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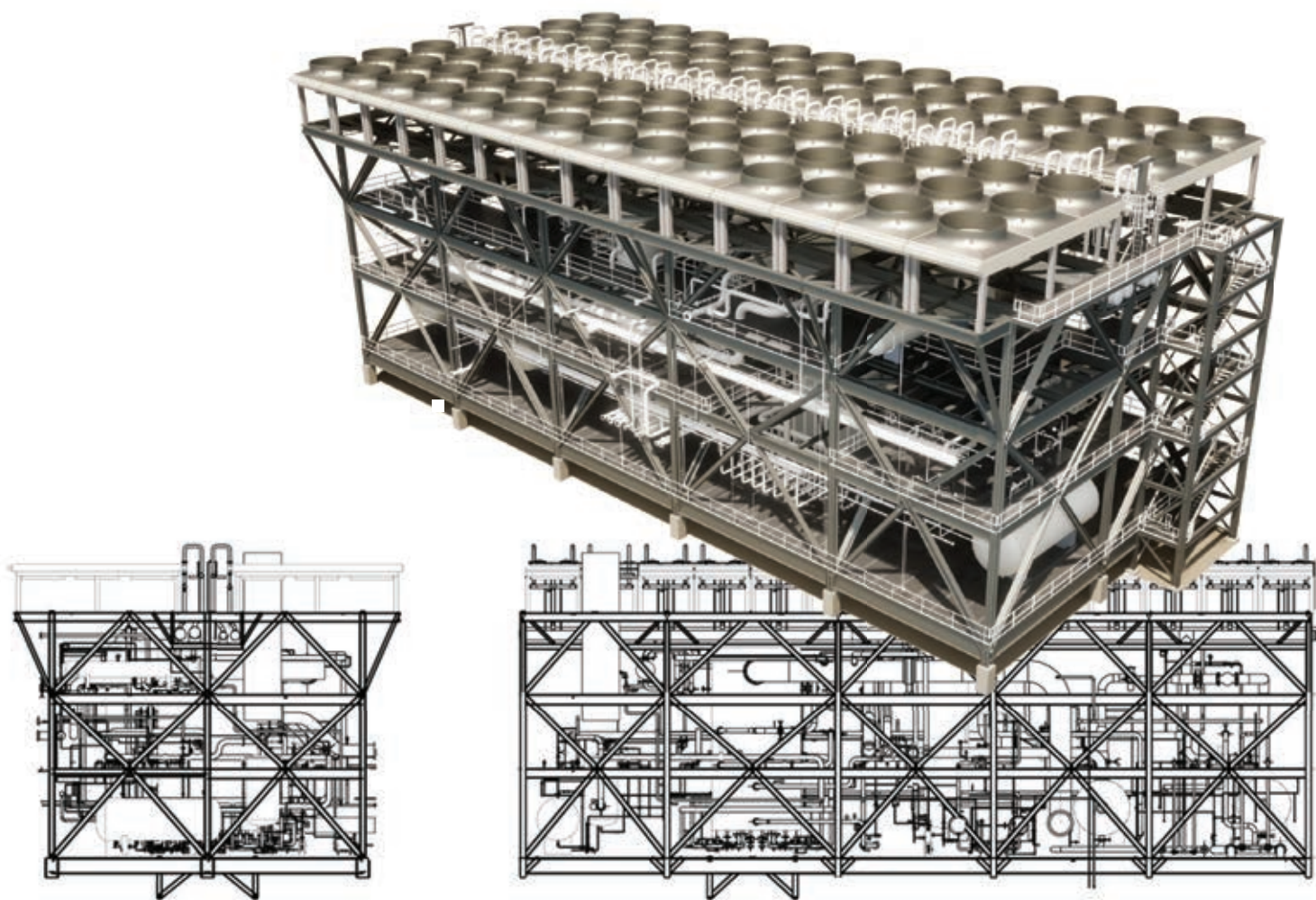
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Paradigm shift in favour of long-term LNG supply in Europe

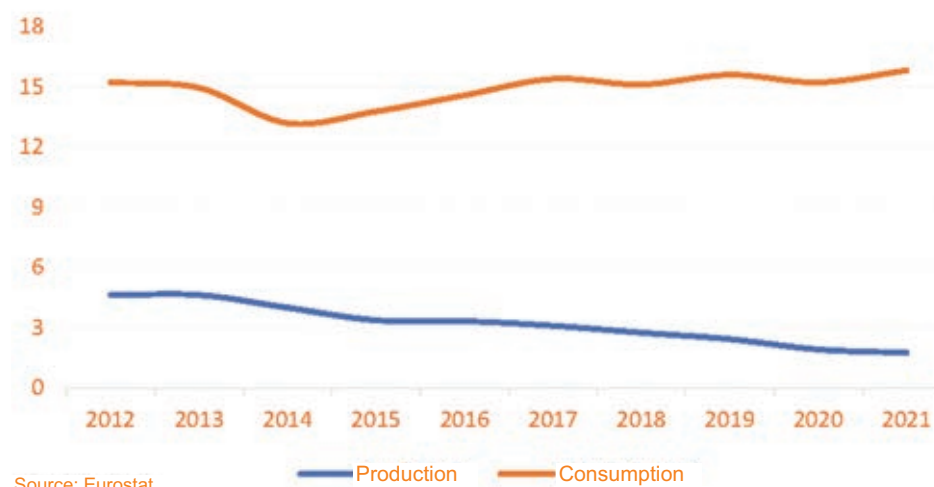
The unfolding energy crunch in Europe may end up setting the stage for a paradigm shift in LNG contracts. Having relied on pipeline gas 'baseload' for decades, European buyers are now increasingly shifting towards new long-term LNG supply deals in an effort to replace as much as possible pipeline gas from Russia. our Markets Editor Alexander Wilk reports.

Previously, negotiations with large-scale LNG suppliers such as Qatar have stumbled over restrictive supply terms long-term contracts often employ. Under new pressure to plug the gap left by plummeting Russian pipeline gas supply, however, these objections are waning. This, in turn, risks new pressure on European energy market liberalisation policies.

The introduction and spread of natural gas as a primary energy source in the European Union reflects governmental choice of energy resource mixes and the development of domestic hydrocarbon resources. The rise of natural gas as an essential energy resource for the achievement of national energy objectives has been greatly influenced by three national energy policy developments that unfolded successively during the three decades following 1970. First, of course, there were the oil shocks of the 1970s which highlighted weaknesses in major importers' energy policies and triggered greater energy diversification. Second, modes of production favouring coal were beginning to be gradually phased out, which opened the door for natural gas. Third, global environmental concerns began to gain traction on the European political agenda and played an increasingly significant role in determining the composition of national energy mixes.

Towards the mid-1980s, pressure started to be exerted upon the traditional patterns of organising gas markets. That trend developed in a context of waning anxieties surrounding gas supply security, mostly owing to an increase in available gas reserves and significant new pipeline capacities connecting to Russia. Consequently, support for traditional government-led gas markets began to crumble. This development was

European Union Gas Consumption (Mln. TJ)



favoured by the European Commission, which over time sought to break the vassalage link between monopolistic and competitive elements of the European gas market. Unbundling policies aimed towards infrastructure favoured the market entrance of new, smaller competitors.

In line with the ensuing liberalisation of the European Union's natural gas market came a moving away from long-term, Brent-indexed contracts. Instead, there began a gradual move towards allowing real-time gas market trading set prices rather than long-term contracts. Whilst gas was cheap and plentiful, this policy has kept prices in check (some short-term spikes notwithstanding). Since the 2010s, gas prices in the EU have thus moved away from oil-indexed prices and towards 'gas-on-gas' competition, which overall resulted in substantial cost savings, according to the IEA.

Falling production & dependency

More than half of the EU's energy comes from countries outside the EU and this proportion has been generally rising over recent decades. Whilst the European Commission sees some evidence of that

dependency having stabilised in recent years, it remains at a relatively high level.

Natural gas production in the European Union has been in decline since 2013, data by Eurostat show. At the same time, Russia has maintained its position as the leading supplier to the EU of the main primary energy commodities – natural gas, crude oil and hard coal throughout the whole period 2010-2020. Almost two thirds (57.6 percent) of the EU's imports of natural gas came from Russia, Norway and Algeria in 2020.

Between 2010 and 2020, the European Union's dependency on non-member countries for natural gas supplies grew by almost 16pp, according to the most recent available dataset by Eurostat. This growth was much faster than the growth in crude oil dependency, which was up only 3pp. Notably, even former surplus gas exporters Denmark and the Netherlands became increasingly dependent upon energy imports to meet their demand growth for gross available energy. This development is strongly linked to the downturn in their domestic gas production.

With the inauguration of Nordstream in 2011, pipeline gas supply into the



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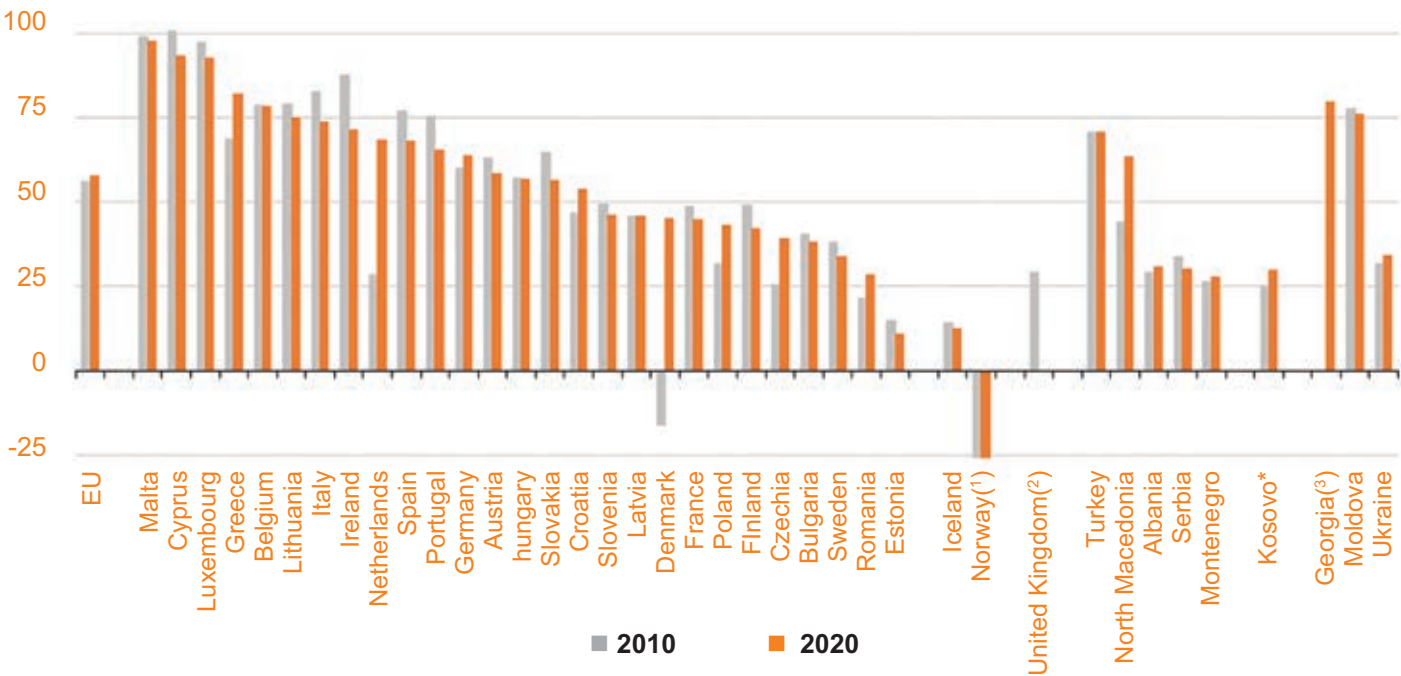
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Energy imports dependency, 2010 and 2020 (%)



(¹) The bars are cut; The value in 2010 was -512.8% and in 2020 it was -623.1%.
(²) 2020 data are not available.
(³) 2010 data are not available.
* This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Source: Eurostat

European Union via Germany was buoyed and peaked at more than 280 billion cubic metres (bcm) in 2017. However, as we have reported in our April issue, Russian gas pipeline exports to the European Union have been decreasing since 2020 with the decrease having accelerated at the beginning of 2022.

During the period of ample pipeline gas supply, LNG played more the role of top-up with the price mainly set by the TTF hub. Now, liquefied gas is likely to be pushed increasingly into role of major source of supply even as there are renewed efforts to uplift European gas production through new developments that had previously been rejected on environmental grounds.

Among the few new gas field developments on the European continental shelf is the Jackdaw gas field in the UK North Sea. In July, BG International Limited, an affiliate of Shell U.K. Limited, has taken the final investment decision to develop the field following regulatory approval earlier this year, Shell said in a statement in July. Whilst Jackdaw's anticipated production is likely going to be substantial – Shell projects it will account for more than 6 percent of UK North Sea gas production, it is not scheduled to come on-stream and reach that level of output before the middle of this decade, Shell explained. Importantly, Shell's statement indicates Jackdaw will merely slow that rate of North Sea gas production decline.

Contracts needed now

In August, British energy multinational Centrica has signed a £7 billion (approx. US\$ 8.49 billion) purchase agreement with US LNG developer Delfin Midstream. Centrica agreed to buy 1.00 million tonnes (mmt) for 15 years on a free-on-board basis. The Delfin Deepwater LNG project is only due to start production in 2026, however. According to the 15-year running period, the contract would extend into 2041. Notably, it was unclear at the time of writing to what extent pass-through to the European Union forms part of the deal. Centrica's group chief executive Chris O'Shea commented that "additional US gas export capacity will help increase UK, European and global energy security, reflecting the increasing importance of LNG in the global gas supply chain".

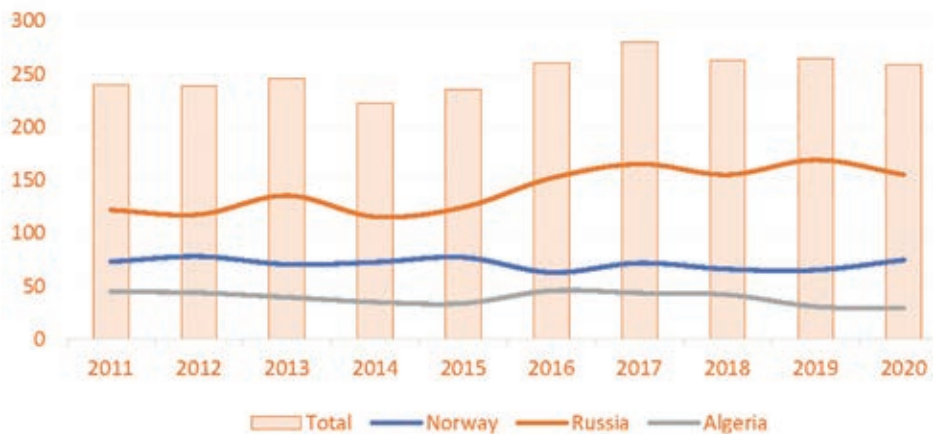
Moreover, French energy giant Engie

sealed a long-term LNG supply deal with US LNG developer NextDecade earlier this year. The move came only months after negotiations between the two parties had collapsed because the French government had reservations about the emissions footprint of the company's LNG production facility.

