2008 Case Study

3 Industrial Brackish Water Reverse Osmosis Units (total of 6000 m3/day)

MBR treated reclaimed water, Dubai UAE

INTRODUCTION

As municipalities seek new water sources to augment fresh water supplies, water reuse and reclamation are gaining in popularity. Reuse is an economic and environmentally sound solution that uses less energy and reduces overall waste compared to the alternative solution, seawater desalination.

Low-pressure membranes based processes for water reuse have been proven to meet stringent standards. Their advantages include: a physical barrier to biosolids, pathogens, bacteria and nutrients; the flexibility to handle changing wastewater characteristics and plant capacities; fully automated and simple operation; a significant reduction in footprint and operating costs, delivering the lowest cost per volume treated. Low-pressure membranes are commonly used for post-secondary clarification processes for tertiary filtration, and after biological processes such as membrane bioreactors (MBRs).

In September 2008, Pure Aqua successfully manufactured and supplied three Industrial Brackish Water Reverse Osmosis (BWRO) Units for reclaimed water, Dubai, UAE. Brackish Water Reverse Osmosis Units are designed to produce 3 x 2000 m3/day. The complete BWRO Units were supplied with pre and post treatment using advanced PLC control.

Pure Aqua, Inc. modular design and the use of fiber reinforced pressure vessels, Grundfos multi stage SS pump, advanced PLC control panel with colored touch panel, make these modular units one of the most compact units in the water treatment industry.

The overall reverse osmosis water treatment plant design used a total of 378 reverse osmosis low-pressure membrane elements housed in 54 pressure vessel assemblies.

The plant is designed as three identical stand alone operating trains which provide more operating flexibility.

Reverse Osmosis also known as hyper filtration, is used to purify water and remove salts and other impurities. It is also capable of rejecting bacteria, sugars, proteins, dyes, and other constituents that have a molecular weight of greater than 150-250 Dalton. A full line of brackish and seawater reverse osmosis can be viewed at our website: www.pureaqua.com

SYSTEMS & PROCESS

Feed water to the system is processed water with raw water TDS about 1250 PPM. The system design was based on high rejection TFC spiral wound low fouling membranes.

The Brackish Reverse Osmosis unit consists of 5-micron cartridge filters to reduce feed water Silt Density Index (SDI) and to limit the SS to 5-micron size. It also includes RO membranes feed high pressure pump and TFC spiral wound membranes to reduce the TDS.

PERFORMANCE

The RO membranes remove total dissolved solids (TDS), TOC, BOD and COD after MBR. The RO membrane permits the passage of water molecules but is a barrier to most of the ions, viruses and bacteria in the water.