

WHAT HAPPENED TO ALL THAT STICKY OIL?



Most travelers on passenger ships will probably never have the chance to see the impressive machinery needed to run the ship. To keep the machinery going, the ship needs different kinds of oils to work properly. However, fuel oil is not directly usable when delivered to the ship, because the water it contains must be removed first. This separation process would not work unless the oil viscosity was lowered using a SWEP BPHE.

The manufacturer of the system is GEA-Westfalia Separatoren AG, one of the global leaders in mechanical separation and dairy systems. The group consists of more than 50 companies and is represented in over 60 countries.

To separate the water from the oil without clogging the separator with sticky oil, the viscosity of the oil must first be lowered by heating it.

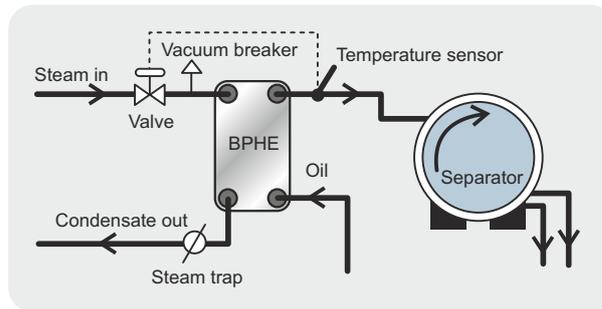
A compact BPHE is mounted before the separator, with oil in one circuit and condensing steam in the other. The oil processed in this application may be low-sulphur heavy fuel oil as well as lube oil.

SWEP offers many different BPHEs for this onboard application, from the very small 10-plate B5T to the larger 80-plate B120T. Multiple SWEP B633 BPHEs, the world's largest BPHE for this purpose, may be used at the cistern oil pumps to control the viscosity. All the various BPHEs meet the heating demands in a very compact envelope that enables them to fit into the machine room's confined spaces.

Application data from a specific heavy fuel oil heating case

BPHE type	B35x30
Cooling capacity	72 kW
Oil type	IF-380
Oil temperature	50 °C to 98 °C
Oil flow	2700 l/h
Steam pressure	3 bar
Steam flow	108 kg/h

Since steam is involved in this system, some components are needed close to the BPHE that are not necessary in a water-heated oil system.



The steam trap ensures that the uncondensed steam and non-condensable gases (e.g. carbon dioxide and air) leave the system after the BPHE. If the steam trap does not work, these gases occupy a lot of space in the condensate pipe, which may lead to so-called water hammer. When water hammer occurs, a high-speed “water bullet” is formed that may fracture the condensate pipe or other downstream components.

If a vacuum occurs in the BPHE, the vacuum breaker allows air into the unit to avoid the backflow of condensate into the BPHE.

If the temperature of the oil becomes too high or too low, the temperature probe sends a signal to the regulation valve to throttle or open the steam flow.

