



TechBrief

Degassing Optimization

When designing a degasification system the major concerns are often with capital and operating costs. By splitting a Liqui-Cel Membrane Contactor system between the make-up loop and the polishing loop it may be possible to lower these capital and operating costs.

In addition to lowering these costs, other benefits can be realized. By placing the first stage degassing step in the make-up loop you still remove a majority of the dissolved gases (O₂, CO₂, THM's etc.) that may put unwanted load on system components downstream. The second stage degassing step would then be placed in the polish loop to lower the gases to specification just before circulation to the fab. This is important because other equipment in the process after the initial degas system may add gases back into the water stream.

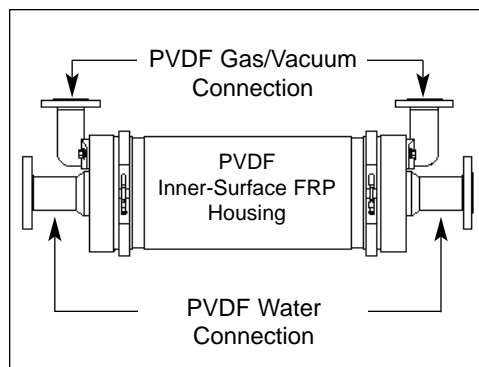
For example, O₃ breaks down into O₂ after the downstream UV lamps which leaves excess O₂ at the end of the process. Splitting up the degas system where it can provide bulk gas removal in the make-up loop and final degassing in the polishing loop, however, gives added security against this potential problem. Splitting the degas operation into two parts maximizes the efficiency of the degas system and

The following table compares the sizing output of a two stage system to that of a single stage system. A generic P&ID of both system designs can be found on side 2 of this TechBrief.

	3x3 Make-Up Loop 2x1 Polish Loop	3x4 Make-Up Loop
Total Number of Contactors	11	12
Total Estimated N₂ Consumption (SCFM)	2.75	8.40
Total Vacuum Volume (ACFM)	84.4	207.2
Guaranteed Oxygen Outlet	1ppb	1ppb
Conditions	350 gpm (make-up), 300 gpm (polish), 20°C, 50 torr	350 gpm, 20°C, 50 torr

improves the quality of the water at point of use.

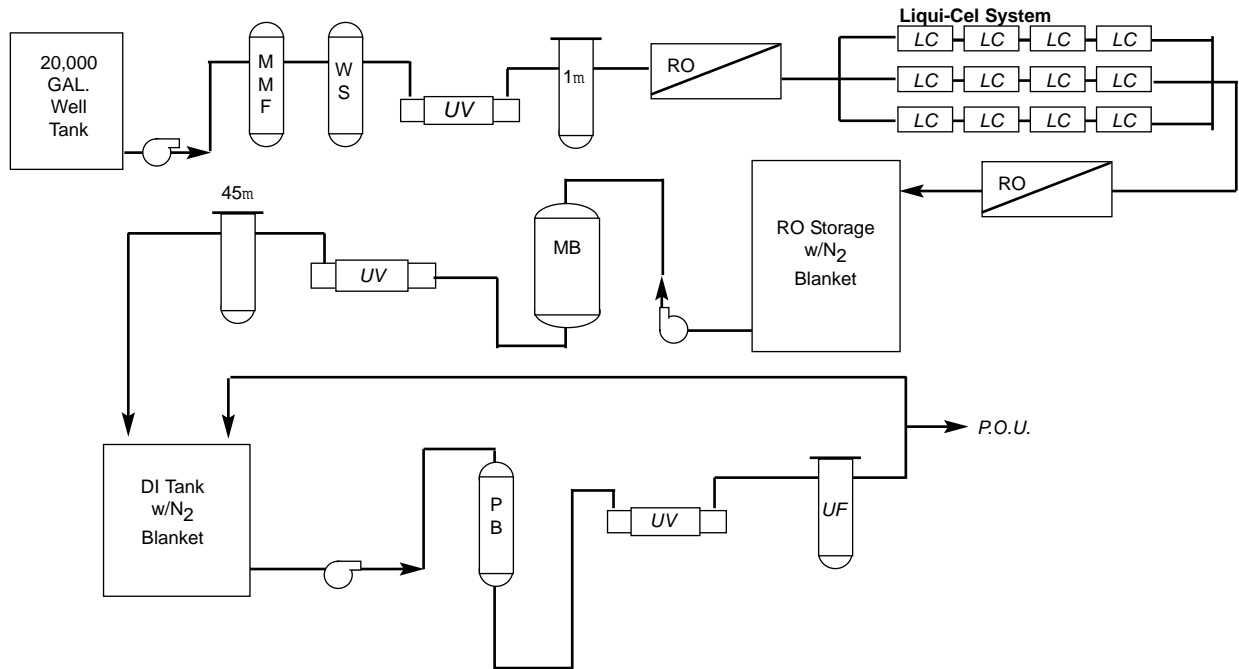
Liqui-Cel Membrane Contactors are also clean enough to be used in the polishing step. With the new FRP/PVDF housing, it is now possible to have an all polymeric device in the polish loop. The new housing developed by Celgard still delivers the same excellent degassing performance while providing a PVDF water contact surface.



