

GP&I unveils new Coselle CNG carrier designs

Guido Perla & Associates, Inc. (GP&I), Seattle, Wash., recently unveiled two additional Coselle Compressed Natural Gas carrier designs that it will provide to Sea NG Corp., Calgary, Canada. The new CNG carrier designs are similar to one that was approved by ABS in September 2006 for construction.

"CNG carriers are a cost effective, reliable and safe alternative to the traditional ways of transporting natural gas via subsea pipelines or Liquefied Natural Gas (LNG) carriers," says Dan Koch, GP&I vice president of Engineering. "When circumstances allow it, pipelines provide the best option for transporting gas over short distances, while LNG car-



riers offer various advantages for large quantities of natural gas to be transported over long distances.

To transport moderate volumes of compressed gas, the CNG carriers will use Coselles, a new technology consisting of large coils of pipes wound into a cylindrical storage container.

The original 118m CNG carrier, for which GPA completed the design in 2006, will have a capacity of 50 mmsCF (million standard cubic feet) in 16 Coselles. The Coselles are

arranged in four equally sized stacks, each four high, in a fully enclosed and inerted cargo house on the main deck. A major advantage of the Coselle system is that it requires minimal onshore facilities due to the ability to load and discharge gas at simple portside facilities not requiring liquefaction and regasification equipment, which greatly reduce environmental, land-use and financial concerns.

The vessel, which under ABS will be classed as Maltese Cross

A new Coselle CNG carrier design from Guido Perla will offer capacity of up to 250 million standard cubic feet

+A1 Compressed Natural Gas Carrier, E, +AMS, +ACCU, +APS, UWILD, will accommodate 11 crew members and will be equipped with two azimuthing Z-Drive propulsion systems and one bow tunnel thruster.

The two new CNG carrier designs will be both larger and have more capacity than the original. One will be 204m in length, accommodate 20 crew members, and will be equipped with 84 Coselles, providing a combined natural gas capacity of 250 mmsCF.

The other will measure 141m in length, accommodate 11 crewmembers, and have the capacity to carry 75 mmsCF in 25 Coselles, which will be arranged in five stacks of five Coselles each.

the system to routes (notably serving Japan) that don't transit the Suez Canal.

Though LNG may be the fuel of the future, LNG ships are hardly "ships of the future." LNG technology is something that largely got locked into a time warp when the first LNG shipbuilding boom collapsed. Deliveries of LNG ships peaked in 1978, then dipped below an average of five per year until the market picked up steam in the mid-1990's. Demand soared again from around 2000 onward.

Something else that's apparent from the current order book is the domination of Korean yards.

Korea is a prodigious importer of LNG. Korean yards leveraged orders from national gas company Korea Gas Corporation (KOGAS), the world's largest customer for LNG, to grab themselves a huge slice of the market. In pursuing market share, they did not look to improve upon LNG tanker technology, but rather focused on honing LNG ship production technology. Initially, they brought that technology to bear on ship designs that were essentially 30 years old.

BACK TO THE FUTURE

Now we are seeing the first major

advances in the technology of the ships themselves. One that we've discussed in the past is a gradual move away from steam turbines to diesel and diesel electric plants that are able to use LNG boil-off as fuel.

Hyundai Heavy Industries Co., Ltd. (HHI) has developed the first Korean Dual-Fuel Diesel-Electric (DFDE) propulsion system for LNG carriers.

An Integrated Automation System covers the main engine, the electric propulsion system, other control systems, and what HHI calls "the Ecobot."

The Ecobot is the heart of the DFDE system, using any available LNG boil-off to fuel the main engine.

The first ship equipped with the DFDE propulsion system is the 155,000 m³ *British Emerald*, delivered to BP in July.

When running at a speed of 20 knots, the DFDE system reduces fuel consumption by 40 tons per day compared to a steam turbine ship, which uses 180 tons of fuel per day at that speed. And, of course, LNG boil-off produces less emissions than diesel (or steam turbine) fuel.

HHI plans to produce the dual-fuel engine and most of the core equipment, including the electric motor, switchboard, and generator, in Korea by 2008.

The next big development from Korea seems likely to be in containment systems.

Korean shipyards and KOGAS in April agreed to cooperate on the trial run of an LNG vessel that uses a locally developed LNG containment system.

The memorandum of understanding between KOGAS and the Korea Shipbuilders' Association calls for joint efforts to test the new LNG containment membrane system, Korea's Ministry of Commerce, Industry and Energy said.

Korean shipyards and the government have invested \$12.5 million since 2004 to develop the new system, and lab tests are expected to be completed this year. Once the first phase is complete, KOGAS will order an LNG ship with the new technology and operate it on a trial basis to ensure there are no quality or safety problems.

The new LNG ship may undergo tests as early as 2009.

If the trials are successful, Korean yards can cut royalty payments by \$10 million on each LNG carrier they build.

According to one Korean Government official, many foreign shipping companies are awaiting the trial of the new system since they would be direct beneficiaries of the new containment system. **ML**