German utility EnBW, meanwhile, has signed a similarly long-term LNG supply deal with Venture Global, alongside Poland's PGNiG, Spain's Repsol and Galp Energia, France's EDF and Italy's Edison. Additionally, European oil majors Shell and BP also signed long-term deals with Venture Global. These contracts are lasting up to 20 years until 2044 and amount to almost 8.00 million tonnes (mmt) to be supplied by Calcasieu Pass LNG and the upcoming Plaquemines LNG.

Germany is also expecting Qatar to supply LNG to its shores starting in 2024.

EU Pipeline Gas Imports (bcm)



Source: Eurostat



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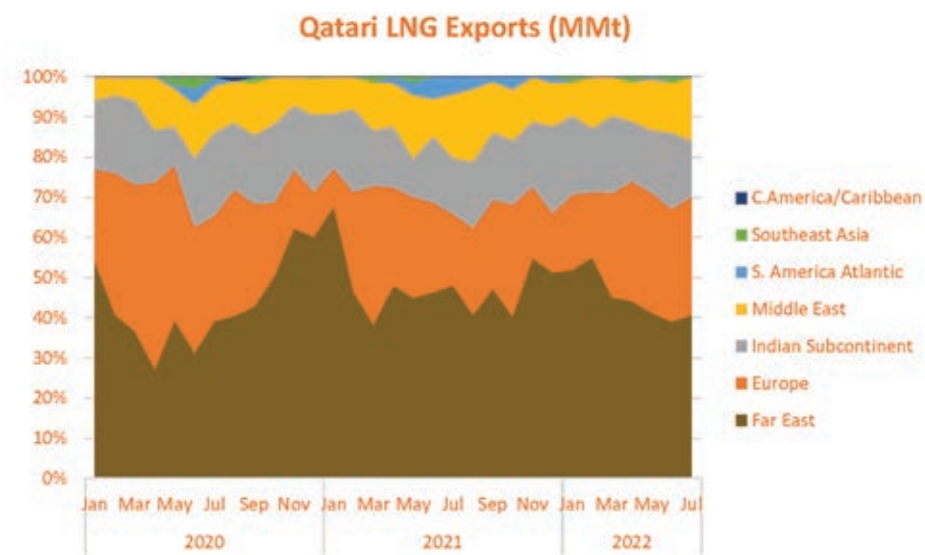
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Source: LNG Journal

However, exact quantities and the duration of the agreement remained unclear at the time of writing. Speaking to Qatari news station Al Jazeera, Emir Sheikh Tamim bin Hamad Al Thani merely commented that “Qatar [...] in 2024 could definitely deliver 20-25 percent of Germany’s total gas consumption”. At the signing event of Germany’s first direct LNG import contract with Uniper and RWE in Berlin in mid-August, Federal Economy Minister Habeck implied Qatar’s current high prices made it a less viable choice for immediate supply.

Notably, Qatar had previously insisted that European buyers must make long-term purchase commitments. Historically, the Middle Eastern LNG supplier has favoured long-term, large-scale supply deals. Qatar’s supply agreements have included some of the industry’s most rigid terms, extending to restrictions on cargo diversions and delivery deferments.

Substantial investments

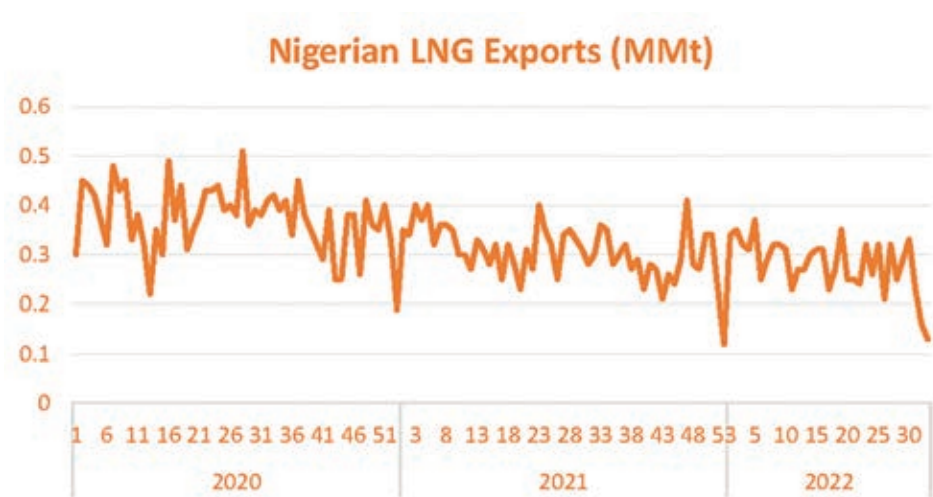
LNG import capacity expansions have formed a trend across the European Union. Germany has been chasing FSRU capacity as the country is seeking avenues to replace Russian pipeline gas.

The German government plans to spend as much as €3 billion on FSRU import capacity over the next decade. In its ‘Progress Report on Energy Security’ in March, the Finance Ministry said the government had signed options with German LNG trader Uniper and utility RWE to operate the first two FSRU terminals. Current plans envisage their start of operations before the end of this year – one at Wilhelmshaven and one at Brunsbüttel. Another terminal at Lubmin, owned and operated by Deutsche ReGas, has signed a TotalEnergies-controlled FSRU and plans to start operations by mid-December. Germany is currently the only major European gas consumer without direct access to the LNG market but is planning to employ up to five FSRUs by the end of 2023.

Ironically, Australia, one of the world’s leading LNG exporters, is now experiencing a shortage of floating regasification units because they have been snapped up by Germany, which still has no operational LNG import terminals of its own.

Policy pressure

However, the current price environment and the ascend of new long-term gas



Source: LNG Journal

contracts risk growing pressure on European energy market liberalisation achievements. Financial assistance by governments to both consumers and suppliers is intended to enable the survival of the latter (in the interest of supply security) but can do little to slow a renewed entrenchment of large market incumbents. For example, several smaller energy providers have quickly gone bust in the UK and Germany as Russian supply dwindled. Their contracts were taken over by large competitors, typically at considerably more expensive standard tariffs, which left consumers with few opportunities to shop around. Although the German government has announced direct financial assistance for gas importers, larger incumbents are likely to benefit the most. Only former wholesale importers of Russian gas can apply for it to cover a maximum of 90 percent of losses incurred whilst buying gas volumes on the spot market. Any financial assistance is limited to contracts with direct physical deliveries to Germany that were signed before 1 May 2022, according to the Federal Ministry of Economic Affairs. Notably, companies will have to bear such losses on their own until the

end of September.

Meanwhile, current LNG production outages and long-term declines in the United States, Australia and Nigeria make for a cautionary tale against regarding long-term LNG contracts as a silver bullet – even to the extent that their nominal volume can cover energy demand growth. Risk of accidents (Freeport LNG), industrial action (Prelude FLNG) or feedgas shortages (Nigeria LNG) at large-scale LNG producers again favour larger market players and their ability to smooth out market shifts.

Concluding thoughts

The European Union has sought to liberalise the European energy market for decades. Especially its unbundling policy was designed to break the link between transmission infrastructure ownership and access to consumers. New market incumbents benefited from flexible transmission access whilst European gas hubs led by the TTF allowed for efficient ‘gas-on-gas’ pricing. As far as gas is concerned, the achievements of this policy are now facing a new risk in the form of more restrictive, large-scale long-term supply contracts.



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Bridging the unbridgeable:

Gas gap fuels risks for Europe's utilities

As the Europe Union continues to distance itself from Russian gas, ongoing price volatility and security of supply issues are prompting concerns for the continent's utilities – and could ultimately slow the energy transition. Emmanuel Dubois-Pelerin, Sector Lead, EMEA Utilities at S&P Global Ratings, explains.

For decades, Russia has been Europe's largest supplier of gas. Yet the ongoing conflict in Ukraine has compelled European countries to drastically reduce their reliance on Russian supply. Indeed, the European Commission's plan REPowerEU is seeking to completely eliminate Russian gas imports by 2027, while simultaneously ramping up the rollout of renewables.

But this target has presented a considerable energy gap that needs to be filled – and one that renewable energy alone is currently unable to cover. Indeed, Europe's dependence on Russian piped gas is significant. In 2021, Russia exported 155 billion cubic meters (bcm) of piped gas to Europe, with 140 bcm supplied by Gazprom, its monopoly exporter, alone.

To cover the immediate drop in supply, Europe has turned to alternative gas sources – mainly liquefied natural gas (LNG), procured at extremely high prices – to bridge the gap.

In addition, the use of coal has also increased to address security of supply concerns, which could compromise the speed of the energy transition.

Yet, if Nord Stream 1 volumes remain at the extremely low late-July level, a low double-digit decrease in demand is likely to be needed to fully bridge the “Gazprom gap” over next winter and to prepare the subsequent winter.

Utilities resilient – for now

Despite a turbulent environment, European utilities have so far remained largely resilient from a credit perspective. Indeed, while the temporary gas price spike in early March provoked considerable margin calls, utility companies were able to weather initial shocks and importers have taken measures to somewhat mitigate the impact of future price swings. Uniper's earnings and liquidity squeeze has to date been unique in its suddenness and extent.

Fast action by various governments across Europe has also largely been supportive for the gas import and electric power sector, and this is expected to bolster the reliability of energy market functioning until next winter. In some jurisdictions, including Germany, measures allow utilities to pass on a substantial portion of high supply costs to consumers.

Several governments have also taken steps to preserve affordability for residential and small business consumers. In the most proactive countries – including France, Italy, Spain and the UK – some of these actions are credit negative. Price-setting in France, for instance, is expected to turn EDF's high-single-digit Euro billion EBITDA into a loss in 2022, while its 2022 tariff freeze on household gas represents a negative working capital movement for Engie – something that will be manageable as long as the freeze is temporary.

Meanwhile, suspending the pass-through of energy costs and a windfall tax on extra VAT margins will strain working capital in Italy, and proposed price caps could dramatically deflate power prices in Spain. Despite this, producers in both countries have hedged much of their 2022 production and the impact should be limited.

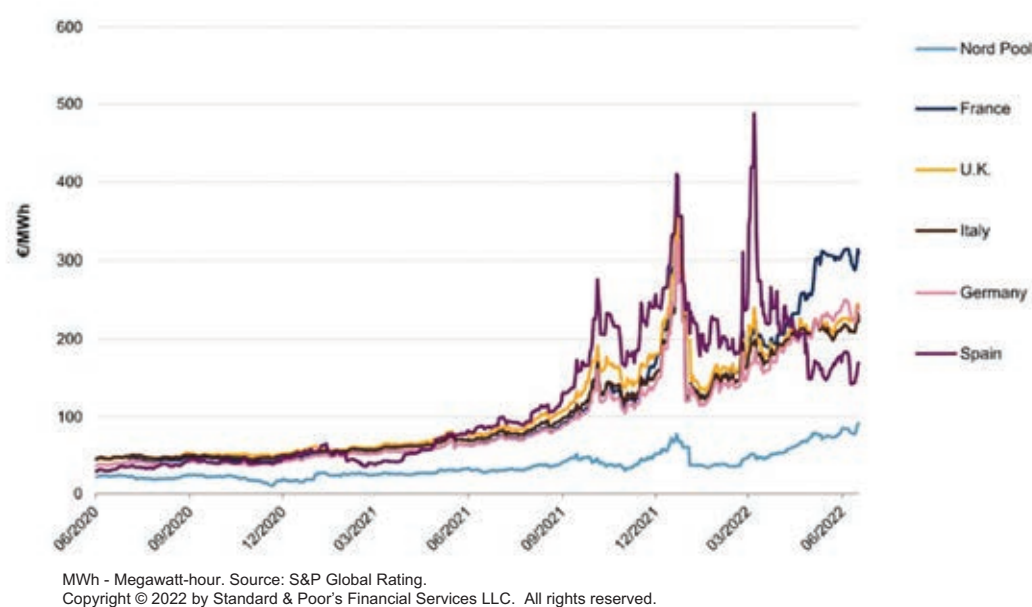
In the UK, June windfall taxes on energy producers focused on oil and gas upstream producers, sparing utilities, and interventions have been geared towards easing the burden on households rather than shifting it onto suppliers. Like in other markets, these measures represent a significant change in the government's stance, following adverse intervention in the sector in recent years.

As a result of these measures – and despite declining global gas demand triggered by high prices and slower GDP growth – European utilities ratings, including government support, have remained largely resistant to ratings challenges to date. Indeed, among Western European utilities S&P has conducted no upgrade or downgrade exceeding one notch, with most ratings clustered in the BBB to low A range.

Uncertainty lies ahead

While government measures are largely supportive, balancing supply and demand will continue to present a risk to Western European utilities. Indeed, supply difficulties could emerge in the latter part of the crucial 2022/23 winter, given the November to April period typically

Figure 1
European Power 1-Year Forwards Will Remain Very High



represents two-thirds of annual requirements. At the same time, a complete shutoff of Gazprom exports is no longer a ‘remote scenario’ and could lead to supply difficulties in the first quarter of 2023.

Amidst these uncertainties, the cost of alternative supply is impacting utilities' liquidity. As such, prices are expected to remain high and volatile (see figure 1), while further risks impacting the sector – including government action on affordability, higher debt costs, interest rates and inflation – will continue to pose a threat to the industry moving forward.

Despite challenges, government and company measures have been progressing REPower EU's objectives. Before the collapse of Nord Stream 1 flows in mid-June, the EU was on track to meet its 80 percent fullness goals one or two months ahead of the November 1st target; despite the collapse, it reached 68 percent as of July 28.

Sharply increasing LNG imports – particularly from the US – are also supportive of western European utilities and now represent Europe's single largest source of supply. (see figure 2). Should the brisk year-on-year increase recorded over the January to May period this year continue until December, total LNG imports could rise to about 30 percent of total market supplies, which, if not fully offsetting Gazprom cuts, would be a record high.

Gas rationing on the cards

Efforts to reduce reliance on Russian gas have had a significant impact on the energy mix across Europe as utilities have

scrambled for alternatives. Most European governments have put in place legally binding staged intervention protocols to ration gas by government decision if supplies are insufficient to meet demand in case of a gas shortage, and in June, some started to activate the early stages of these protocols. While new measures do slow the energy transition, expanded fossil fuel power generation will be temporary.

Some countries have signalled a comeback for nuclear energy and the EU Parliament has voted to include it in the EU's green taxonomy. Belgium, for instance, previously planned to retire its nuclear fleet by 2025, but it will instead prolong the life of 2 GW of capacity to 2035, ensuring a baseload bridge as it ramps up renewable capacity. Plans for new builds have become firmer in both France and the UK, where nuclear energy is expected to be a more permanent contributor to the energy mix. With six European pressurised reactors (EPRs) planned in France and eight EPRs in the UK, these projects will require significant government or regulatory support from the mid-2030s to promote commissioning. Poland will also move ahead with plans for six new reactors.

