On a clear night last spring, the skies over the Port of Hamburg in Germany were lit by a brilliant fireworks display for the christening of AIDA Cruises’ new dual-fuel cruise ship, the AIDAprima. The ship treated spectators on the shore to a spectacular rolling light show spanning the decks from fore to aft. Celebration aside, the exhibition also showcased the opportunity for liquefied natural gas in yet another segment of the marine industry.

“We’re the first cruise line in the world to supply a ship with low-emission LNG for operation in port. I am convinced that our path is also a clear signal to the ports and LNG producers to invest in the necessary infrastructure,” said Felix Eichhorn, president of AIDA Cruises.

Eichhorn’s comments echo the sea change that’s being felt throughout the industry. Just six years ago, the marine industry was the last large emission source that remained unregulated. Since then, International Maritime Organization mandates have led ship owners to develop new solutions. While LNG remains a relatively new fuel source for ocean-going vessels, marked growth in the number of LNG-fueled ships signals the beginning of a new era, even as it calls out a challenge for the marine transportation industry and LNG suppliers.

From cruise ships to containerships, as the world continues to move toward an international emission standard, liquefied natural gas is asserting its role as a marine transportation fuel. **BY PAT OLSEN**
New Markets
Today, more cruise line owners are buying into LNG worldwide. In addition to Germany’s AIDAprima launch this year, in the United States, Carnival has ordered four dual-fuel cruise ships from Meyer Werft, a German shipyard. If one cruise line executive’s prediction proves true, 80 percent of cruise ships will be LNG-powered by 2025.

Ferry owners are also jumping on board. In Canada last summer, the Société des traversiers du Québec launched the first LNG-powered ferry, which was built in the Italian Fincantieri shipyard. John Hatley, Americas vice president of Marine Solutions for Wärtsilä North America, confirmed that there has been an increase in orders for LNG-powered ferries: “Wärtsilä alone has contracts for several new ferry buildings: three being built in Poland, two in Turkey, two in Canada, the one recently delivered from Italy and two more soon to be converted to LNG fuel.”

In North America, deliveries of LNG-fueled vessels kicked off with offshore leader Harvey Gulf International, whose Harvey Energy entered into service in February 2015, Hatley said. Six offshore vessels powered by LNG fuel are now planned for the company.

Other industry segments are moving to LNG this year as well, and infrastructure is being developed to support them. In the Caribbean, Crowley Puerto Rico Services received a $21 million terminal construction contract in May to upgrade the San Juan terminal in preparation for the late 2017 arrival of Crowley’s two new LNG-powered ConRo ships, some of the world’s first LNG-powered combination container and Roll-On/Roll-Off ships. In Norway, Stolt-Nielsen has announced global LNG distribution projects that will involve building regional terminals served by a fleet of ships to support customers far from conventional pipeline gas.

In Central America, the expansion of the Panama Canal had a major impact on the maritime industry this year, boosting LNG trade by lowering costs and speeding transport. In July, Royal Dutch Shell’s Maran Gas Apollonia tanker, loaded with a cargo of U.S. LNG from Cheniere-operated Sabine Pass, became the first standard-size LNG vessel to motor through the canal. Bloomberg recently reported that 90 percent of the world’s fleet of tankers carrying LNG exports will now have access to this shortcut to Asia, which bodes well for U.S. gas companies exporting LNG to other countries.

A Climate Resolution?
Meanwhile, the Paris Agreement during the U.N. Climate Change Conference in December 2015 marked the first universal, legally binding global climate deal, with 195 countries agreeing on a global action plan to limit global warming to well below 2 degrees Celsius. The treaty was ratified in mid-October and went into effect on Nov. 4.

Although international shipping was not included in this agreement, amid the optimistic predictions for growth, all eyes are on the International Maritime Organization to see whether the sulfur emission standard for emission control areas will be dropped from 3.5 percent to 0.5 percent in 2020, or deferred until 2025. At press time, the organization’s review is “nearing completion,” according to an IMO spokesperson, with the IMO Marine Protection Committee already agreeing in principle to make a decision at its session at the end of October.

Should the standard be deferred, there might be a slowdown by those parties planning on switching to LNG. But if it goes through, vessels subject to the emission regulations laid out in MARPOL Annex VI, the IMO’s pollution regulations, have only three choices: 1) use low-sulfur diesel fuel; 2) use abatement technologies such as exhaust gas treatment systems (usually scrubbers); or 3) use alternative fuels such as LNG.

The IMO has not offered an opinion but has said that “certainly LNG has environmental advantages in terms of sulfur emissions.”

For Continued Growth, Invest
“Growth in the use of LNG may be slower than some of us wish, but it’s inevitable.” That’s according to John Graykowski, founder and principal of Maritime Consultants, who was deputy maritime administrator in the U.S. Department of Transportation during the Clinton administration and later was acting maritime administrator. Still, Graykowski believes LNG’s continued upward momentum—at least in the United States—is also dependent on how willing the federal government is to support it. Despite the progress by Harvey Gulf, the port at Jacksonville and Tacoma (in which the gas suppliers reached an agreement with the users that the latter would guarantee to purchase LNG for a number of years), a national strategy for developing LNG as a fuel source remains to be developed.

“If the United States is serious about developing a plan and moving toward energy independence, there needs to be a national statement to that effect by Congress and the president,” he said.

Graykowski suggests a program similar to one Europe created to incentivize the industry to convert ships to natural gas.
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**GERMANY**

**VESSEL:** Shipping management company Wessels Reederei GmbH will be the first to convert a containership to LNG in 2017, the WES AMELIE; French international classification society Veritas Bureau will class the vessel.

**SPAIN**

**VESSEL:** Astilleros Gondán has launched the first two of three dual-fuel tugs built in Europe for Norwegian state-owned Statoil.

**UNITED STATES**

**VESSEL:** Carnival Corp. entered into an agreement with Meyer Turku in Finland for two LNG-powered cruise ships for Carnival Cruise Line’s 2020 and 2022 fleets. They will be the first LNG cruise ships based in North America. The company also ordered an LNG-powered ship from German company Meyer Werft for delivery in 2020 for P&O Cruises UK. The company recently signed an LNG supplier agreement with Shell for the vessels.

**ITALY**

**R&D:** RINA has established a “Gas Center of Excellence” in response to the European Union (maritime) master plan and the increased interest in the use of LNG as a fuel.

*Source: www.ngvglobal.com/blog/category/market-developments/maritime*
AUSTRALIA
INFRASTRUCTURE: Fremantle Port off Australia’s western coast is the first Australian port to have an LNG bunkering facility. EVOL LNG will provide the fuel.

JAPAN
R&D: The Ministry of Land, Infrastructure, Transport and Tourism established a steering committee to conduct a feasibility study on using LNG for bunkering in the Port of Yokohama.

KOREA
VESSEL: The agreement for the largest LNG-fueled bulk carrier ever ordered was recently signed between the Hyundai Mipo Dockyard, Ilshin Logistics and steelmaker POSCO. The ship is expected to be complete in 2017.

RUSSIA
INFRASTRUCTURE: Gazprom and Mitsui & Co. Ltd. have signed a memorandum of understanding to cooperate in feasibility and marketing studies with regard to the bunkering of marine vessels with LNG in Russia’s Far East and the Asia-Pacific region.

NORWAY
R&D: DNV GL is leading a study on the EU LNG market to determine better opportunities for LNG refueling, specifically for maritime vessels on the Iberian Peninsula; the research is anticipated to be complete in late 2020.

SPAIN
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