GE
Water & Process Technologies

Fact Sheet

Patented DEOX* Process

Description and Use

The removal of dissolved oxygen from aqueous streams to <1ppb O_2 at ambient temperatures. This application uses a patented deoxygenation process.

Typical Applications

Dissolved oxygen is a significant factor influencing corrosion damage in boilers and steam generator systems. The GE DEOX* process is a simple, effective and proven process. The versatility of the process allows use on virtually any source, including filtered surface water, well water, reverse osmosis permeate, condensate and demineralised water. The chemical deoxygenation method consists of the addition of hydrazine to an oxygenated effluent, then passing the mixture through activated carbon to catalyse the reaction between oxygen and hydrazine, followed by a suitable ion exchange bed downstream to remove any carbon leachables or excess hydrazine.

Table 1: Reaction

N_2H_4 (Hydrazine)	+	O_2 (Oxygen)	⇨ Activated Carbon	N_2 (g) (Nitrogen)	+	H_2O (Water)

The carbon catalysed reaction is stoichiometric and rapid even at cold (1°C or 34°F) influent water temperatures. Dissolved oxygen effluent concentrations of <1ppb are common from influent containing 12 to 14ppm dissolved oxygen. Activated carbon is a true catalyst and is not consumed during the process. No metallic catalysts are involved. The reaction products are inert nitrogen gas and water. Hydrazine has a unique advantage over other chemical oxygen scavengers such as carbohydrazine, diethyl hydroxylamine (DEHA), hydroquinone and sodium sulfite; which add TOC, dissolved solids, carbon dioxide and other impurities downstream. A "flywheel" effect allows the system to operate temporarily after shut down or loss of hydrazine feed without significant quality degradation.

General Properties

Equipment

The GE DEOX* process is available for extended term or emergency and supplemental service. Custom systems are recommended for extended term use, and a variety of mobile systems are available for emergency and supplemental requirements. The process is also available under license agreement for users who wish to use and operate the equipment employed.

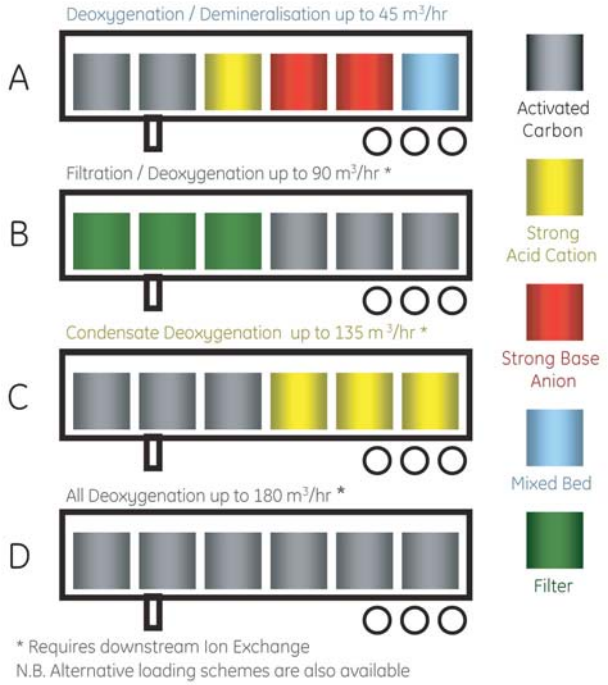

Figure 1: MobileFlow* Typical Loading Schemes

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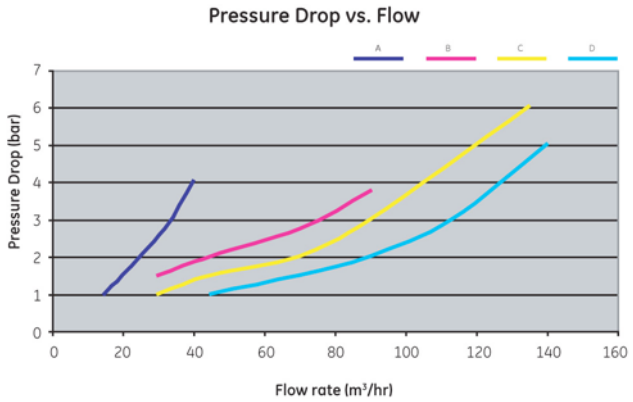

Figure 2: Typical loading performance

Safety Precautions

A Material Safety Data Sheet containing detailed information about this product is available on request.