Attitudes to nuclear energy diverge across Europe, and not all countries will keep it in their energy mix. Notably, Germany and Spain will proceed with the scheduled closure of their nuclear plants – though Germany could decide to temporarily defer the closure of some or all of the three reactors scheduled to stop generating at the end of December. This



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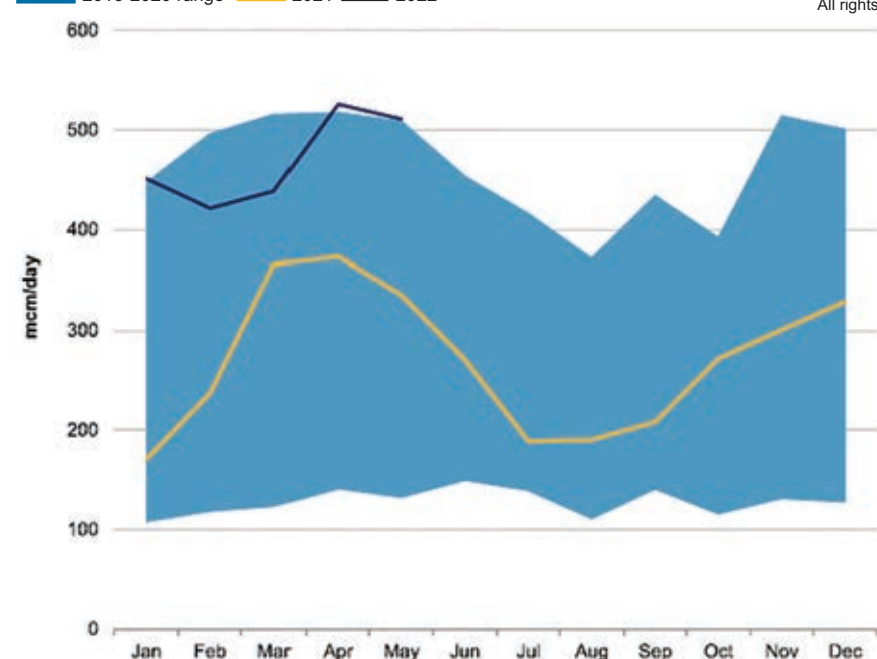
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Figure 2

Europe Attracts Ever More LNG

■ 2016-2020 range ■ 2021 ■ 2022



mcm - Million cubic meters. Source: S&P Commodity Insights
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measure is being debated in an effort to ensure baseload power supply in the face of ongoing gas supply risks.

Hunger for gas abates over supply bottlenecks

If the current crisis has sparked a decoupling from Russian gas specifically, the cost of LNG imports has also

challenged the appetite for gas in general. The energy transition offers a route to strengthen utilities' business models, but the road ahead may be costly and bumpy, and some of the EU's ambitious decarbonisation targets may not be met. What's more, while plans for mass electrification of transport and heating could transform value chains by putting

a greater focus on transmission and distribution, the pace at which they can be achieved remains in question.

Though considerable funding is available through REPowerEU, utilities' free cash flow may be less affected if the development of renewables is actually slower than the plan's current aspirations. Renewable gases – such as biomethane and green hydrogen – form a key part of REPowerEU's renewable objectives. Yet the technology necessary for their development is not yet mature or economically viable in the absence of sufficient public policy and regulatory incentives.

In the immediate term, severe industrial bottlenecks will likely persist – particularly when it comes to the availability and price of key raw materials, the high operational and financial burden of interconnecting national grids, and the shortage of skilled workers. Further bottlenecks may also arrive in the form of social-environmental dilemmas. Moreover, REPowerEU's proposal of "renewables go-to zones" can limit legal recourse against grid build-ups, and national policies may rebalance – favouring security of supply

over maximum environmental protections. Many bottlenecks steam from local decisions regarding the wider acceptance of renewables generation installations. Addressing these, alongside wider social-environmental dilemmas, will be crucial to consolidating utilities' creditworthiness.

Moving beyond the critical 2022/23 winter and definitely by 2025, S&P expects Europe will have sharply decreased its dependence on Russian piped gas. Yet as the sector becomes riskier, credit paths are likely to become increasingly divergent for European utilities. While regulated activities should prove more resilient in supportive jurisdictions, unregulated operations face uncertain operating conditions and creditworthiness may be impacted by earnings volatility. In addition, pressing social-environmental dilemmas stand in the way of future consolidation of credit standing. Public authorities, in collaboration with the industry, will need to address the acceptable economic cost of security of supply, energy affordability, and indeed a customer pecking order in order to navigate potential further supply cuts. ■

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Retraction of Freeport's force majeure leaves traders at a loss

Freeport LNG has retracted its force majeure which had left traders having to source product on the spot market at significant losses. The second largest US LNG exporter had declared 'force majeure' in June after an explosion at the plant led to a complete shutdown. Now, the company retracted the notice, blaming 'human error'. Markets Editor Anja Karl has more.

Force majeure would have given traders cover if defaulting on their current agreements to supply end users with product. Instead, the retraction has caused traders to enter the spot market to fulfill customer orders at much higher prices that resulted in collective losses of about \$8 billion, trading sources said. Freeport LNG has not commented on the retraction thus far.

"No facts have been revealed that would indicate that the incident was a result of *force majeure*," Freeport stated in a note to market participants on August 3. Freeport LNG's liquefaction facility is the world's seventh largest and the second largest in the US, accounting for up to 20 percent of the US export capacity, capable of processing 2.1 billion

cubic feet of gas per day (Bcf/d).

Overall US LNG exports have fallen by around 2.0 (Bcf/d) following the shutdown of Freeport. Initially, traders were told that 'partial service' at the liquefaction facility would resume in about 90 days. The three-train facility has a liquefaction capacity of 15 million tons per year (mtpa) and accounts for around 15 percent of US LNG supply, increasingly in demand from European buyers.

Contractors have been rushed to Freeport LNG to undertake repairs and maintenance work on a storage tank. Reports said the explosion and fire occurred along a 700-foot pipeline section where LNG had become trapped, causing pressure to build. A subsequent rupture released a cloud of gas that ignited,

whereby the fireball lasted for 5 to 7 seconds, and the fire burned for some 30 minutes. No injuries were reported and operators at Freeport LNG estimated some 1.6 million cubic feet of natural gas was burned during the fire.

Prices at the bellwether US trading point Henry Hub fell after the accident, largely because the outage at Freeport LNG reduced exports which put downward pressure on production.

US LNG exports stay low, spot prices forecast to fall

Looking ahead, analysts at the US Energy Information Administration (EIA) expects LNG exports to remain below average, at 10.5 Bcf/d in the second half of 2022, some 1.8 Bcf/d lower than in its June outlook.

Therefore, analysts anticipate the Henry Hub gas spot price to keep falling from its June average of \$7.70/MMBtu to an average of \$5.97/MMBtu in the second half of the year.

With these lower prices, the EIA expects a rise in domestic gas consumption – both by industry and by US power generators. Total gas demand, including domestic consumption and exports, is forecast to fall by 0.7 Bcf/d over the second half of 2022.

By early 2023, however, US gas production is likely to return to growth which will put additional downward pressure on prices. The latest July STEO outlook anticipates that 2023 spot gas prices at Henry Hub will average at around \$4.76/MMBtu. ■



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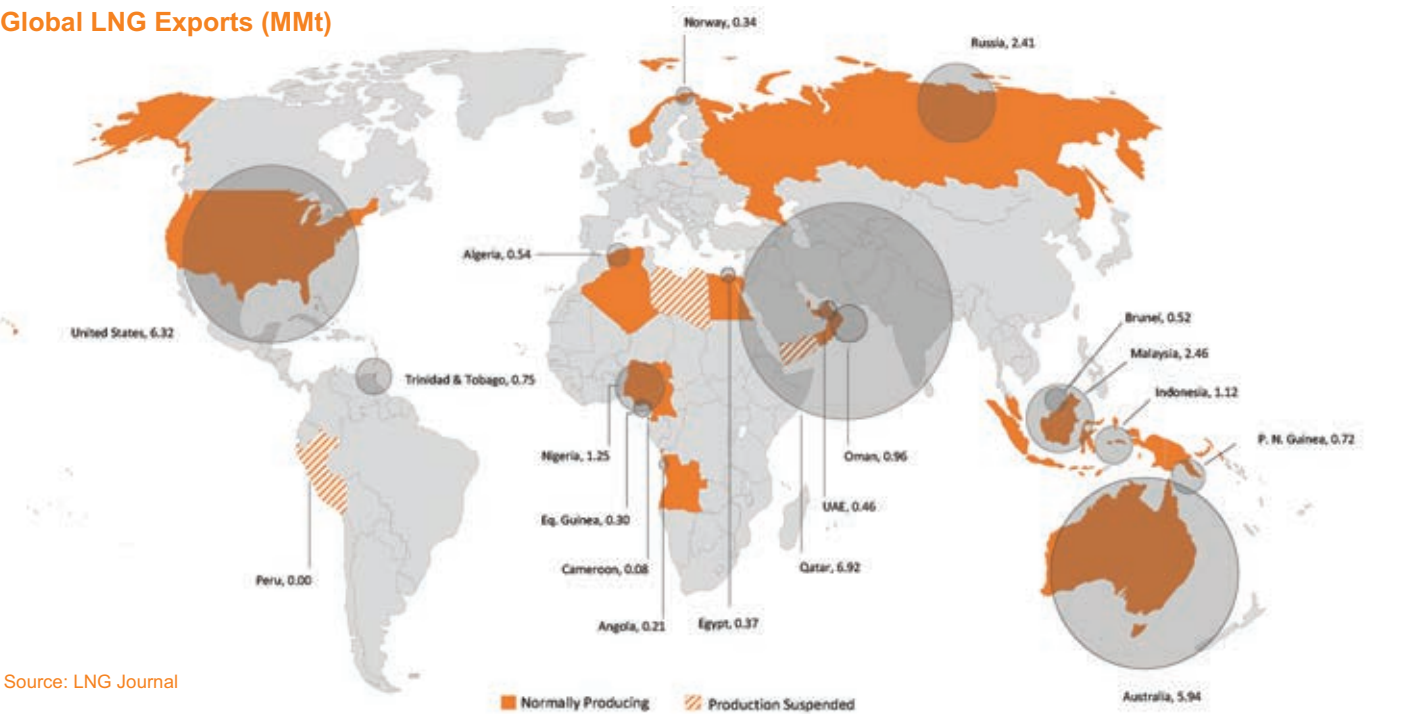


Outages weigh on July trade

Our July data highlight several outages in the Atlantic and Pacific Basins weighed on supply whilst demand grew in July, our Markets Editor Alexander Wilk reports.

Our data show global LNG trade continued to decrease slowly month-on-month. The shipped amount of 31.67mmt represented a net decrease of 0.59mmt (-2 percent) from the 32.26mmt shipped in June. Nevertheless, we still recorded year-on-year growth of 1.24mmt (4 percent) over the 30.43mmt seen in July 2021. The decrease in July performance was due to several outages in both the Atlantic and Pacific Basins. Whilst Freeport LNG in the United States continued to be offline since June, Ichthys LNG in Australia was also not seen in the market in July. Prelude FLNG only achieved one export but was subsequently not seen in the market due to industrial action. Based on their June performance, the two plants’ absence resulted in 0.83mmt of supply being removed in July. Additionally, Peru’s Pampa Melchorita plant underwent maintenance in July, removing 0.43mmt of supply. It thus fell to Qatar and Malaysia to attempt to close

Global LNG Exports (MMt)



Source: LNG Journal

the gap by hiking exports. Angola also benefitted by supplying three spot cargoes.

Meanwhile, there was good global net demand growth despite a drop in imports

among some key European importers and an unusual decrease in regional demand in the Middle East on account of Pakistan. These reductions were compensated by robust demand among importers in the Far East in particular. Offtake increases among Southeast Asian buyers also helped.

this meant the plant still produced at annualised nameplate capacity. Concurrently, there were reductions totalling 0.17mmt at Gorgon LNG, Gladstone LNG and Darwin LNG. For Gorgon, a small export reduction of 0.07mmt (-4 percent) to 1.53mmt meant the plant still produced well above nameplate capacity in July. For Gladstone LNG and Darwin LNG, however, their relatively minor decrease in volume terms of 0.09mmt (-16 percent) and 0.01mmt (-11 percent) left them with monthly exports of only 0.48mmt and 0.08mmt, respectively, and thereby considerably below annualised capacity. These reductions were only cushioned by marginal increments totalling 0.06mmt at NWS LNG, Pluto LNG and Queensland Curtis LNG, which in turn produced 1.41mmt, 0.44mmt and 0.44mmt, respectively, in July. Australia Pacific LNG kept shipped volumes steady at 0.73mmt, which represented production at almost full capacity.

Shell’s Prelude FLNG barge, meanwhile, slashed exports month-on-month and saw only one shipment of 0.08mmt at the beginning of July. Shell stopped operations on the barge later in the month due to industrial action. Accordingly, the facility’s LNG output was down by 0.21mmt (-72 percent) month-on-month from 0.29mmt in June. Annualised utilisation for the floating LNG plant thus stood at only 25 percent in July.

Exports

Global exports at 31.67mmt had decreased by 0.59mmt (-2 percent) compared to 32.26mmt for the equivalent period in June. Atlantic Basin shipments were down by 0.38mmt (-3 percent) whilst Pacific Basin exports also saw negative growth of 0.78mmt (-6 percent) in July. Only Middle Eastern shipments showed month-on-month growth with an increase of 0.57mmt (7 percent) to 8.71mmt.

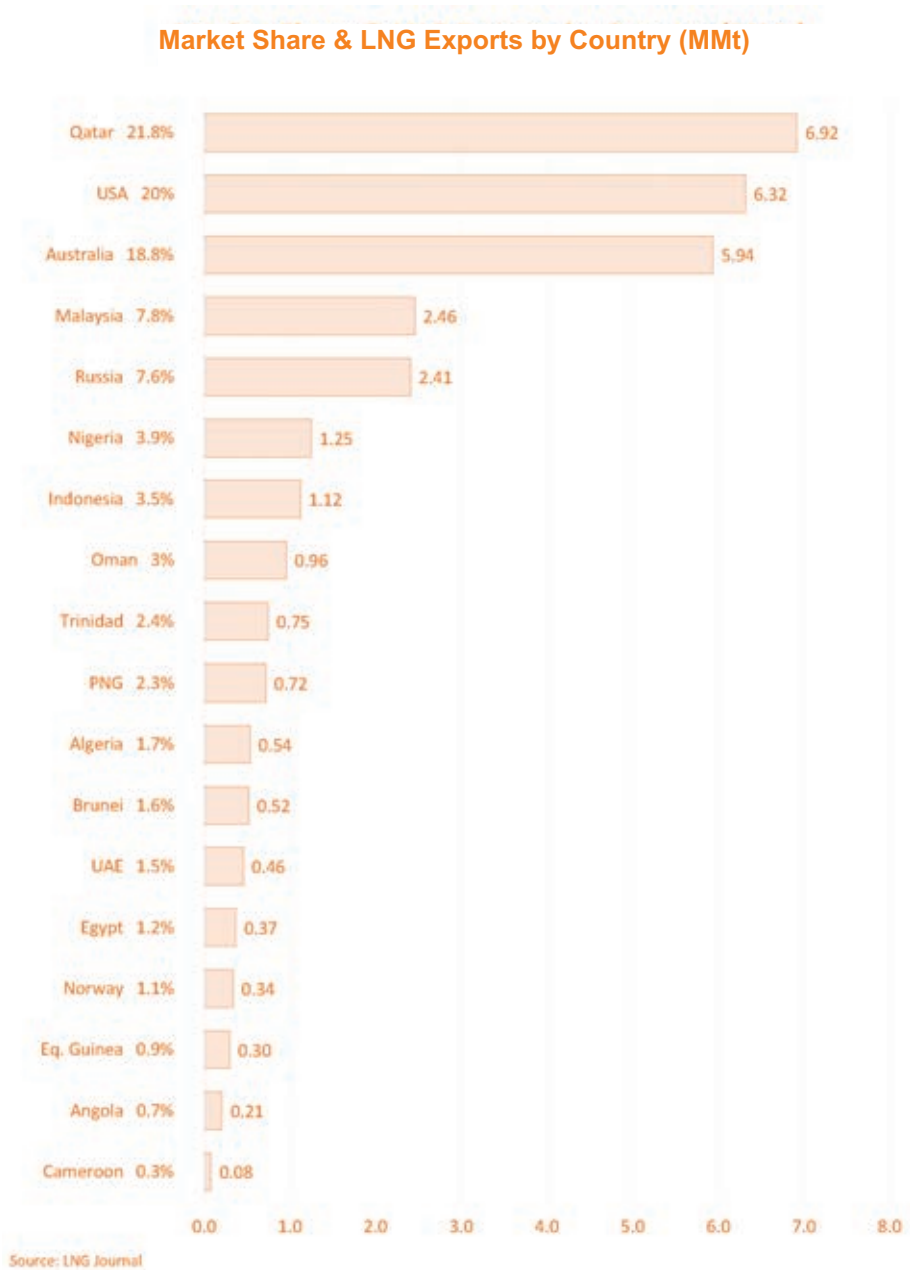
Pacific Basin

Our July data show Pacific exports reached 11.50mmt, coming in below June’s full-month volume of 12.28mmt by 0.78mmt (-6 percent). Consequently, annualised capacity utilisation stood at 86 percent at the time of writing.

