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the cold, partially-dried air flows into a desiccant section, where the desiccant absorbs additional moisture from the air.

DISTILLING PLANTS

Distilling plants are used to supply fresh water and feedwater. Distillers use either steam, hot water, or electrical energy to boil seawater.

The majority of Navy ships have steam-heated distilling plants. There are three types of steam-heated distilling plants—submerged tube, flash, and vapor compression. Of these types, the submerged-tube heat recovery and flash are the most widely used.

Heat recovery units are used in vessels with engine propulsion or auxiliary engines. Two variations of the heat recovery types are used; both use the heat from engine cooling systems for evaporization of seawater.

In one model of a heat recovery plant, the heat of the diesel engine jacket water is transferred to the seawater in a heat exchanger. The heated seawater is then flashed to freshwater vapor as in the flash-type

a chamber that is under vacuum as in the submerged tube distilling unit.

Refer to figure 10-31, which shows a simplified flow diagram for a 12,000 gpd (gallons per day), Model S500ST, submerged-tube recovery unit. In this unit, jacket water from the ship's main propulsion diesels is fed to a tube bundle. The tube is submerged in the seawater that will be evaporated. The jacket water imparts its heat to the seawater surrounding the tubes, which induces seawater evaporation. The vapor created by the evaporating seawater is drawn through vapor separators to the distillate condensing tube bundle. The temperature of evaporation is maintained below the normal 212°F boiling point by a feedwater-operated air

eductor. The eductor mechanically evacuates air and gases entrained in the vapor formed in the evaporating process and creates an internal shell pressure as low as 2

1/2 psia. The flash-type distilling plant (fig. 10-32) has preheater that heat seawater to a high temperature. Then, the seawater is admitted to a vacuum chamber where some of it flashes to vapor. The remaining

distilling unit. In the second variation, the hot diesel engine jacket water is circulated through a tube bundle that is submerged in seawater. The seawater is boiled in

seawater is directed to another vacuum chamber maintained at an even lower vacuum. Here, more seawater flashes to vapor. At this point, the remaining

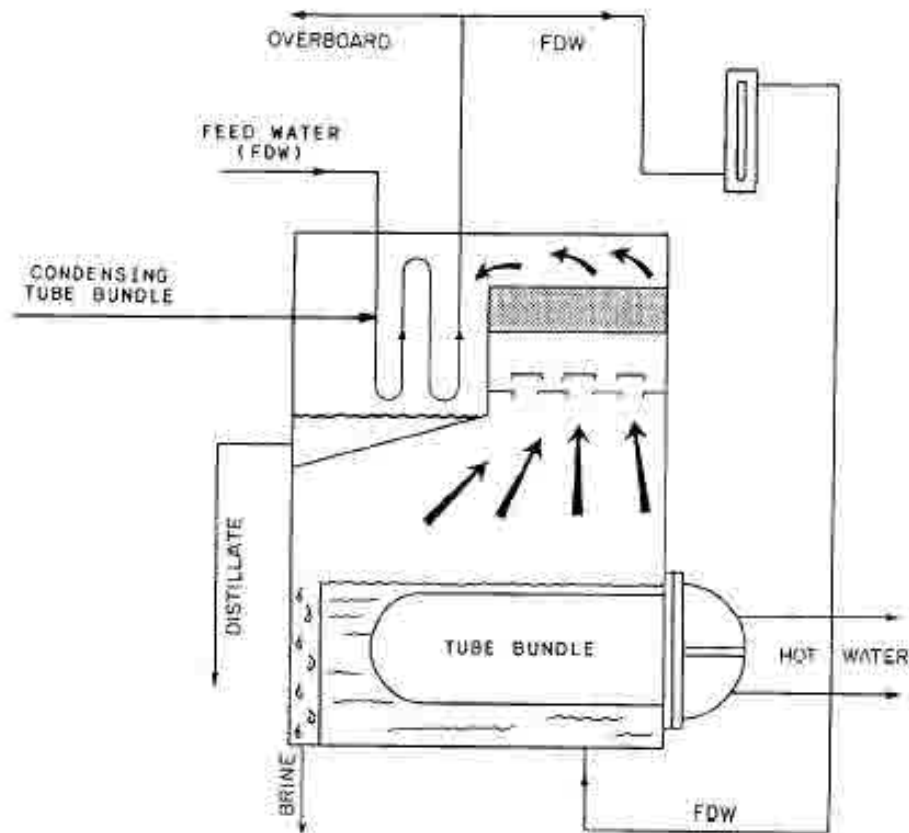


Figure 10-31.—Simplified flow diagram-heat recovery unit.