

## Highlighting HiLoad flexibility

New projects reveal the flexibility of TORP HiLoad units in both LNG import and export terminal roles; TORP is also promoting EasyLNG



*Torp's barge-mounted EasyLNG concept is a regasification solution for shallow water and benign environments*

One of the most notable of a number of recent developments at TORP LNG has been the choice of the company's proprietary HiLoad technology for an offshore loading application with a proposed LNG floating production storage and offloading (FPSO) vessel. This LNG export application stands in stark contrast to the other offshore projects where HiLoad units are being considered, all of which involve a regasification facility in an LNG import role.

MEO Australia Ltd has selected a TORP HiLoad unit as its preferred method for loading LNG carriers at its proposed LNG FPSO project in the Timor Sea. The HiLoad unit will be employed with a single point mooring system and MEO points out that this technology will avoid the need for close vessel approaches and assist tugs.

"We undertook a study for MEO Australia to enable the comparison of our technology with a conventional

jetty and are pleased to report that our system has been chosen as the company's preferred solution for offshore LNG loading," says Lars Odeskaug, TORP LNG's chief executive officer.

The TORP HiLoad LNG loading system locates against the side of the LNG vessel at the normal cargo manifold access point and loads via conventional articulated arms, thus enabling conventional LNG carriers to be used. While the L-shaped TORP unit has yet to be used for LNG, it is planned for several other projects involving LNG regasification facilities. The recent certification of LNG subsea pipe technologies and flexible transfer systems in the form of umbilicals and hoses is opening up opportunities for offshore technologies such as HiLoad.

The proposed Timor Sea LNG project involves a 3 million tonnes per annum (mta) LNG production module on a self-installing platform, a conventional steel

LNG storage tank with concrete secondary containment on a concrete gravity-based structure (GBS) and an LNG loadout system. Environmental approvals for the project have been secured as an extension to MEO's proposed Tassie Shoal offshore methanol project.

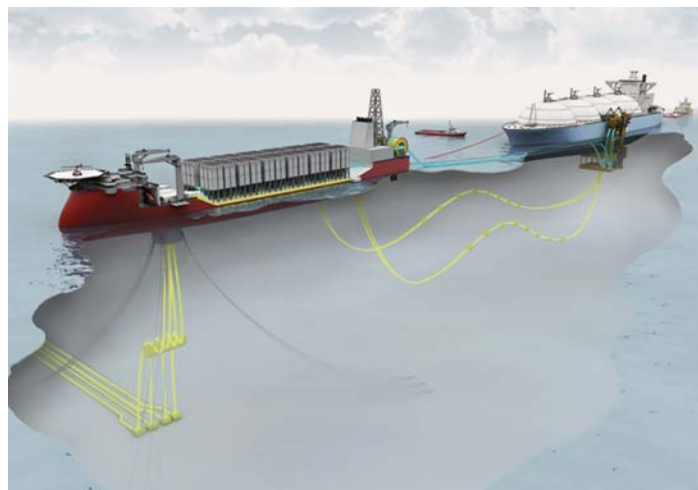
In another recent development TORP LNG has refiled its application with the US authorities for its Bienville Offshore Energy Terminal project planned for a location 60 miles off coast of Alabama in the Gulf of Mexico. The LNG import terminal proposal that has been resubmitted features a HiLoad unit which makes use of closed loop ambient air vaporisation (AAV) technology. The closed loop AAV approach is recognised as a more environmentally sound choice than the open loop system using sea water originally envisaged.

The revised Bienville project has been extensively redesigned in other respects, in addition to the new regasification approach. The offshore terminal will consist of a floating regasification unit (FRU) moored in place via a detachable turret mooring system and a separate HiLoad unit. In addition to housing the AAV plant, the FRU will serve as an LNG metering station and provide electrical power, utilities, accommodation space and a helipad for the terminal. The AAV plant will utilise solar energy to heat an intermediate fluid which will be transferred via flexible hoses in a closed loop between the plant and the shell and tube vaporisers on the HiLoad unit. These vaporisers on the HiLoad unit, which will be positioned a suitable distance from the FSU, will carry out the regasification of the LNG.

The Bienville project is being developed by TORP Terminal LP, a company owned by TORP LNG and Siemens Financial Services Inc.

Over the past year TORP has also been progressing its EasyLNG regasification solution for shallow water and benign environments. EasyLNG is designed as a simple and straightforward approach to the import of LNG at offshore locations and the barge-based system can accommodate multiple regasification technologies, including AAV. If an LNG storage option is required, a conventional LNG carrier could be moored on the opposite side of the barge to that used by the delivery tanker. Both sides of the EasyLNG barge would be fitted with cryogenic loading arms to facilitate LNG transfers across the barge between vessels.

Besides Bienville, the other specific offshore LNG import project with which TORP is involved is the Azzurro LNG scheme in Italy. Currently being developed in conjunction with the Italian energy firm Sorgenia SpA, Azzurro LNG would make use of two HiLoad units positioned 20km



*The revised Bienville Offshore Energy Terminal*

off the country's southern or central coastal region at a location yet to be named. The throughput capabilities of the HiLoads would enable a conventional size ship to be fully discharged in the space of 2.5 days. Sorgenia has awarded a contract to TORP to develop a receiving facility that could start operations by 2014.

"The baseload Azzurro terminal would have a peak gas sendout capacity of 1.4 billion ft<sup>3</sup>/day and Sorgenia SpA expects to move the project into the permitting stage during 2010," states Leiv Kallestad, TORP LNG's vice president for commercial affairs. "In addition, the Bienville project should get a record of decision and move into the marketing phase over the same time period.

"The HiLoad LNG technology is also being considered for future LNG projects by several companies worldwide for LNG transfers as well as in a carrier assist or tug replacement roles. Finally, TORP expects to be in a position to compete for regasification projects with our EasyLNG barge-based solution in 2010.

"We believe that the use of our technology in all these regasification applications provides customers seeking to import LNG at offshore locations with a cost-effective and environmentally sound solution," continues Mr Kallestad. "All offshore LNG projects face a number of challenges at the moment, not least public perception, global economic uncertainties, a fragile financial environment and political instability in certain regions.

"For our part, TORP LNG is meeting these challenges through responsible economic stewardship and adopting a strategy that takes into consideration the long-term nature of the LNG business. On top of the perseverance and dedication necessary in this sector is our belief in the economic and environmental advantages inherent in TORP's offshore LNG solutions." *LNG*