiltered water.</p> <p>After backwashing the filters, the flow rates were recaptured as in the first step to see if backwashing the filters allowed the filters to flow at flow rate near the expected flow rate of a DSU-H, 10L/min. The flow rates of the two filters were now 3L/min and 3.75L/min, as compared to before of 1L/min and 1.5L/min. This is still a 70% and 62.5% decrease then the expected 10L/min flow rate of a DSU-H. This proves the fibers in the filter have been so polluted causing irreversible fouling.</p> <p>Finally, Image 2 below shows one of the filters, [REDACTED] install date, which had the lower flow rate out of both filters, cut open. This exposed both fiber bundles of the filter and it is evident from the image that the fiber bundle on the left (stage 1) is discolored compared to the white fiber bundle on the right (stage 2). The images show that the reason for the low flow rates is due to the pollution of the water source that is feeding the filters that they were installed at. After 5 days of letting the backwash solution rest in the container, the solution still did not fully settle, which also demonstrates how much of an affect the solution had as it passed through the fibers causing low flow rates since the solution does not fully settle.</p>						
						
Image 1				Image 2		

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<b>Conclusion:</b>						
<p>Image 1 and Image 2 clearly illustrate the performance of both DSU-H filters installed at [REDACTED]</p> <p>Image 1 shows the cumulative unfiltered water from both install dates compared to the filtered water from the DSU-H filters. The filtered water is clear in both filtered water containers.</p> <p>Image 2 further demonstrates the positive impact of the DSU-H filters and the unique dual stage barrier. This single filter was cut open to show the discoloration of the first fiber bundle compared to the white second fiber bundle. The discolored water (likely bacteria and other particulate) was retained in the first fiber bundle leaving the second bundle completely untouched, which explains the coloration difference. The water feeding the filters were so polluted that it caused irreversible fouling of the filter membrane that even after backwashing the filter, the flow rates were still not increased significantly.</p>						
<b>Message Released/Approved by:</b>						
<b>Print Name</b>		<b>Applicable Title</b>			<b>Date</b>	
Allen Jayaraj		Product Development Engineer			7/27/2016	