Australia

The Basin’s most significant exporter by installed capacity – Australia – slashed exports by 1.09mmt from 7.03mmt in June to 5.94mmt in July. Most significantly, Ichthys LNG went off the market in July, having shipped 0.62mmt in June. Wheatstone LNG also decreased exports by 0.15mmt (-17 percent) to 0.75mmt from 0.90mmt in June, although

Market Share & LNG Exports by Country (MMt)



Source: LNG Journal

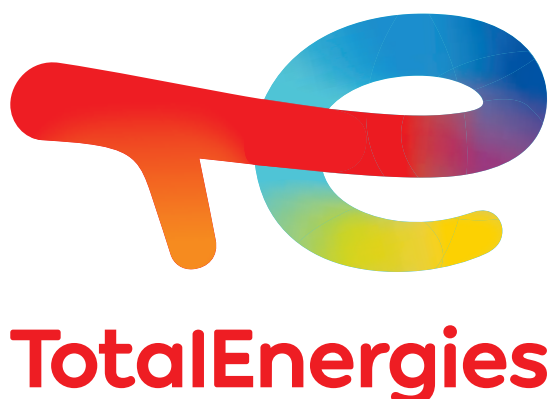


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PNG LNG saw month-on-month shipments increase by 0.06mmt (9 percent) to 0.72mmt in July compared to 0.66mmt in June. PNG LNG gained market share in China and Taiwan, which was only tempered by fewer exports to Japan. At 127 percent, the plant continued to operate at above nameplate capacity, our calculations show.

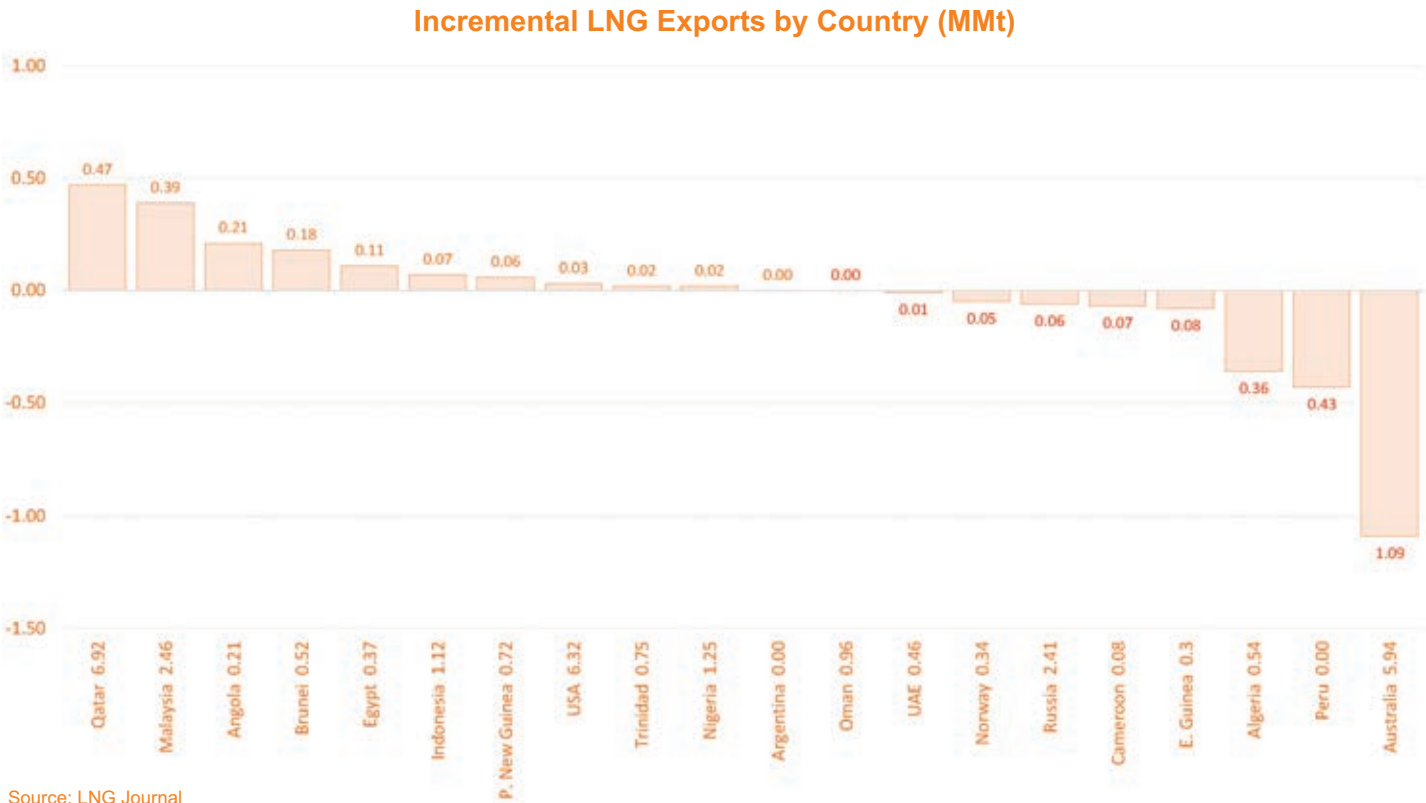
In neighbouring Indonesia, the amount of LNG shipped had increased by 0.07mmt (7 percent) to 1.12mmt in July from the 1.05mmt recorded in June. Notably, the Tangguh plant had increased output by 0.16mmt (29 percent) to 0.71mmt, having exported 0.55mmt in June. The Bontang plant, meanwhile, decreased shipped LNG volumes by 0.02mmt (-29 percent) to 0.26mmt in July. This left only the Donggi-Senoro facility with a month-on-month decrease of 0.07mmt (-32 percent) in July, shipping 0.15mmt instead of the 0.22mmt seen in June.

Concurrently, Malaysia saw a significant increase in monthly shipments, which was led by a 0.39mmt production growth spurt at Malaysia LNG. The plant's shipments stood at 2.27mmt in July compared to 1.88mmt in June. At the same time, the PFLNG Satu and Dua FLNG facilities maintained their June production in July, shipping 0.05mmt and 0.14mmt, respectively.

Brunei, meanwhile, also increased LNG exports in July by 0.18mmt (53 percent) to 0.52mmt from 0.34mmt in June.

Russia & Peru

Elsewhere in the Pacific, Russia's Sakhalin-2 LNG grew LNG exports by 0.04mmt (6 percent). The plant's



shipments amounted to 0.74mmt in July compared to 0.70mmt in June. July's performance suffered from a loss in market share in China. Nevertheless, this was more than compensated by higher exports to Japan, South Korea and Taiwan. Sakhalin-2 LNG thus continued to operate close to nameplate capacity, with annualised utilisation at 93 percent. Meanwhile, Peru's Pampa Melchorita plant was not seen in the market in July, having exported 0.43mmt in June on the back of a string of cargoes headed for Europe and the United Kingdom in particular.

Atlantic Basin

In line with the Pacific, the Atlantic Basin's overall shipped LNG had also decreased by the end of July, with negative growth reaching 0.38mmt (-3 percent) month-on-month to 11.46mmt in

July from 11.84mmt in June. This translated into annualised export capacity utilisation of 75 percent for the Basin.

North Africa & Europe

Overall export growth in the Atlantic Basin notwithstanding, the amount of LNG shipped from within the north-eastern part of the Atlantic Basin – comprising the EEA, Russia and North Africa (and not including re-exports) – decreased by 0.51mmt (-17 percent) to 2.55mmt in July compared to 3.06mmt in June. Snøhvit LNG in Norway shipped 0.34mmt in July following exports of 0.39mmt in June, a decrease of 0.05mmt (-13 percent). Export levels also suffered from a significant decrease of 0.36mmt (-40 percent) to 0.54mmt from Algeria's Arzew and Skikda LNG plants. Monthly shipments from Russia's Yamal LNG had

also continued to decrease in July and were down again by 0.10mmt (-6 percent) to 1.67mmt from 1.77mmt in June. The plant nevertheless continued to produce above nameplate capacity. Yamal LNG flows into Europe remained significant but saw a net decrease of 0.24mmt due to significantly fewer offtakes in Spain. Exports to southern Asia seen in June also did not recur in July. However, the plant's exports to the Far East were up by 0.28mmt month-on-month, helped by the restart of shipments via the Northern Sea Route in June.

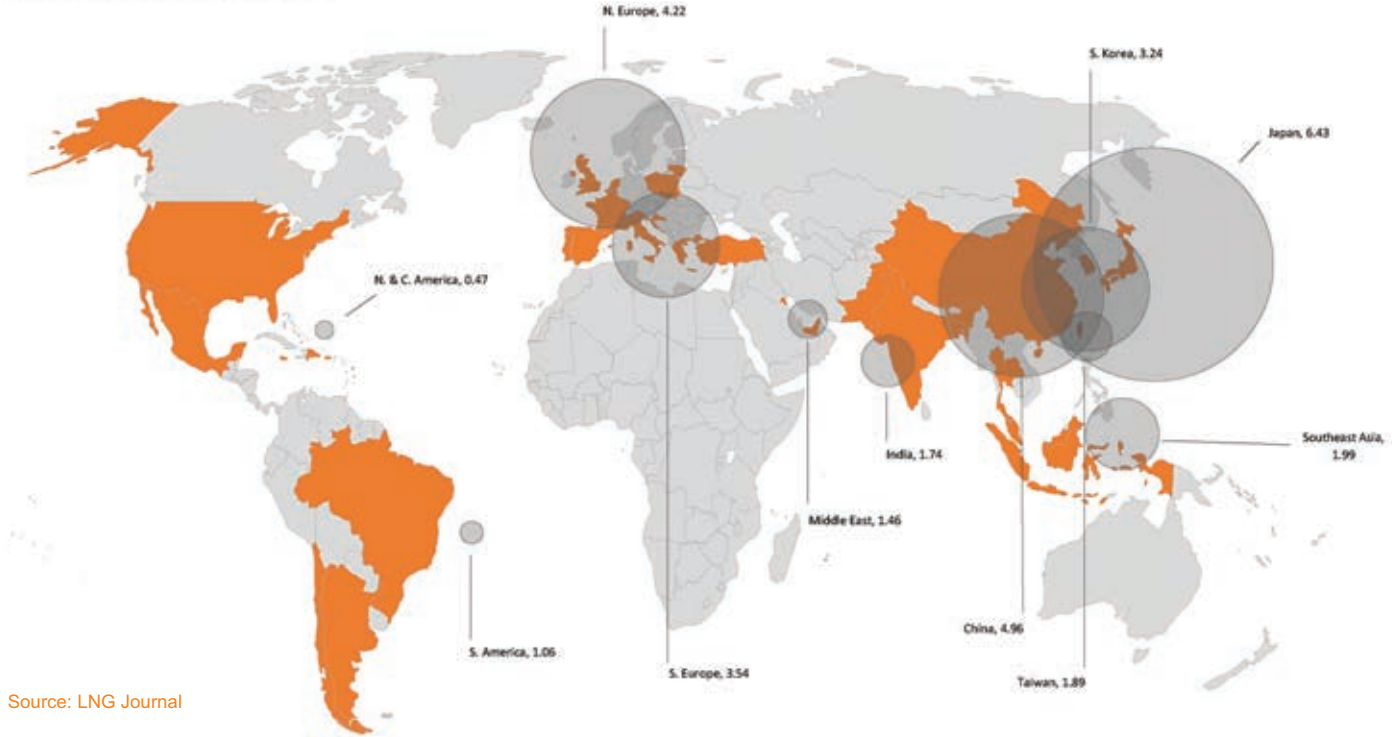
West Africa

Meanwhile, West African exports were up by 0.08mmt (5 percent) in July. Nigeria maintained month-on-month export growth, although shipments out of Bonny Island only saw a slight uptick of 0.02mmt (2 percent) to 1.25mmt in July. Concurrently, Angola returned to the market with exports of 0.21mmt after it did not export LNG in June. However, West African LNG shipment growth was tempered by Cameroon curtailing exports by 0.07mmt (-47 percent) to 0.08mmt in July from 0.15mmt in June. Equatorial Guinea also saw a steep export decrease of 0.08mmt (-21 percent) to 0.30mmt in July from 0.38mmt in June. Overall, West African exporters gained significant market share in Europe, which compensated for a continued month-on-month reduction in exports to Asia and the Middle East.

