De-aeration Technologies

Product Application

De-aeration and de-carbonator is a process for removal of dissolved gases such as (Oxygen & Carbon Dioxide). Removing Dissolved oxygen from water boiler feedwater is an essential process to protect boiler tubes & vessel, the presence of dissolved oxygen in boiler feedwater causes rapid localized corrosion. The de-aeration process increases the life of a steam system dramatically.

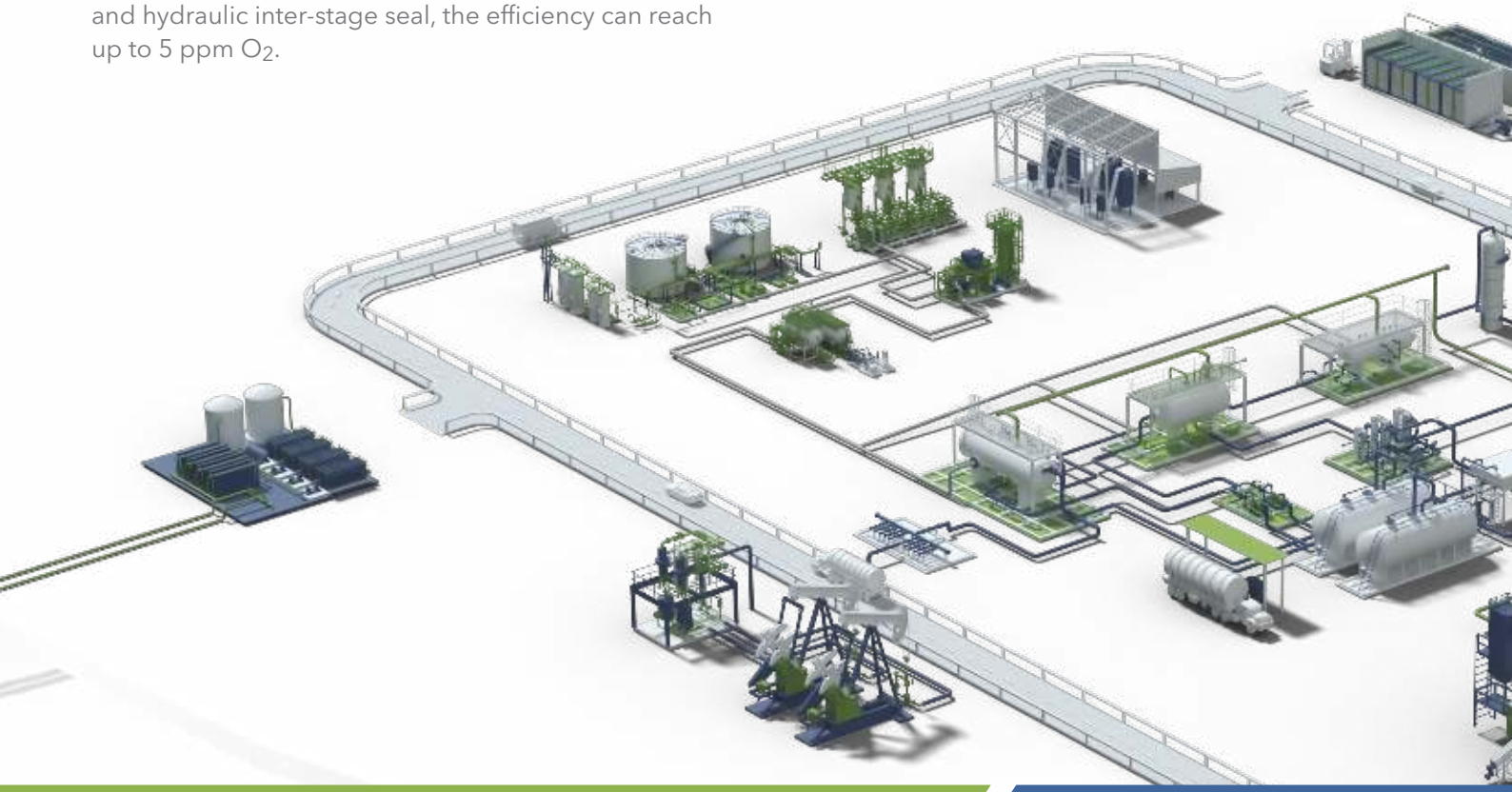
There are two main different types of de-aerators, De-aerator towers (Atmospheric or Vacuum) and Membrane De-aerators.

In the de-aeration towers a heat source is required (Steam) to heat the feed water to increase the efficiency of the removal. With the help of a special internals such as Packing, distribution laterals, Liquid re-distribution and hydraulic inter-stage seal, the efficiency can reach up to 5 ppm O_2.

In the membrane contactors, where a membrane containing a ceramic or polymeric porous material is used to separate water & dissolved gas (Oxygen or Carbon Dioxide) with the help of sweeping gas (Air or Nitrogen), the efficiency can reach up to 0.1 ppm O_2.

Applications Include:

- Boiler feed Water
- Upstream Demineralization plant as de-carbonator
- Seawater Desalination for injection water
- Produced water treatment



Process Description

De-aeration is based on two scientific principles: Henry's Law & the relationship between gas solubility and temperature. The feedwater is sprayed in thin films into a steam atmosphere allowing it to become quickly heated to saturation. Spraying feedwater in thin films increases the surface area of the liquid in contact with the steam, which results in more rapid oxygen removal and lower gas concentrations. This process reduces the solubility of all dissolved gases and removes them from the feedwater. The liberated gases are then vented from the deaerator.

The membrane contactor has the objective to promote the contact between two phases liquid and dissolved gas. The membrane does not give selectivity to the separation since it is only a physical barrier that separates the two phases.

Product Benefits:

- De-aerator Tower
- Robust, Durable and require minimal maintenance
- Efficiency can reach 95%
- Chemicals required to achieve efficiency higher than 99%
- Membrane Contactor
- Compact modular design and requires small footprint
- Efficiency can reach 99.9%
- No chemical requirements

Service and Features:

- Supply as part of integrated system to achieve the performance guarantee values
- Fast track delivery
- Retrofit for existing De-aerators with more efficient internals
- Supply Membrane contactors package as a replacement of existing De-aerator tower
- Installation & supervision commissioning
- Operation & maintenance services

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