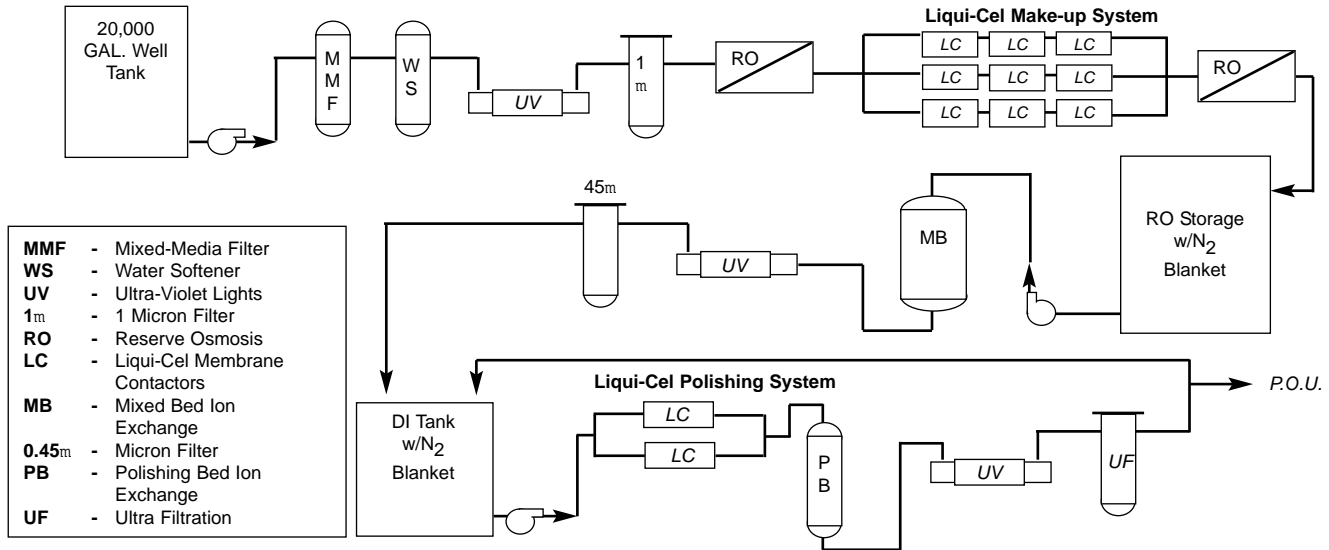
Are you upgrading your fab or water loop?

It is now common practice to have a hybrid vacuum tower/Liqui-Cel system if you have a new, lower DO specification. You can place the Liqui-Cel system in the polish loop and keep the existing vacuum tower in the make-up loop. The modular design makes for simple addition to an already existing system. As DO specifications change over time or flow rates are increased you can simply add to the system to meet future demands.

Traditional Make-Up Loop System



Hybrid Make-Up Loop/Polish System



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