Americas

Exports from the US Gulf Coast remained broadly steady at 6.32mmt in July compared to 6.29mmt in June. Export

Global LNG Imports (MMt)



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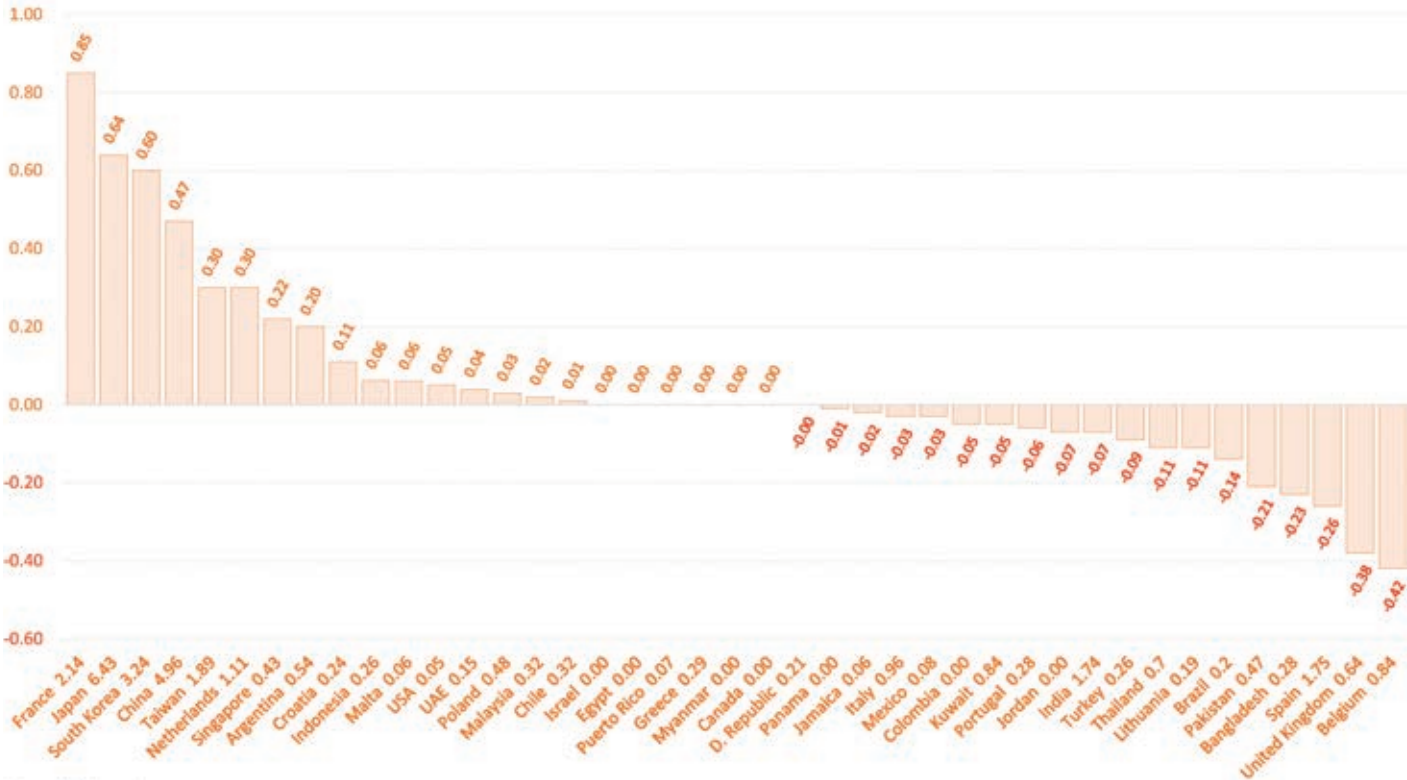


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Incremental LNG Imports by Country (MMt)



Source: LNG Journal

growth was held back due to the protracted shutdown of Freeport LNG following a fire incident in early June. In May, the plant had led US LNG export growth through an increase of 0.47mmt (48 percent) to 1.43mmt, bringing production significantly above annualised nameplate capacity. Apart from Freeport LNG, Cameron LNG also curtailed shipments by 0.14mmt (-11 percent) from 1.26mmt in June to 1.12mmt in July. However, this reduction only brought output back in line with nameplate capacity. Similarly, Elba Island LNG reduced exports by 0.03mmt (-13 percent) to 0.20mmt. As such, robust increases totalling 0.47mmt at Cove Point LNG, Corpus Christi LNG and Sabine Pass LNG – as well as the continued ramp-up of production at Calcasieu Pass by 0.07mmt (13 percent) to 0.62mmt – could not compensate.

In South America, Atlantic LNG in Trinidad & Tobago saw exports increase by 0.02mmt (3 percent) to 0.75mmt in July from 0.73mmt we recorded in June. Atlantic LNG shipments continued their focus on Europe whilst also increasing shipments to the Caribbean, South America and the Far East in July.

Middle East

In contrast to the lower month-on-month Pacific and Atlantic Basin exports, shipments from Middle Eastern plants increased in July. The region’s exports saw a robust increase in exports by 0.57mmt (7 percent) from 8.14mmt in June to 8.71mmt in July. Accordingly, our data showed the Basin’s overall utilisation of operational export capacity

(i.e., excluding Yemen) at 100 percent at the end of July, up 7pp from June.

Month-on-month export growth in the region was led by exports from Qatar’s Ras Laffan LNG complex. The facility grew shipments by 0.47mmt (7 percent) to 6.92mmt from 6.45mmt in June. The month-on-month increase was mainly based on significant volumes flowing to Japan, South Korea and Taiwan. Qatar’s LNG exports to Europe, meanwhile, saw net growth of 0.23mmt, with the largest share of that growth – 0.36mmt – going to Belgium. Meanwhile, Kuwaiti imports of Qatari gas were up by 0.20mmt (95 percent) to 0.41mmt. This was compounded by 0.05mmt (10 percent) growth in exports to Pakistan and seasonal monthly demand growth for Qatari gas in the UAE of 0.04mmt (36 percent). Together, these increments compensated for a significant downturn in Qatari shipments to China and India, which resulted in a negative monthly difference of 0.37mmt (-29 percent) to 0.90mmt and 0.25mmt (-27 percent) to 0.67mmt, respectively.

In contrast, Qatar’s fellow Persian Gulf producer the UAE saw overall monthly exports remain broadly steady at 0.46mmt in July. The same applied to neighbouring Oman, where exports of 0.96mmt in July remained unchanged from June. Higher exports to India could not compensate for a reduction in shipments to the Far East whilst a lack of exports to Pakistan and a decrease to Kuwait meant shipments to the Middle East were down by a 0.04mmt (-36 percent).

Egypt’s exports, meanwhile, grew by

0.11mmt (42 percent) as growth at Damietta SEGAS LNG compensated for the market absence of neighbouring Idku LNG. Damietta exported five cargoes amounting to 0.37mmt. In June, the plant had shipped 0.18mmt whilst Idku only

saw one export of 0.08mmt. In July, Damietta benefitted from strong European demand.

Imports & Domestic Trade

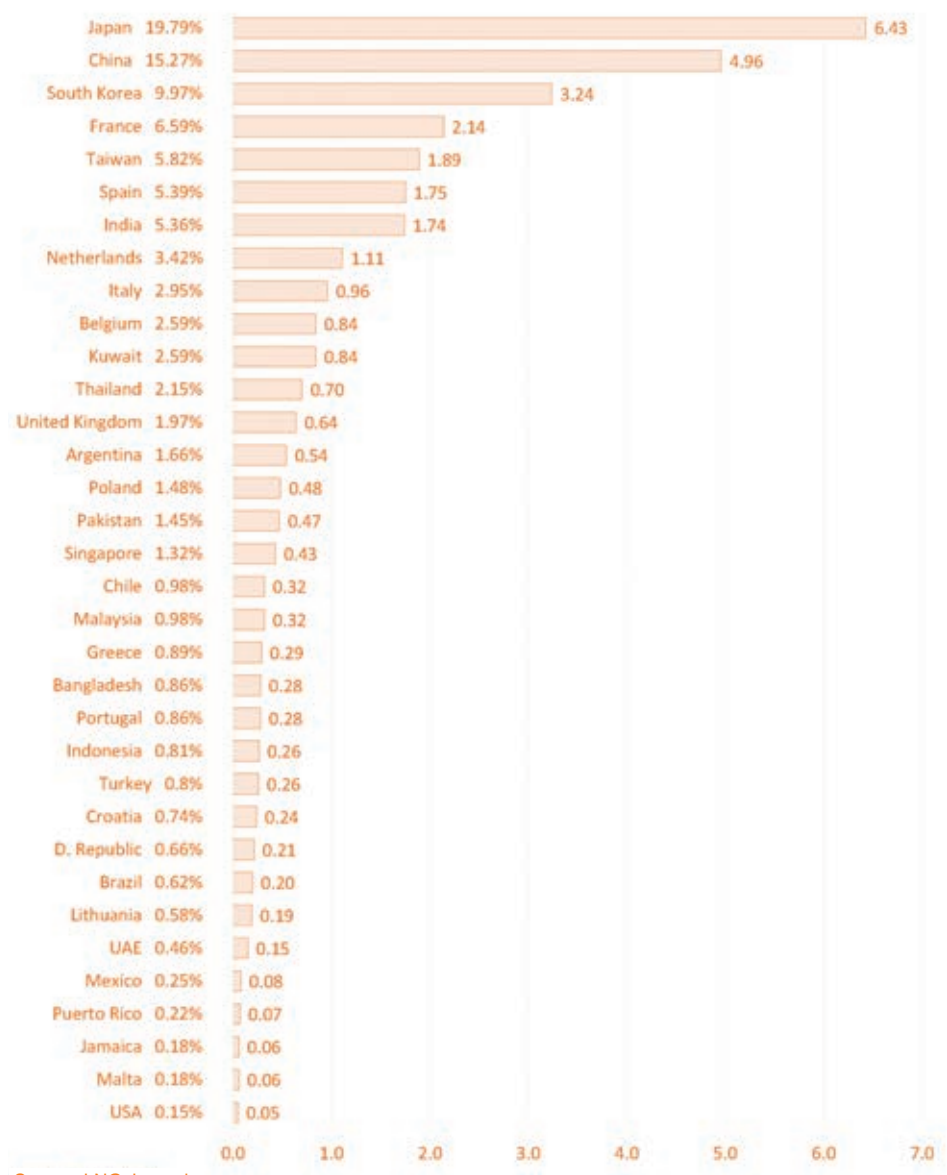
Global LNG imports were up by 1.55mmt (5 percent) in July. Significantly higher demand in France and the Netherlands added to significant demand growth in the Far East and Argentina.

Pacific Basin

Month-on-month Pacific Basin imports had increased significantly by 1.94mmt (10 percent) in July as Japan, South Korea, China and Taiwan grew their offtakes by 2.01mmt (14 percent) in total to 16.52mmt. As such, this month-on-month demand increase among larger importers in the Pacific easily compensated for India’s import decrease of 0.07mmt (-4 percent) to 1.74mmt from 1.81mmt in June. Concurrently, Indonesia and Malaysia saw demand grow by 0.06mmt (31 percent) to 0.26mmt and by 0.02mmt (7 percent) to 0.32mmt.

In contrast to the Pacific’s net demand increase, the roster of smaller Pacific

Market Share & LNG Imports by Country (MMt)



Source: LNG Journal

buyers in volume terms – including Bangladesh, Thailand, Chile, Indonesia, Malaysia, Mexico, Singapore and Myanmar – collectively saw imports decrease slightly by 0.06mmt (-2 percent) to 2.39mmt in July. This was primarily due to a drop in demand in Bangladesh, which was down 0.23mmt (-45 percent) from 0.51mmt in June to 0.28mmt in July. The import drop in Bangladesh came alongside a reduction of 0.11mmt (-14 percent) to 0.70mmt in Thailand and 0.03mmt (-27 percent) to 0.08mmt in Mexico. These instances of negative growth were cushioned by a significant demand increase in Singapore, where imports were up by 0.22mmt (105 percent) to 0.43mmt. Concurrently, Indonesia and Malaysia saw demand grow by 0.06mmt (31 percent) to 0.26mmt and by 0.02mmt (7 percent) to 0.32mmt. Offtakes had also increased slightly by 0.01mmt (3 percent) to 0.32mmt in Chile. Myanmar had not been seen in the market since June last year, our data show.

Atlantic Basin

In contrast to their Pacific counterparts, LNG imports in the Atlantic Basin remained broadly steady at 10.37mmt in July compared to 10.39mmt in June, with annualised utilisation of installed capacity at 45 percent.

Lack of net growth in European offtakes was a primary factor in the Basin's overall demand picture. Only some European importers showed increased demand. We recorded strong import growth in France, the Netherlands and Croatia, which together increased imports by 1.26mmt (56 percent) to 3.49mmt. In addition, Malta and Portugal took in 0.06mmt and 0.03mmt (7 percent) more in July whilst Greece's demand remained steady at 0.29mmt. However, these increases were negated by offtake decreases totalling 1.35mmt (-21 percent) to 4.92mmt in Belgium, the United Kingdom, Spain, Lithuania, Turkey, Portugal and Italy.

As to demand in the western Atlantic, importers in the Caribbean and South America – including Brazil, Jamaica, Puerto Rico and the Dominican Republic – saw broadly steady monthly LNG demand. Regional imports stood at 1.08mmt in July compared to 1.10mmt in June. Notably, Argentina was the region's key importer with offtakes of 0.54mmt, up 0.20mmt (59 percent) from 0.34 in June. The country was also the only regional importer with month-on-month demand growth in July as offtakes in Puerto Rico

and the Dominican Republic did not change from the 0.07mmt and 0.21mmt seen in June, respectively. LNG demand elsewhere in the region, however, was down 0.22mmt. Brazil curtailed imports by 0.14mmt (-41 percent) from 0.34mmt to 0.20mmt whilst Jamaica cut offtakes by 0.02mmt (-25 percent) to 0.06mmt. Panama, in turn, did not import LNG in July following an import of 0.01mmt in June.

Finally, LNG demand recurred in the United States in July with an import of 0.05mmt. In June the country did not show

LNG demand. Canada, meanwhile, did not import LNG, unchanged from June.

