

COLOANE POWER PLANT, MACAU

Installation of two new 400 t/h
Freshwater Generation Plants

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Freshwater Generation Plant

In 2007 BWSC installed two new FreshWater Generation plants (FWG) at Coloane A Power Plant. The new generation plants constitute more than a doubling of water production capacity and utilize FWGs based on the Multistage Flash principle.

The FWGs produce freshwater by distillation of seawater utilizing waste energy for heating purpose. This energy is taken from the jacket cooling water system of the two 37 MW Mitsui MAN 12K80MC-S diesel engines.

Operational Features

The generation plant is designed for fully automatic operation and is integrated into the main control system. The plant includes a chemical dosing system used for preventing "Deposit inside the Heat Exchanger", "Foaming in the Evaporator" and "pH-adjustment of distillate".

Advantages

The production of distillate uses the otherwise wasted energy in the jacket cooling water from the diesel engines, adding further advantage to the competitive price per m³ of distillate from the Multistage Flash principle FWG. The distillate from the FWG can be used directly as technical clean water in steam boilers, for cooling or cleaning purposes, or for drinking purpose after treatment in a polishing system.

The Multistage Flash principle has the lowest sensitivity to malfunction or incorrect operation as well as to fluctuating quality of the raw water of all commercially available thermal desalination principles.

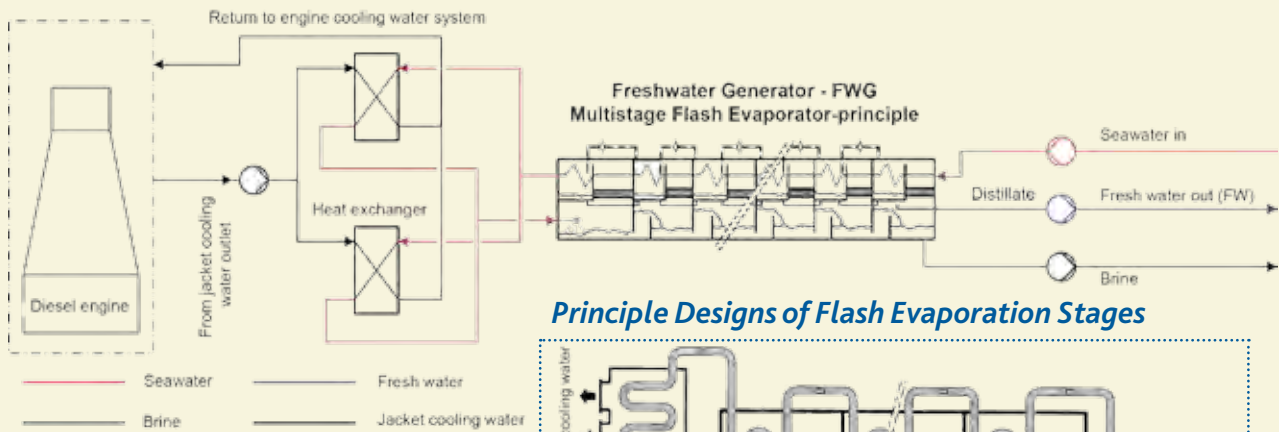
Scale formation and tube fouling are kept at a minimum because no boiling occurs during heat transfer and because high pressure is being kept inside the condenser tubes during heat transfer.

Technical Details

Make of FWG: Serck Como GmbH
 Type of FWG: MSF 400 - 6
 Net water production: 400 t/24h
 Thermal heat demand: 3404 kW
 Electrical power demand: 113 kW
 Specific electrical power consumption: 6.8 kWh/t

Chemicals dosing quantity: 869 g/h
 Jacket water flow: 262 t/h
 Jacket water temperature: in 80, out 69 °C
 Dimension (l x w x h): 6125 x 3410 x 2800
 Weight: 20.7 t
 Seawater supply: 335 t/h
 Seawater temperature: in 30, out 39 °C

Principle Diagram for the Generation Plant



Principle Designs of Flash Evaporation Stages

