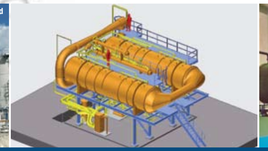
Water Technologies


Jarry Sud




Kimmen - Taiwan

UNITS CAPACITY: 10-500 m³/h

SEA WATER DESALINATION Units

The Sea Water Desalination, by thermal evaporation process, is usually recommended whenever a heavy duty desalination unit is requested for industrial use.
The thermal evaporation units can be arranged according to the following process families;
each of these realizes a vacuum evaporation of the sea water, either by flash or by surface heat transfer,
and involves an energy input which is given
by LP steam. The MVC process only doesn't require for steam but electric power.

MSF (Multi Stage Flash)

MSF PROCESS:
The sea water evaporation is realized by flash into multiple flash chambers each of them working at a different pressure. Sea water is required in large excess as cooling medium, in order to the heat reject for Heat Balance closure, while only a portion of the total sea water demand is used as make-up water to the evaporator.

MSF SPECIAL FEATURES:
WELL TESTED PROCESS OPTIMIZATION PROGRAMS
- Coming from decades of experience
- High thermal efficiency
- Optimization of the brine recirculation

EXCELLENT DEAERATION OF SEA WATER MAKE UP WATER
- No need for oxygen scavengers
- Prevention of corrosion

WELL PROVEN PROPRIETARY DESIGN OF BRINE TRENCHES (PRE-FLASH)
- Wide range of modulation of the brine recirculation
- Enhanced operation flexibility (lower TDR)
- SED® SYSTEM (SWS patent)
- Desalinated water TDS < 0,5 ppm

MED (Multiple Effects Distillers) & ME/TVC (Vapour Thermo (re) Compression)

PROCESS:
The sea water distillation is realized by heat transfer between condensing vapor and a thin liquid falling film evaporating. The process takes place through a number of evaporation stages (effects) each of them working at a different pressure. Through this cascade of stages the vacuum rises up to the final condenser.
When Thermocompressor is applied,
the primary steam is supplied in pressure as motive fluid for the recompression of a portion of vapor, by this increasing the mass performance of the system.
Sea water is required in excess as cooling medium, in order of the heat reject for Heat Balance closure while only a portion of the total sea water demand is used as make-up to the process.

MED AND ME/TVC SPECIAL FEATURES:
WELL TESTED PROCESS OPTIMIZATION PROGRAMS
- Coming from decades of field experience
- High thermal efficiency
- Optimization with the Thermocompressor performance

TUBE FIXING WITH RUBBER GROMMETS (PROPRIETARY TECHNOLOGY)
- Employment of low grade material tubes
- Absence of galvanic corrosion

TUBES STIFFENING WITH PLASTIC DISTANCERS
- Ease in tubes dismantling
- Complete absence of direct contact between different metals

SED® SYSTEM (SWS patent)
- Desalinated water TDS < 0,5 ppm

MVC (Mechanical Vapor(re) Compression)

MVC PROCESS
Similar to the MED / TVC process in terms of evaporator arrangement, the energy input is here from electric source and no steam is required. A limited number of effects is applicable due to the low available pressure gain, usually arranged as single effect for small units or double effect for larger units.
Sea water excess is not required but only the make-up flow to the evaporator.

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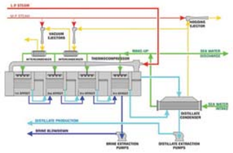
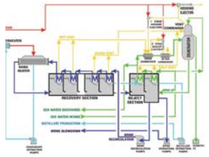
SED® SYSTEM (SWS patent)
- Desalinated water TDS < 0,5 ppm

SED® SYSTEM
The produced vapor is driven through a double layer demisters battery, a thin spray film of water is placed in between. The achieved consequence is a vapor washing so that droplets escaping are free from salts more than in conventional demister banks, resulting in a distilled water purity up to 0,5 ppm.

GROMMETS
The seal tube-to-shell side is well ensured at the low operating pressure difference. This method allows for complete disconnection between different metals and granting for absence of galvanic effects and the relevant corrosion phenomena, by this sacrificial anodes are no more necessary compared with conventional technology.
It also enables ease in assembly and dismantling of the tube bundle in connection to the SWS typical evaporator arrangement.


MED process


MSF process


Grommets detail


Ras Laffan-Qatar

UNITS CAPACITY: 50-2000 m³/h

DEAERATORS Thermal & Vacuum

The Water Deaeration is necessary for boilers and steam generators to eliminate the dissolved oxygen and preventing the boilers from corrosion. The usual required duty is 5ppb as residual oxygen content.
The Thermal deaeration process involves the reaching of the saturation condition of the water to reduce the partial pressure of the dissolved gases: under this condition the gas content in a saturated liquid is zero, the gases tendency is therefore leaving the liquid phase, crossing the liquid-vapor interface and migrate to the vapor phase.