Middle East

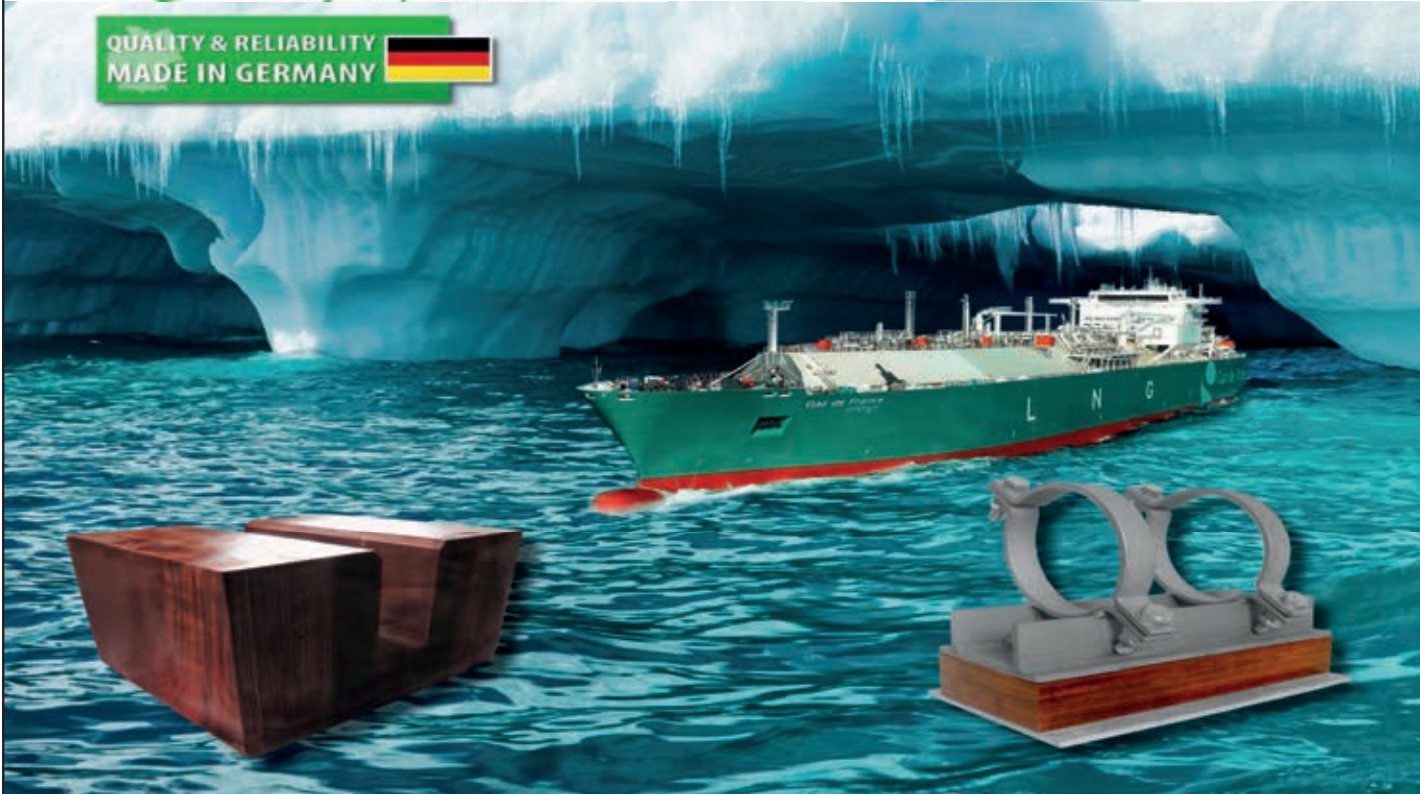
Unusually for this time of year, Middle Eastern LNG demand slumped in July. Regional offtakes were down 0.29mmt (-17 percent) to 1.46mmt from 1.75mmt in June. Offtake levels were weighed down by a steep cut in imports by Pakistan, which saw a 0.21mmt (-31 percent) demand reduction from 0.68mmt in June to 0.47mmt in July. Concurrently, Jordan did not import a cargo in July after it had received a

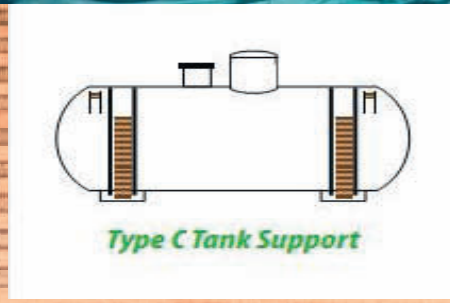
0.07mmt delivery in June whilst Egypt's FSRU at Ain Sokhna was also not seen in the market. All three countries receive LNG solely via FSRU. As such, it was only Dubai's FSRU that showed import growth in July. The facility's imports were up by 0.04mmt (36 percent) to 0.15mmt. Kuwait's Al Zour terminal, meanwhile, saw a reduction in imports by 0.05mmt (-6 percent) to 0.84mmt. Accordingly, the Middle East's annualised import capacity utilisation stood at 39 percent in July – down 8pp month-on-month – alongside FSRU utilisation of 28 percent. ■



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From LNG import to export: Lake Charles LNG prepares to be transformed

Energy Transfer's Communications Vice President, Vicki Granado, explains the plan to convert an LNG import facility into an export terminal.

At Lake Charles, Louisiana, Energy Transfer is developing Lake Charles LNG, a large-scale LNG export facility on the Calcasieu ship channel. This channel connects the Port of Lake Charles to the Gulf of Mexico, a main US gateway to the global energy trade.

The project, if sanctioned through a final investment decision (FID), will convert Energy Transfer's existing Lake Charles LNG import and regasification terminal into a 16.45 mill tonnes per annum liquefaction export facility.

Energy Transfer has signed significant long term LNG offtake contracts, with more in the pipeline.

Currently, Lake Charles LNG is the only fully-permitted brownfield project on the Gulf Coast moving towards FID, which is expected to be reached by the end of this year.

By using existing infrastructure, the facility will provide cost advantages and a shortened construction timeline over other LNG projects.

The demand for energy across the globe is increasing. Natural gas, with its lower-carbon profile, is a key energy source among countries aiming to satisfy climate goals. With the recent sanctions imposed on Russia, the global natural gas shortage has been exacerbated, boosting demand for US LNG exports.

Wood Mackenzie analysts forecast global LNG demand will more than double over the coming decades, to more

than 800 mill tonnes per annum by 2050, citing a recent report by the Australian Government. Shell (i) expects demand to double to 700 mill tonnes by 2040, (ii) with 380 mill tonnes consumed in 2021.

Natural gas supply factors and accelerating demand for natural gas and LNG are positive factors that make Lake Charles LNG an important asset in the US' energy infrastructure landscape.

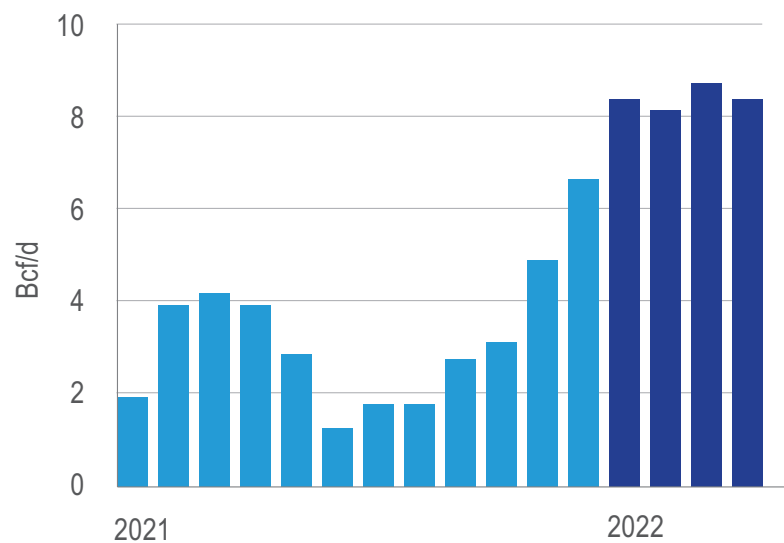
Scale and scope

Energy Transfer is one of the largest and most diversified midstream energy companies in North America, with a strategic pipeline footprint in all of the major US oil and gas-producing basins.

The Lake Charles LNG export project will benefit from abundant natural gas supply through Energy Transfer's 89,800 miles of natural gas transportation and gathering pipelines, with over 40 processing facilities and 160 bill cu ft of storage.

These pipelines offer access to multiple highly prolific areas of US natural gas producing basins, including the Haynesville, the Permian and the Marcellus Shale.

The Lake Charles LNG project merges its brownfield benefits with forward-looking plans for the new liquefaction facility. For example, the existing 152-acre site will be expanded by 240 acres to accommodate construction of the liquefaction facility.



LNG imports from the US to EU and UK have more than tripled, comparing 2021 to the first four months of 2022. Source: EIA, June 2022

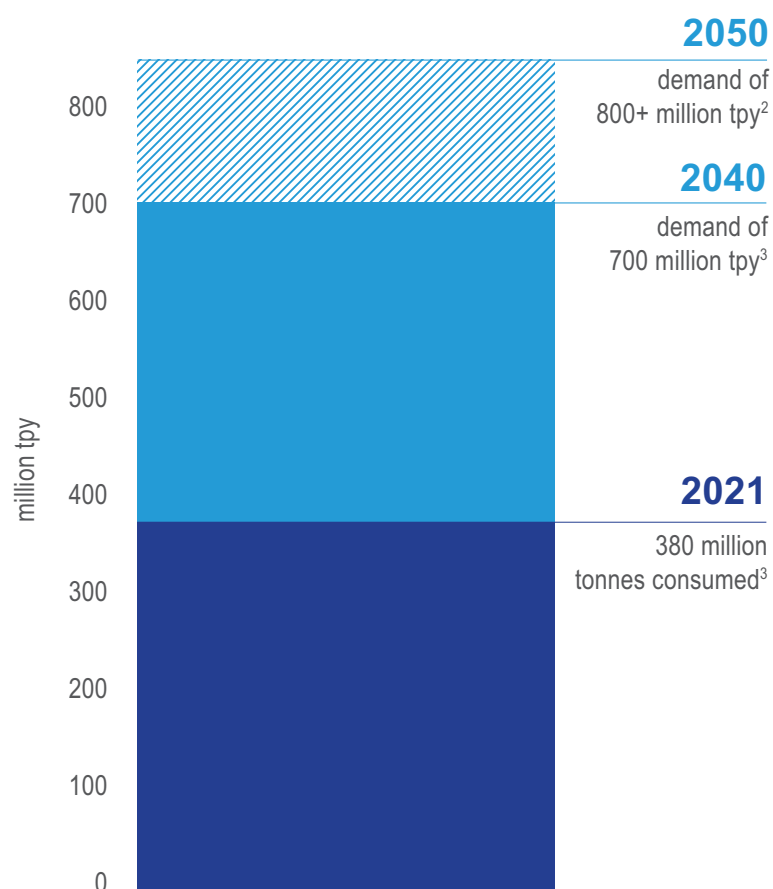
This project will capitalise on four existing LNG storage tanks with an aggregate storage capacity of 430,000 cu m, two deep water berths capable of handling LNGCs of up to 217,000 cu m capacity, and other existing LNG infrastructure, including offices, utilities, and roads.

All US federal, state and local permits necessary for the construction and operation have been received; these include authorisations from the Federal Energy

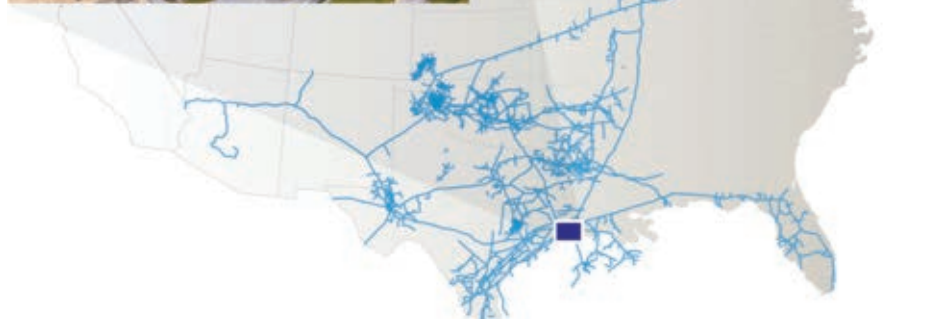
Regulatory Commission (FERC) and export authorisation from the Department of Energy (DoE). The project is estimated to create up to 5,000 jobs during construction and 200 fulltime positions.

Minimising risks

Given the nature of large-scale infrastructure projects, execution risk is an important investment element. For Lakes Charles LNG, many factors minimise the inherent risk associated



Global LNG demand is forecast to more than double over the coming decades. Source: Australian Government Department of Industry, Science, Energy, and Resources Strategy Commodity Report, February, 2022 and Reuters, February, 2022



Energy Transfer's Lake Charles LNG facility and strategic natural gas footprint of 27,000 miles of transportation pipelines and 40,000 miles of gathering pipelines



Energy Transfer's Lake Charles LNG import facility located on the Calcasieu ship channel in Lake Charles, Louisiana, US

with such projects.

For instance, the brownfield site holds existing strategic advantages, including cost savings attributed to existing assets and superior gas supply access. Finally, Energy Transfer is an experienced, credit-worthy project sponsor capable of delivering natural gas supply through its extensive natural gas network.

Lake Charles LNG intends to engage

Bechtel to perform the engineering, procurement and construction (EPC) work for the project on a lump sum, turnkey basis. Bechtel has built several large scale LNG liquefaction projects on the Gulf Coast.

With the site location around 26 miles

inland from the mouth of the Calcasieu Pass on the Gulf Coast, its location provides superior protection against hurricanes.

This site has proved to be better placed during two direct hurricane hits at the existing Lake Charles regasification facility, which resulted in no significant damage to the plant, primarily due to the dissipation of the on-ground storm surge, as the water moves inland, an advantage over locations closer to the Gulf Coast where the storm surge is much higher.

Long-term contracts

To meet the growing LNG trade, long-term contracts are needed to support long-life infrastructure assets in exporting countries around the world. During late March, two purchase agreements for a total of 2.7 mill tonnes per year of LNG with 20-year terms were signed by ENN, a major natural gas distributor in China. The first deliveries to China are expected to commence in 2026.

In May, another 20-year agreement was finalised with Singapore's Gunvor Group to supply 2 mill tonnes per annum with deliveries expected in the same timeline. Energy Transfer also announced a contract to supply 0.4 mill tonnes for 18 years to SK Gas, its first South Korean offtake partner. In early June, a 25-year agreement with China Gas, another natural gas distributor in China, was signed for 0.7 mill tonnes per annum.

Lake Charles LNG President, Tom Mason, noted that the signing of these contracts was an important step towards reaching FID later in 2022. It was also reported that several other long-term contracts are currently in the negotiation stage.

Energy Transfer's Lake Charles LNG is prepared and well-positioned for the historic energy challenges currently being faced globally. The transition of Lake Charles LNG from an LNG import facility to a re-purposed LNG export facility is a defining moment for the company. ■

Footnotes:

(i) <https://www.industry.gov.au/sites/default/files/February%202022/document/grs-commodity-report-lng.pdf> p. 6

(ii) <https://www.reuters.com/business/energy/lng-trade-grew-6-380-mln-tonnes-2021-amid-gas-price-volatilityshell-2022-02-21/>

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Multi-purpose cryogenic pump designer adds to series

In the small-scale industrial sector, cryogenic pump downstream applications have seen significant growth in the past few years. Technical Editor, Ian Cochran reports.

These are related to gas pipeline feeding, gas power generation stations, gas peak shaving plants and LNG transfer in small to medium size shore terminals.

With the ARTIKA series, Vanzetti Engineering is able to supply all the cryogenic pumping equipment downstream of the liquefaction plants, on skids and complete with all the accessories, sensors and instruments, the company claimed.

Their features include a seal-less concept with the motor bearings permanently lubricated by LNG, which allows a permanent cold condition for quick and efficient starting and stopping and a low maintenance frequency, due to the absence of wear parts.

The ARTIKA series of submerged cryogenic pumps for LNG are available in one-stage or multi-stage configurations (ie, 2, 3, 4 or 6). They are designed to work in submerged

conditions in cryostats/sumps or in cryogenic tanks and are suitable for continuous and discontinuous operations. They feature helical inducers to minimise NPSH requirements, integrated motors to be used with inverter/VFD LPG and low noise (< 80dB) during operation.

They are designed to supply LNG at different flow rates and pressures for several applications. For example, for automotive sector LNG refuelling stations, Vanzetti Engineering proposes the ARTIKA 160 submerged pump that can be used for one or two LNG dispensers.

Marine sector use

Meanwhile, the ARTIKA 120-3S is the smallest pump in the series and is used for marine sector applications. The ARTIKA 200-4S can deliver a guaranteed flow rate of over 30 cu m per

hour at 35 bar, while the ARTIKA 200-6S is able to reach a differential pressure of 55 bar. Both models can be used in marine sector applications for FSRU projects.

In order to meet the needs of applications that transfer LNG to small and medium size terminals, the ARKITA 300 is available in a 1 or 2 stage configuration, which can reach a flow rate of up to 270 cu m per hour.

