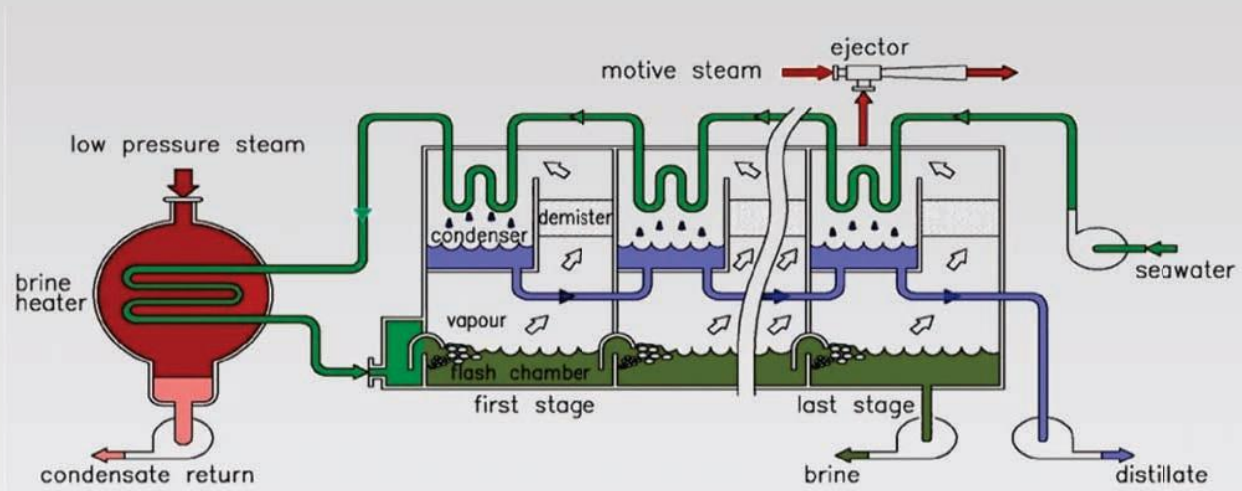


Multi Stage Flash (MSF)



- Multi Stage Flash (MSF), a thermal desalination technology based on flashing process, produces distilled quality water directly from seawater. In MSF process, pre-heated sea water is heated to a top brine temperature of about 90– 120 °C in a brine heater using low pressure steam and then flashed in successive stages maintained at decreasing levels of pressure. The vapour produced in each stages is condensed on the outside surface of the preheating condenser, thereby preheat the incoming feed seawater. Condensed vapour is recovered as pure water.
- MSF can accept higher contaminant loading (suspended solids, heavy metals, oil, grease, COD, BOD etc.) in feed sea water. MSF is capable of producing distilled quality product water required for power plants, process industries and several other high purity applications.
- BARC, based on the experience gained from the 15 KLD desalination experimental facility and 425 KLD MSF pilot plant at Trombay, has developed MSF technology with long tube design requiring less energy consumption as compared to conventional cross tube MSF.
- A large scale (4.5 MLD) MSF plant was designed, installed and operated as a part of the 6.3 MLD Nuclear Desalination plant based on Hybrid MSF-RO technology. MSF plant uses the steam from nuclear power plant and produce distilled water almost 10 times of the steam consumed. This water is used to meets the makeup water requirement of the nuclear power plant apart from supplying potable water to the nearby locality.

For further details contact :

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Multi Stage Flash (MSF)



4.5 MLD Multi Stage Flash Plant at Nuclear Desalination Demonstration Plant (NDDP), Kalpakkam coupled to Madras Atomic Power Station

S. No	Items	Specific Information
1.	Objective of the technology	To produce distilled quality water from seawater
2.	Scope of service	Know how and consultancy services (process design, system engineering, procurement services) in setting up MSF Desalination Plant
3.	Features of the Technology	Uses low grade Steam for producing distilled quality water Specific Energy Consumption: <3 kWh/m ³
4.	Capacity	Large capacity
5.	Approximate Capital Cost (Rs/unit)	About Rs 100 per LPD capacity (Base Year 2015) at battery limits
6.	O&M Cost	5-10 paise/lit
7.	Any Specific Pre-requisites for installation of the unit	
	Open Space/shed required for installation	30,000 sq. m for 4.5 MLD plant
	Electrical Power Requirement	650 kW for 4.5 MLD plant
	Steam Requirement	21 T/hr @ 3.5 bar
	Necessity of Specialized Manpower	Local manpower with proper training

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