This concept has been developed to enable the transfer of LNG from small- to mid-scale carriers to onshore or floating storage and regasification terminals where it is not feasible to construct a jetty for mooring the vessel. This may be because the water is either too shallow for the ship, or too deep for a jetty to be built.

With the LNG carrier conventionally spread-moored in proximity to the shore, a self-propelled Floating Transfer Terminal (FTT) is attached to the ship using mooring ropes or winches. The FTT has been developed by Houlder in cooperation with Wärtsilä. The transfer arm, which is operated from the FTT, is developed by Houlder and Klaw LNG.

The Floating Transfer Terminal with onshore connected floating hoses.
The transfer of LNG takes place using floating Cryoline hoses by Trelleborg. The Cryoline technology provides fatigue resistance in even the most demanding conditions, and enables a viable and cost-effective alternative to conventional jetty-based transfers. When not in use, the hoses are stored onshore with a custom designed reel system.

**DIFFERENT CONCEPTS TO SUIT ACTUAL CUSTOMER NEEDS**

The jettyless concept represents a low investment and quick installation solution in situations where the cost of building a jetty is prohibitive. Because each location has its own characteristics, Wärtsilä develops different concepts to suit the particular situation.

As an EPC contractor, Wärtsilä sees this new concept enabling even smarter total LNG terminal solutions for various types of small-scale LNG opportunities, where a jetty would be an expensive and time-consuming solution to execute.

**KEY FEATURES & ADVANTAGES OF CRYOLINE LNG**

- Hose-in-hose design with insulation
- From 6” to 20” (inner diameter)
- EN 1474-2 Certified Technology
- Maximum allowable operating pressure 20 bar
- For floating, submarine or aerial configurations
- Integrated leak monitoring system
- For environments up to Hs* = 5.5 m

*C* significant wave height