

1 Deaerated Water (DAW) Skid Functional Specifications

1.1 Brief Overview of the System:

- Reduce the dissolved oxygen content of water to under 20ppb using membrane contactors.
- Hold up to 200 bbl of DAW water in the DAW tank.
- Sterilize the water using UV Light.

1.2 System Description:

Filtered water is pumped to the water deaeration system through a 4" SS pipe; there is a manual butterfly valve before the line splits into a 2" and 1" SS pipes. The 2" diameter takes the filtered water through another pre-filter, followed by a check valve, manual globe valve, and automatic control valve (12V001).

The 2" diameter tube continues through a cooling tube which is used to cool the vacuum pumps prior to entering two identical membrane contactors in series. These membrane contactors strip the dissolved oxygen out of the filtered water using CO₂ which is under a vacuum. The final step prior to entering the DAW Tank is the UV treatment light (12IL001) which is used to reduce the potential for microbial growth follow by a flow switch (12FS002), pressure indicator and manual butterfly valve.

From the gas side, CO₂ is fed from vaporizer skid as a gas. The gas passes through two parallel lines which each have control valves (12V003, 12V004) with pressure regulator, flow indicator, and pressure indicator. Afterwards, the gas stream is used to supply the first and second membrane columns, as well as the DAW tank with CO₂ vapour to counter pressure.

The DAW tank is equipped with a necessary pressure relief valve, as well as pressure transmitters at the top (12PT002) and bottom (12PT001). The top pressure transducer will measure the gas pressure while the bottom can be used to measure the liquid level. The outlet of the DAW tank is a 4" SS pipe with a 2" SS sampling port to drain. A handheld dissolved oxygen sensor can be

used at the sampling port to test the deaerated water. A pump (12M001) with capacity of 100 gpm at 60 psi running at 10 Hp pumps the deaerated water through a check valve, past a pressure transducer (12PT003) and flow meter (12FS001). The deaerated water is constantly being recirculated back through the loop to prevent microbial growth and maintain the level of deaeration. When the mixing lane is calling for DAW, water is sent through a 3" line which goes with a mix proof valve (Mix Lane 1 CIP-S). The 3" line feeds towards the mixing lane where flavours and ingredients are added. When the packaging lane is calling for DAW, it is sent through a 2" SS line that goes through a mix proof valve (Packaging 1 CIP-S).