

Desalination at Point Lisas Industrial Estate Trinidad, West Indies

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Challenge

Ensuring a reliable local source for potable water

Limited groundwater sources are constricting economic growth of the Point Lisas industrial area. The government of Trinidad was being forced to choose between improving the economic well-being of the nation and providing water for its citizens.

With the help of the United Nations, WASA solicited and evaluated bids to turn ocean water into useable potable and high purity process water for the industrial estate.

Solution

Trinidad's impressive desalination facility is owned and operated by Desalcott, Inc., a joint venture between GE Water & Process Technologies and Karamath Engineering of Trinidad. A water sale agreement between WASA and Desalcott covers all aspects of water delivery.

Overview



Figure 1 shows the process of how the Point Lisas desalination facility provides high purity water to clients of the Industrial Park and drinking water to

the customer of the Water and Sewer Authority of Trinidad and Tobago (WASA). The plant desalts the ocean waters off the coast of Trinidad and has a capacity to produce up to 30 million imperial gallons of quality water per day. Start-up of Phase I-IV of the facility was completed by April 2002 and has run at capacity since. The final Phase V is in process. Trinidad is the host country to the largest desalination facility in the western hemisphere.

Water intake



The ocean feedwater is pumped from a shoreline intake structure to the facility nearly 1.5 km inland. A row of screens protects marine life from being drawn into the intake structure. Water quality is greatly affected by the outflow of the Oronoco River only 10 miles southwest.

Pre-treatment



Due to the high amount of silt in the gulf water, an intensive pretreatment system comprised of floccu-



Find a contact near you by
visiting gewater.com or
e-mailing custhelp@ge.com.

Global Headquarters
Trevose, PA
+1-215-355-3300

Americas
Watertown, MA
+1-617-926-2500

Europe/Middle East/Africa
Heverlee, Belgium
+32-16-40-20-00

Asia/Pacific
Shanghai, China
+86 (0) 411-8366-6489

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lation, sedimentation, single-stage media filtration and disposable cartridge filters clean up the water prior to desalination. The design of the pretreatment system allows gravity flow once it is pumped onsite.

Desalination



The desalination plant includes a seawater RO plant followed by a brackish water RO plant to provide high purity water. Two-stage centrifugal pumps directly connected to an electrical motor provide pressurized seawater for the RO units. The motor is directly connected to a Pelton energy recovery turbine (ERT) that is driven by the RO reject stream to recover energy and reduce the power required for pumping.

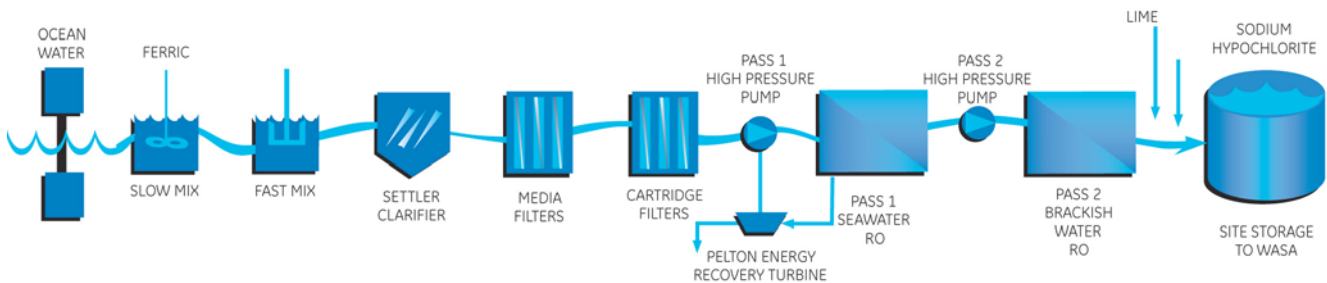


Figure 1: Desalination Process

Post-treatment



Post-treatment includes pH adjustment, remineralization and disinfection to meet potable water standards so water can be used for industrial users or diverted to residential customers.