ARTIKA pumps are suitable for all the requirements for regasification, LNG satellite plants, power generation, peak shaving plants, industrial and oil & gas plants, plus mining.

Vanzetti Engineering's series of ARKTIKA submerged cryogenic pumps for LNG will range from the smallest 120-3S to the largest 300-2S and will include the prototype of a new single stage ARTIKA 400 pump, which is currently under development. With a flow rate of up

to 546 cu m per hour, the development of ARTIKA 400 will complete the current range of submerged LNG pumps, the company said.

Besides the ARKTIKA series, the company has developed highly efficient cryogenic reciprocating pumps, which are compatible with cold converter and thermosyphon storage tanks with easy installation, due to 360 deg rotating inlet and outlet connections.

VT-1 series pumps are used in L-CNG refueling stations for road vehicles and for buffer filling.

Founded in 1984, Vanzetti Engineering is an Italian company active in the design and construction of cryogenic equipment for LNG and air gas. The 12,000 sq m plant, inaugurated in 2015, houses manufacturing facilities for cryogenic pumps and skids, which has allowed the company to significantly increase its production capacity. ■



An ARTIKA 160-2S



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SIGTTO tackles fugitive methane emissions

The Society of International Gas Tanker & Terminal Operators (SIGTTO) has produced a document entitled 'Detection and Reporting of Fugitive Methane Emissions from LNGCs', which has been published by Witherby. Technical Editor, Ian Cochran examined the paper.

One of a series of technical papers, its primary purpose is to recommend that a structured system be set up to identify, detect, measure and quantify LNGCs fugitive methane emissions.

An important first step is identification. This may also support a more comprehensive leak detection and repair system (LDAR) to reduce emissions through maintenance and design improvements.

From a safety perspective, the measurement of leaks is normally in percentage volume of the gas' flammable range. However, from an environmental perspective, effective leak detection needs to be carried out at much lower levels and this is usually measured in parts per million (ppm), which requires a more precise approach than that used for safety purposes.

Fugitive leaks generally come from either equipment imperfections or routine wear in joints, such as flange gaskets, screwed connections, valve stem packing and poorly seated valves.

When a measured level of methane exceeds the prescribed limit it should be considered that a leak has been detected. When there is no prescribed limit, an appropriate limit should be determined by the owner and recorded in the ship's documentation. Multiple limits may need to be set depending on the equipment type. For example, valves and pumps may have different limits.

All identified components within the areas to be considered for leaks should be physically tagged with their own unique identification number and recorded. It may be helpful to use the same tag numbers as in the ship's piping and instrumentation diagram (P&ID).

An electronic data record management system would help with audits and improve efficiency, if bar coding or similar equipment is used.

Cargo tanks - Fugitive leaks from cargo tanks can typically occur at access hatches, tank skirts and around penetrations into the tank dome. Cargo tank domes have penetrations for process piping and for instrumentation and sampling.

Several locations should be checked for leaks, such as flanges, valve stems, screwed connections and end caps. The tank containment system should be

checked on a regular basis, while the cargo tank hold space atmosphere should also be sampled.

In addition, fugitive leaks from cargo tanks should be checked after maintenance, particularly after drydocking. Where cargo tank hatches have been opened for maintenance, it is essential to monitor them for leaks after a cargo is loaded into the tank.

Cargo and fuel piping - This piping is designed to minimise leaks, but there are necessary connections for process piping, instrumentation and sampling. Flanges and screwed connections are possible sources of fugitive emissions. Temperature probe pockets, liquid sensors and sampling connections are also examples of items that should be checked.

Gaskets used to ensure tight connections may deteriorate over time and the connections may leak, due to forces on the joint.

Large flange connections should be included during routine checking, due to a correspondingly larger potential for leaks. If flexible connections are used, care should be taken to check for fugitive emissions that may occur from pin holes or material deterioration.

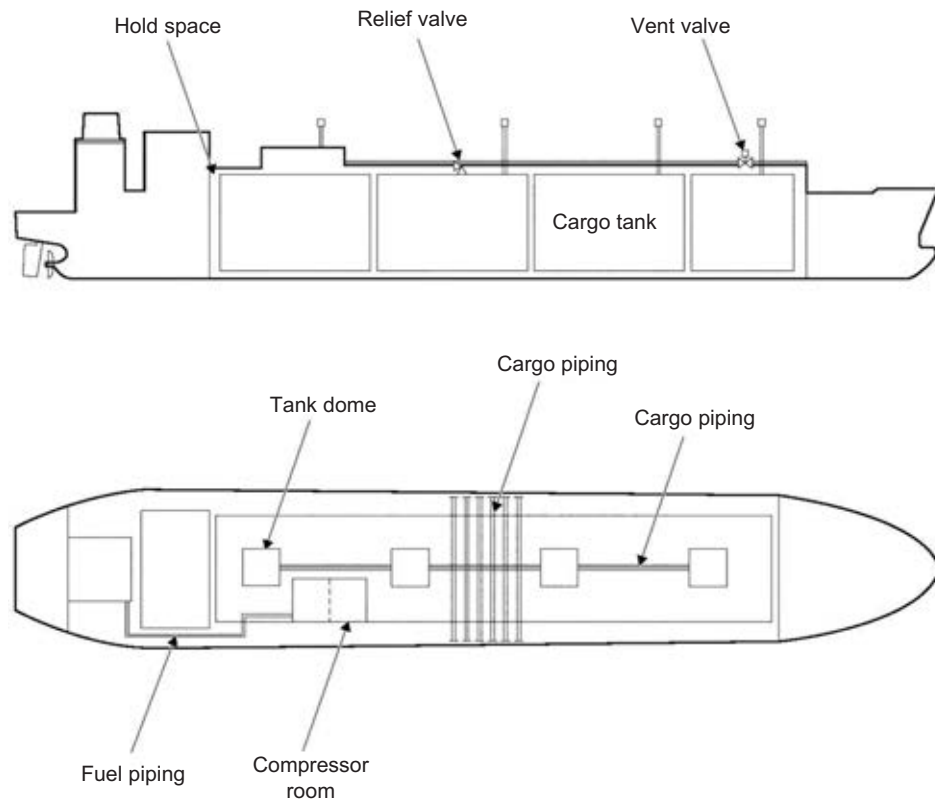
Cargo and fuel valves - These should be checked for leaks that may occur from valve gland packing and valve body joints. Process valves that are subject to regular thermal cycles, vibration and routine wear and tear from operations may need to be checked more frequently.

Some process valves may not be under constant liquid or vapour pressure and have only intermittent service, so the detection of leaks will need to be planned accordingly.

Relief valves may be subject to continuous pressure or occasional pressure from cargo vapour or liquid. Understanding the construction of the valve is important for knowing where and at what intervals to check. These valves may develop leaks at the sealing faces seat, the diaphragm and in the valve body.

For spring loaded relief valves, leaks may occur from the valve disc seat.

Some ships may have automatic vent valves that are connected to the vapour system, which could be a fugitive emissions source, if the valve disc is not sealing properly.



Areas to consider for sources of fugitive leaks. Source: SIGTTO

Other sources

Compressors and heat exchangers are also possible sources of emissions. Any cargo pumps that are outside the cargo tank are also possible sources. Leaks may occur from shaft seals, casing, gaskets, penetrations for instrumentation and equipment valves.

There may be multiple leak sources for each equipment type and it is important to identify all the possible sources and record them individually with reference to the tag number.

Combustion equipment, such as the gas combustion unit (GCU), boilers and engines, receive cargo vapour via piping from the cargo tanks. The fuel gas system includes valves, piping and instrumentation that should be monitored for leaks and recorded in the ship's documentation.

As each equipment item is unique, care should be taken to identify which areas of the equipment are exposed to cargo vapour and may be a source of fugitive emissions. Identification should cover all parts of the system, including the engine cylinder head and engine crankcase.

Various methods of emissions detection can be used, the suitability of which may depend on whether the installation is fixed or mobile, and whether it is on land or at sea.

For LNGCs, practical options include

detection using point sensors on portable and fixed detection equipment. For cargo containment, thermal imaging may also be used to detect leaks and then measure the rate to quantify the leakage.

The detection frequency depends on the system type and source of leak, and this frequency should be specified in the ship's fugitive emissions reduction documentation.

The fugitive emission reduction plan should detail each aspect of the monitoring process, including the items to be monitored, frequency of monitoring and method of detection.

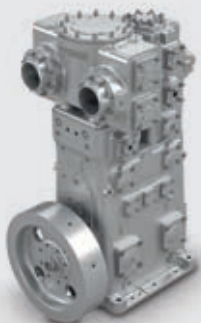
It is recommended that a structured system and methodology should be set up to identify, detect, measure, and quantify fugitive emissions. Proper record keeping, audits and a reporting regime are also essential for making continuous improvement in reducing fugitive emissions.

Improvements in methods, technology and lessons learnt from audits should all be used to drive continuous improvement. The ship's fugitive emission reduction documentation should be periodically updated to reflect these improvements.

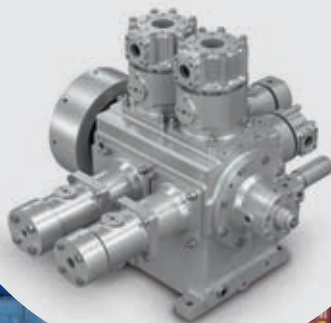
Regular audits should be carried out by the company to ensure the ship's fugitive emission reduction documentation is being followed and that records are reviewed for quality and accuracy. ■

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Wilhelmshaven accelerates LNG bunker plans

Belgian fuel company Tree Energy Solutions (TES) is to fast-track LNG imports in Germany, with plans to boost bunkering activity through the acceleration of clean fuels adoption. Fuelling Editor Malcolm Ramsay reports.

The construction schedule for Germany's Wilhelmshaven LNG terminal has been sharply accelerated this year in response to the worsening outlook for the country's gas import sector.

"We are planning for the regas import terminal," Otto Waterlander, COO at TES H2, tells *LNG Journal*. "We believe that the imports of Green gas (e-fuels) will create further momentum for the acceleration of clean fuels adoption in shipping and for heavy duty trucks."

EOI demand outstrips capacity

TES initially offered a terminal capacity with base services of up to 20 billion cubic metres per annum but received Expressions of Interest for more than twice the offered capacity following the launch of an Open Season earlier this year.

"The positive market response to our open season is a reflection of the current challenging market conditions and the strong desire to open a direct route for Germany," Waterlander commented. "Importantly, over 70% of those, expressed interest in transitioning to green gas imports before 2043."

TES is working with German energy group Uniper, and owner of the wider Wilhelmshaven LNG import terminal, to develop a Green Energy Hub capable of importing alternative fuels such as green hydrogen and green gas in future.

State approval

Permissions for the first phase of construction were approved by the State Trade Supervisory Authority Oldenburg in July, paving the way for Uniper to

begin work on Germany's first LNG terminal as well as ancillary onshore and seaward port infrastructure.

"We are very pleased that things are now visibly getting underway," Olaf Lies, Minister for the Environment, Energy, Building and Climate Protection in Lower Saxony, said. "We need a replacement for Russian gas as quickly as possible, and we in the north are prepared to take responsibility for this. Every cubic meter we save will help us get through the next winter, and every cubic meter we import to Germany via alternative routes in the future will help us free ourselves more quickly from Russia's grip."

The initial terminal will be based on a Floating Storage and Regasification Unit (FSRU), with plans to develop a larger onshore terminal as soon as possible after. The proposed FSRU will be able to handle up to 7.5 billion cubic meters of natural gas per year, equivalent to around 8.5 percent of Germany's current gas demand per year. The German Federal Ministry for Economic Affairs and Climate Protection and Uniper aim to commission this FSRU in winter 2022/2023.

"Here in Wilhelmshaven, we are currently demonstrating what the new German speed means: we are planning, approving and building at eight times the normal speed," Energy minister Lies added, "With such complex projects, this is only possible if everyone pulls in the same direction."

Once commissioned this new terminal will provide a further driver for LNG bunkering in the region, with secondary infrastructure expected to support a wide array of vessel and vehicles.



Otto Waterlander, CEO of TES

Waterlander of TES notes that extensive jetty-infrastructure is already planned for Wilhelmshaven and this make it "an advantaged location" for bunkering as well as "so-called 'breakbulk' activity" which may be added based on customer demand.

Transition fuel

While the scramble to build LNG import capacity has been driven by the war in Ukraine and, souring of ties with Russia, the change is forecast to be fortuitous for LNG bunkering as much of the infrastructure and technology for LNG-fuelled transport can be seamlessly switched over as cleaner fuels or blends become available.

Klaus-Dieter Maubach, CEO of Uniper, praised the rapid approval of the LNG terminal and its importance for the country's security of supply, noting that "in the medium and long term, our Green Wilhelmshaven hydrogen project will set the course for an even more climate-friendly energy supply."

Uniper and TES has partnered with engineering, procurement and construction giant Technip for development of the Wilhelmshaven Green Energy Hub and plan to build on initial LNG infrastructure by importing green

ammonia to create a hydrogen supply chain in northern Germany.

Green Energy Hub

The terminal will be equipped with an "ammonia cracker" for reconversion of the ammonia to green hydrogen and nitrogen," a spokesperson for Uniper said. "It will be connected to the planned hydrogen network and would be capable of supplying around 295,000 metric tons or 10% of the demand expected for the whole of Germany in 2030."

The proposed NH3 splitting plant or "ammonia cracker" will be the first large-scale plant of its kind in the world and is hoped to be a springboard for transition from LNG to even cleaner fuels.

"Its high volumetric energy density, low production costs and good storability make ammonia one of the most attractive means of transporting hydrogen. The ability to convert ammonia back into hydrogen as well as its immediate use as a marine fuel, energy carrier or chemical feedstock predict widespread adoption and have triggered numerous export projects around the world," Uniper adds.

Commissioning of the new terminal is planned for the second half of this decade, depending on national import demand and export opportunities. ■



Artist's rendition of Wilhelmshaven LNG Terminal



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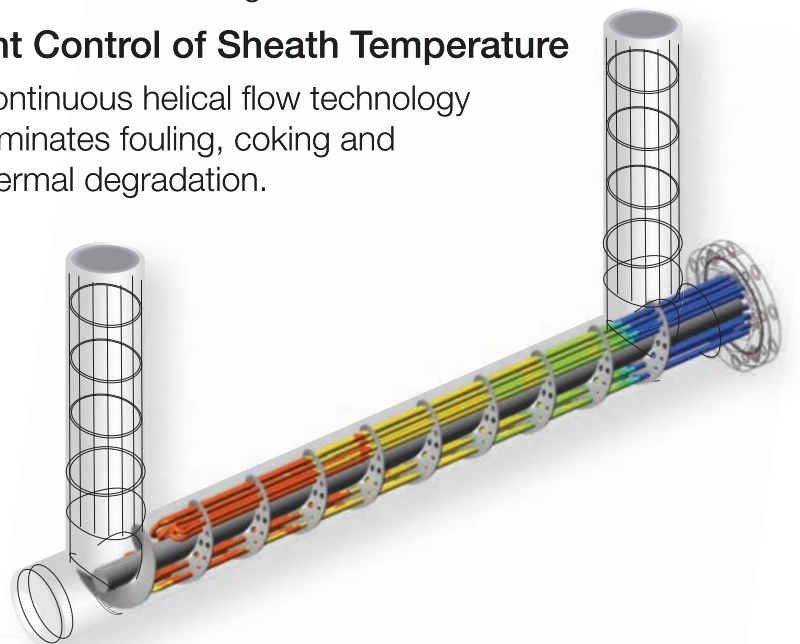
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For the Record

Angola's Azule Energy commences operations

UK energy giant bp and Italian energy company Eni have officially established Azule Energy, a new 50/50 independent joint venture formed to combine the two companies' Angolan businesses.