Saturated conditions may be realized either in pressure or under vacuum. On this basis the deaerators can be divided into the following process families:

THERMAL DEAERATORS
Operating at the saturated conditions either atmospheric or under pressure with steam inlet.

FLASH DEAERATORS
Operating under vacuum without steam inlet. The kinetic process is then an important factor since the resident time must be set adequate to let the time to gases for disengaging from the liquid phase.

Spray & Trays Arrangement

The feed water is sprayed above the trays. The inlet heating steam is conveyed from the bottom by the walls of the same chamber, so that a countercurrent flow is established between the steam and the falling water. While falling, the water is heated up to the working saturation condition and releases the gas content, so that at the last trays layer no gas is present in water.

The deaerated water falls down in the below holding tank. Connections are also arranged as steam pressure balance, since it is important to have no pressure difference between the tower and the tank.
The quality standards of SWS units are in compliance with the most severe requisitions of the Power Industry. Our expertize include condensate, make-up demineralized water and sea water to be deaerated in a large range of production rates from 10t/h up over 1000t/h.

The efficiency of the process arrangement, the excellent design of the spraying valves and trays, the ability in localizing large portions of the construction works worldwide enhance SWS's flexibility and competitiveness.


Spray Valves


Piombino-Italy


Azio - Cyprus


La Spezia - Italy

UNITS CAPACITY: UP TO 1000 m³/h

WATER & CONDENSATE Treatments

SWS designs and supplies water treatment plants for the production of make-up water to boilers and of process water to refineries and petrochemical plants. The following technologies are available and covering the widest range of applications:

Raw water treatment
- Clarification
- Dechlorination
- Deferrization
- Sand and multi-media filtration
- Activated carbon filters
- Reverse osmosis package units
- Demineralization units through ion exchange resins

Desalinated water treatments
- Chemical conditioning through chemicals dosing units
- Demineralization by ion exchange
- Resin mixed bed filters
- Remineralization units by either salts dosing and mineral bed drums (potabilization)

Condensate water treatment
- Fine physical filtration through self cleaning cartridges filters
- Deoiling on either activated carbons and coalescing resin filters
- Polishing by ion exchange resins through systems with either internal and external regeneration process
- Electrodeionization package units
- Chemical conditioning units by chemicals injection (for Boiler Feed Water)

Industrial waste water treatment
- Deoiling (CPI separators)
- Clari-Flocculation
- Biological Treatment

All SWS units are custom designed according to the specific requirements of each project. The expertise of SWS in the water technologies is then extended to every kind of treatments and uses, as SWS enjoys the most complete scientific know-how in the field of the water and its applications.


Trieste - Italy


Chivasso - Italy


Cutro- Italy

Who we are...

Company

SWS was **established in 1996** with the scope to design and supply, on its proprietary know-how, **package units** for the primary water treatment and the production of pure water for industrial use in **power generation**, **oil & gas and petrochemical industry**.

Sofinter

SWS is the operational **division of Sofinter S.p.a.** dedicated to water treatment technologies.

Skills and capabilities

The in-house product development is extensive and the **engineering capabilities** cover all of the disciplines for process calculation, basic design, mechanical, electrical and instrumentation detail design.
Continuous attention to the products update and **continuous r&d programs** devoted to the constant improvement of the technology complete the profile of SWS.
The professional and flexible company structure of SWS is particularly suitable to meet the customers different needs by provision of the proper custom designed solution.
The **project management** is oriented to the customer satisfaction while keeping the job schedule under control.

Certifications

One of SWS major target is the achievement of excellent results.
SWS operates in strict compliance with its quality system which is certified **ISO 9001 : 2000**. Moreover, SWS is committed to pursue an effective policy for the **enviroment** protection; the relevant procedures are taking care of the ambient impacts while keeping under control the quality of the equipment design and fabrication phases.

Worldwide reference

The membership to Sofinter is conferring to SWS the most effective worldwide service capability for a timely and appropriate after-sale assistance.
Plants are arranged as package units delivered on ExWorks, FOB, CIF, DDU, FOT basis according to customer needs.

Saline Water Specialists

SEA WATER DESALINATION UNITS
THERMAL & VACUUM DEAERATORS
WATER & CONDENSATE TREATMENTS

SWS
SALINE WATER SPECIALISTS

A DIVISION OF SOFINTER S.P.A.

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