

Pioneer power station with BPHE LNG vaporizers

One of the world's first power stations with BPHE LNG vaporizers has been installed at a gold mine in Perth, Australia. The company behind the project, EVOL LNG, is a leading provider of LNG for transport, power generation and other industrial applications. It provides a trucked natural gas solution to fuel off-grid power stations and deliver a solution with less capital cost than natural gas pipelines and with lower fuel costs than diesel.



In a traditional LNG process, liquefied petroleum gas (LPG) is extracted from the natural gas by an LPG extraction plant before it is sent to the LNG plant. The natural gas is further treated to remove CO₂ and moisture before being cooled to cryogenic temperatures (approx. -145°) for liquefaction. The LNG is stored in an insulated sphere before being loaded for transportation. At site the LNG is led into 6 m tall vaporizers that demand a lot of space. They use ambient air for the evaporation process and if the ambient temperatures are low, they will cause the vaporizer to ice up and negatively impact performance. In addition, traditional LNG vaporizers require a drainage system.

Always striving to find more efficient solutions, EVOL LNG has managed to solve the technical issues of traditional vaporizers with the use of BPHE technology. With a glycol loop instead of ambient air, the BPHE vaporizers do not ice up. The need for a drainage system is eliminated and performance is ensured at all times. The compactness of the BPHEs also makes the system semi-mobile. Possible to move from one site to another, it is both cost-efficient and more environmentally-friendly.

Located 540 km from the nearest supply point, the Gold Mine has a processing capacity of 480 ktpa and 2 x 90 m³ LNG storage vessels. "You would normally use multiple ambient vaporizer units, as you need to factor in a thaw cycle, so that any built-up ice can be shed," says Mark Lindup, LNG Market and Project Development Manager at EVOL LNG. "So a typical 1-on/1-off cycle would switch every 4- 8 hours, dependent on ambient conditions. For a ~25 tpd project, we would normally use 2 x 2 banks of vaporizers, with a footprint of roughly 2m x 2m x 6m per vaporizer."

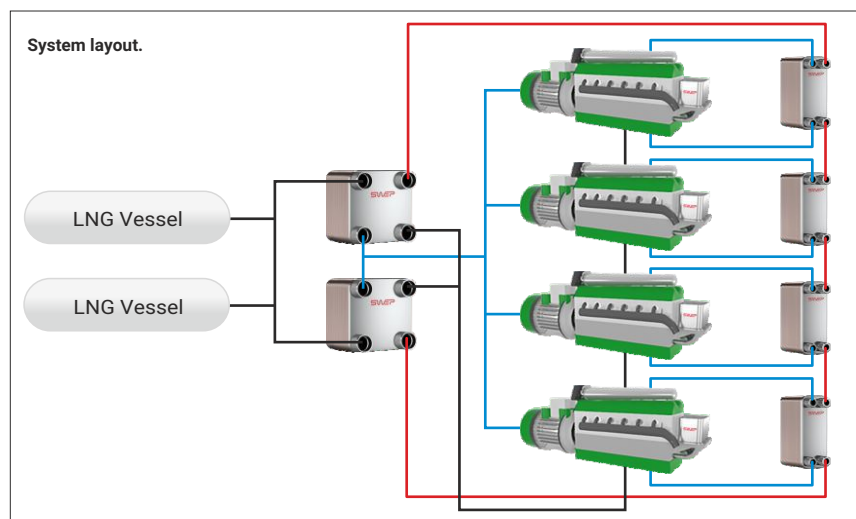
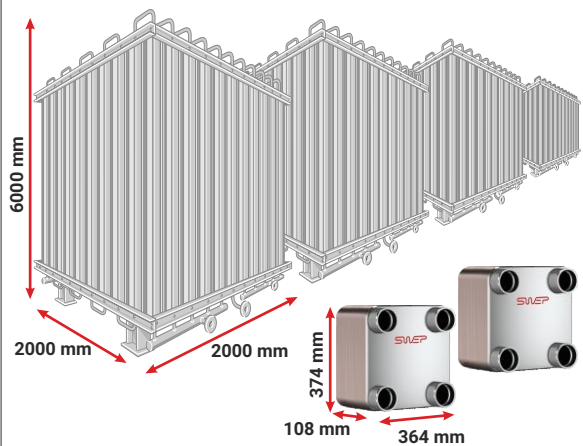
Instead of the traditional solution with ambient vaporizers, SWEP's B60 and B12 BPHE's were installed at the site. The gen-set jacket water next to the installation heats up the 65% glycol, using the B12 units. The glycol in turn vaporizes the LNG, using the B60 units. The natural gas fuel is then piped into the same gen-set power station where it is burned in the dual fuel engines. "For this project I chose 2 x B60, rather than one larger unit, for the sake of redundancy," says

Lindup. "If one of the units failed, we could at least supply ~10 tpd to the customer while replacing the failed unit." The installed generating capacity is 7 MWe and it has a dual fuel supply of diesel and LNG.

HEX	Ambient vaporizer	SWEP BPHE
Capacity (tdp)	25	25
Number of units	4	2
Height (m)	6	0.37
Heating loop	Ambient air	Glycol

BPHE/ambient vaporizers compared

Not only is SWEP's B60 smaller and more compact, but it also costs only a fraction of the traditional solution. Compact, reliable, and cost-effective, BPHEs are the optimal solution for LNG plants. "The LNG vaporizer market is vast and interesting," says Tobias Lindsjö, Regional Manager at SWEP.



The gold mine where the B60 is installed.