Energy efficiency in seawater abstraction and disposal system

Corrado Sommariva[1]

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ABSTRACT

Seawater abstraction plays an important role in achieving the energy targets in both desalination and conventional thermal power plants.

Traditionally SWRO plants have been equipped with submerged intake pipes equipped with an intake head.

The merits of this solution are basically deriving from a better seawater quality that can be used as feed to the seawater reverse osmosis plant.

On the other hand, due to the very shallow bathymetric profile in the Gulf water often these merits are lost unless very long abstraction lines are installed.
This in turn brings about significant head losses resulting in high seawater supply pumping cost, deep seawater pump chamber excavations and issues with seawater pipeline regular maintenance. Needs for pigging requires in fact in built redundancy to prevent availability losses due to unavailability of the seawater abstraction system. The objective of this paper is to compare different type of seawater abstraction system including submerged intake, passive screens and open seawater intake, examine their advantages and disadvantages and illustrate innovative aspects in the seawater abstraction system for SWRO plants which van bring about an increase in energy efficiency and maintainability.

SWPC
SUSTAINABLE WATER POWER CONSULTANTS

[1] Corrado Sommariva, PhD, SWPC, Abu Dhabi UAE – corrado.sommariva@swpc.info