Azule Energy is now Angola's largest independent equity producer of oil and gas, holding 2 bill barrels equivalent of net resources and growing to about 250,000 barrels equivalent a day (boe/d) of equity oil and gas production over the next five years.

It holds stakes in 16 licences (of which six are exploration blocks) and a participation in Angola LNG JV.

According to the two stakeholders, Azule Energy boasts a strong pipeline of new projects that are scheduled to come on stream over the next few years, growing organically from exploration discoveries.

These include oil projects and the New Gas Consortium (NGC), the first non-associated gas project in Angola, which will support the energy needs of the country's growing economy and strengthen its role as a global LNG exporter.

The JV also holds significant exploration acreage in excess of 30,000 sq km in Angola's most prolific basins, allowing it to leverage proximity with existing infrastructure.

Azule Energy's leadership team draws on experience and expertise from both parent companies. They will report to a six-person board, comprising three bp and three Eni representatives, reflecting the ownership share of the company. All bp Angola and Eni Angola staff have joined the new company.

Eni and bp anticipate that Azule Energy's new independent, integrated operating model will unlock significant cost savings, mainly from operational synergies in logistics and technology.

The JV incorporation took place after the pending conditions were met, among them having secured a third-party financing of \$2.5 bill in the form of pre-export financing, and after receiving regulatory approvals.

Bernard Looney, bp's CEO, said: "The

formation of Azule Energy is an important step for bp, Eni and Angola. Combining our Angolan businesses and drawing on both bp's and Eni's expertise, it will continue to safely and efficiently develop Angola's resilient hydrocarbon resources and pursue new opportunities in oil and gas and other energies. Azule Energy continues our commitment to Angola and will create real value for both the companies and the country."

Claudio Descalzi, Eni CEO, added: "This is an important milestone for Eni, marking a step forward in Eni's strategy of enhancing all our best assets. A new, strong entity is born, which combines our experience, skills and technologies with those of our partner bp, putting them at the service of the development of Angolan energy resources, with a priority commitment to environmental protection and the growth of local economy."

Adriano Mongini, Azule Energy's new CEO, commented: "I feel honoured to be the first CEO of the company. Together with a highly competent and motivated leadership team, we are committed to develop the full potential of the company portfolio of development and exploration opportunities. With finance discipline and focus on HSE, Azule Energy will maximise the value of the assets for the benefit of Angola and the of the shareholders."

After announcing their intention to form the joint venture in May 2021, bp and Eni worked closely with the Angolan Government, and Azule Energy's formation was subject to all customary governmental and other approvals.

Asian spot prices rise

Asian spot LNG prices rose last week, after further Russian reductions to Nord Stream 1 flows and renewed concerns over market tightness, as buyers compete for cargoes to meet summer demand in Asia and maintain their European stock building.

The average LNG price for September delivery into northeast Asia LNG-AS was estimated at \$42.5 per MMBtu, up \$4.5 or 11.8% from the previous week, according to newswires.

With limited global supply, the reduction pushed some Asian bids to break through the \$52 per MMBtu range, however, this level fell quickly and bids around the week were in the low \$40s, one source said.

European TTF gas prices hit a four-month high following Russian gas cuts, hovering near €195 per MWh.

Germany has introduced new targets for building gas storage, at 75% by 1st September, 85% by 1st October and 95% by 1st November.

S&P Global Commodity Insights assessed LNG prices on a delivered ex-ship (DES) basis into northwest Europe at \$45.763 per MMBtu, a discount of \$14.05 per MMBtu to August TTF prices.

LNG cargo prices into Europe were trading above North Asia derivative prices, which for October were around \$43.765 per MMBtu.

Last Friday, Russia's Sakhalin Energy Investment Co asked its LNG customers to pay for supplies via a Moscow unit of a European bank, according to Russian media.

Sakhalin was said to be holding discussions to switch payment currencies away from the US dollar for supply contracts. Alternative currencies being discussed included the Chinese yuan, the Japanese yen and South Korean won, according to a source talking with Reuters.

Beach to sell LNG to bp

Perth Australia-based, Beach Energy has agreed to sell 3.75 mill tonnes of LNG to bp.

The agreement has a hybrid pricing structure linked to Brent crude and JKM benchmarks, together with a downside price protection mechanism.

According to local media, Beach Energy had indicated late last year that it was in talks to supply bp with LNG from the Waitsia gas project stage 2, a joint venture project with Japanese trading house, Mitsui & Co.

Beach said that supplies were expected to begin next year under the five-year contract.

"Signing of the LNG [sale and purchase agreement] with BP is a significant milestone in our delivery of material growth and another step closer to Beach becoming a supplier of LNG to the global market," said Beach Energy CEO, Morné Engelbrecht, talking with local newswires.

He said the development was a key phase in Beach Energy's growth plan, under which, the company has invested significantly to boost oil and gas production after a troubled few years.

"Once LNG sales commence, Beach will have further diversified its commodity pricing exposure," Engelbrecht added. "Beach's oil and gas portfolio will provide exposure to Brent oil prices, spot LNG prices, east coast, west

coast and New Zealand domestic gas prices, and oil-linked gas prices. This places Beach in an enviable position within the Australian energy sector."

Engelbrecht also said that the company was well positioned for growth at a time when Australia was experiencing tight domestic supplies.

The Waitsia Joint Venture (WJV) with Mitsui & CO will cost \$768 mill and produce about 250 terajoules of natural gas a day. Beach will contribute around \$350 mill from its existing cash flows and facilities, the company said in December last year.

The LNG will be delivered on a free on board (FOB) basis from the North West Shelf facilities in Karratha, Western Australia.

Centrica deal boosts Delfin's FID bid

UK energy company, Centrica has signed a Heads of Agreement (HoA) with Delfin Midstream to purchase 1 mill tonnes per annum of LNG for 15-years on a Free on Board (FOB) basis.

The LNG will be supplied from the Delfin Deepwater Port, located 40 nautical miles off the coast of Louisiana, US.

This agreement provides Delfin with another key foundation customer, which will facilitate a final investment decision (FID) for the first floating LNG export facility in the US by the end of this year, with operations expected to commence in 2026, the company said.

"We are very pleased to enter into this agreement with Centrica and continue to rapidly advance Delfin's position as a leading source of reliable low-cost energy from the safety of the US at compelling prices.

"Market demand for long-term LNG continues to be strong and buying activity from Europe and various other geographies has accelerated over the past few months. As a modular project that can make FID in 3.5 mill tonnes per year increments, this agreement materially advances our first vessel's path towards FID later this year," Dudley Poston, Delfin CEO explained.

Centrica said that it had been working to boost the UK and Ireland's energy security both now and over the longer term against a challenging geopolitical and macroeconomic environment.

Last month, Centrica signed an additional £4 bill agreement with Equinor to supply 4.5 mill UK homes through 2025, plus this £7 bill agreement with Delfin, which is due to start in 2026.

This will underpin the expansion of US

LNG export capacity, an increasingly important source of stable, reliable future gas supply.

"Natural gas has now been recognised as an essential transition fuel on the path to net zero just at the point geopolitical uncertainty is impacting the global gas market.

"Additional US gas export capacity will help increase UK, European and global energy security, reflecting the increasing importance of LNG in the global gas supply chain. I'm delighted to sign this Heads of Agreement with Delfin, as we continue to deliver our new strategy, growing Centrica's LNG portfolio and ensuring that we increase our access to a diversified range of reliable gas supplies for our customers," said Chris O'Shea, Centrica Group CEO.

Kwasi Kwarteng MP, UK Secretary of State for Business and Energy, commented: "A key component of our Energy Security Strategy is that natural gas is a key transition fuel on the road to clean, affordable, home-grown energy.

"From renewables to nuclear, we have ambitious plans for greater energy independence, but we are also realistic about our energy needs now and in the years ahead. That means we need to secure more diverse and reliable sources of natural gas from friends, allies and strategic partners.

"(Today's) deal between Centrica and Delfin is positive news for the UK, helping to ensure our diversity of supply from reliable sources - like our friends in the US - for many years to come," he concluded.

Cheniere reports second quarter positive income: Cheniere Energy has reported consolidated adjusted EBITDA of around \$2.5 bill and \$5.7 bill for the three and six months ending 30th June, 2022, respectively.

The net income (loss) came in at around \$0.7 bill and \$(0.1) bill for the periods, while distributable cash flow were about \$1.9 bill and \$4.4 bill, respectively.

Cheniere also raised its full year 2022 consolidated adjusted EBITDA guidance to \$9.8 - \$10.3 bill and full year 2022 distributable cash flow guidance to \$6.9 - \$7.4 bill.

This was due primarily to the expected proceeds from the anticipated early termination of the LNG Terminal Use Agreement (TUA) with Chevron and sustained higher margins on LNG throughout 2022, the company said.

In June, Sabine Pass LNG and Chevron agreed terms for the early termination of their TUA in return for a lump sum payment of \$765 mill to be made by Chevron to SPLNG during calendar year 2022.

As part of its capital allocation plan, during the three months ended 30th June, Cheniere prepaid \$1.1 bill of consolidated long-term debt, re-purchased about 4.1 mill shares for around \$540 mill, and paid a quarterly dividend on its common stock of \$0.33 per share on 17th May, 2022.

Since 31st March, 2022, Cheniere and its subsidiaries have signed new long-term contracts totalling around 140 mill tonnes through 2050.

"The second quarter was marked by many successes, including excellent safety and operating performance at both of our facilities, as well as seamless execution of our strategy throughout the LNG value chain. We secured meaningful growth of our LNG platform with the FID of Corpus Christi Stage 3, maintained significant commercial momentum, and commenced providing our Cargo Emission Tags - all of which demonstrate the reliability and the durability of the Cheniere platform," Jack Fusco, Cheniere's President and CEO explained. "Our achievements across our operations, execution, capital allocation and sustainability efforts continue to position Cheniere as a leader in the global LNG market for decades to come.

"We are once again raising our 2022 financial guidance, which is driven by the improved margin environment in the LNG market - underscoring the need for additional investment in natural gas infrastructure globally. I am proud of what our team has accomplished to heed the call for cleaner-burning, reliable energy supply and look forward to further expanding upon our existing platform with future growth at both of our sites," he concluded.

Confusion over Freeport LNG's force majeure declaration: Freeport LNG, has reportedly retracted its *force majeure*, leaving traders to source product on the spot market at significant losses, according to Reuters.

The LNG exporter had declared force majeure in June after the plant suffered an explosion, resulting in a complete shutdown of the facility.

Freeport's force majeure was expected to last until next month. But a document and trading sources told the newswire

that the company had retracted the notice around the end of June, blaming human error.

Force majeure would have given traders cover if defaulting on their current agreements to supply end users with product. Instead, the retraction has caused traders to enter the spot market to fulfill customer orders at much higher prices that resulted in collective losses of about \$8 bill, trading sources said.

Freeport LNG has not commented on the retraction thus far.

Reuters quoted the Freeport note to market participants dated 3rd August as saying, "No facts have been revealed that would indicate that the incident was a result of *force majeure*."

Freeport LNG's liquefaction facility is the world's seventh largest and the second largest in the US, accounting for up to 20% of the US' export capacity, capable of processing 2.1 bill cu ft of gas per day.

Eemshaven LNG full capacity sold: Gasunie subsidiary, EemsEnergyTerminal, has sold the remaining LNG capacity at its Eemshaven terminal to French energy company, Engie.

Under the terms of the agreement, Engie will purchase the last 1 bill cu m of capacity.

Earlier, contracts were signed with EZ (Czech Republic) and Shell Western LNG for much of the capacity.

As a result, the entire 8 bill cu m of LNG available at Eemshaven is now sold.

The first LNG delivery via the terminal is expected to take place in mid-September, Gasunie said.

Engie claimed that with the new capacity added to its existing LNG portfolio, through its business entity 'Global Energy Management & Sales', it will strengthen its energy diversification strategy and increase its ability to supply LNG to Europe.

Ulco Vermeulen, a Gasunie Executive Board member, said: "In a period of just three months, the floating LNG terminal is now completely sold out. In the coming weeks, all attention will be focused on the technical preparation of the location for the floating terminal. This too will take place at record speed."

Marc Pannier, Executive Committee Member of Engie's business entity 'Global Energy Management & Sales', added: "These new capacities are part of Engie's strategy to secure the supply for our customers and support the energy independency in Europe."

Until this year, the Netherlands only had the Gate LNG receiving terminal at Rotterdam. However, the expansion at Eemshaven and the upgrading of the Rotterdam terminal will double the country's LNG import capacity.

Eemshaven will involve two FRSUs - the Exmar S188 and the Golar Igloo. They are both expected to arrive on site in early September.

Engro and Excelerate extend co-operation: Engro Eximp FZE, a subsidiary of Engro Corp, has signed a Memorandum of Understanding (MoU) with Excelerate Energy, to enhance the development of a private sector gas marketing business in Pakistan.

Under the MoU, both partners will jointly evaluate the possibility of establishing a regasified LNG (RLNG) marketing business with maximum participation from the country's private sector.

This initiative has the potential to increase private company participation in Pakistan's LNG sector and enhance Pakistan's energy security by opening up new RLNG supply avenues for businesses and consumers, Engro said.

Ghias Khan, Engro Corp President and CEO, said: "I am delighted that Engro's collaboration with Excelerate Energy has been strengthened through this agreement, which will help Pakistan meet its energy needs.

"As a pioneer in Pakistan's LNG sector, we understand the importance of enhancing energy security; an imperative for Pakistan to ensure economic growth while providing consumers access to adequate, reliable, and affordable supplies of energy," he said.

"We value our collaboration with Engro and take great pride in having partnered with them to build Pakistan's first LNG import terminal in 2015," said Steven Kobos, Excelerate's President and CEO. "This agreement builds on the momentum we have established by extending our reach downstream of our existing terminal to key regasified LNG markets in Pakistan. We remain committed to meeting Pakistan's growing energy security needs, and look forward to expanding our collaboration with Engro in this pivotal market."

Since 2015, Engro and Excelerate have jointly played a key role in strengthening the energy security of Pakistan through continuous operations of Pakistan's first LNG import terminal, which utilises a

A photograph of an industrial facility, likely a liquefied natural gas (LNG) plant. Large, silver-colored pipes and machinery are visible. A worker in a blue uniform and white hard hat is standing on a metal walkway in the background. The scene is brightly lit, and the overall color palette is dominated by the metallic silver of the equipment and the green of the structural supports.

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long term chartered Excelerate FSRU.

The terminal currently caters for up to 15% of Pakistan's natural gas requirements and is recognised as the most utilised FSRU worldwide, the companies claimed.

Eni acquires FLNG

Italian energy major Eni has acquired Export LNG Ltd from Belgium's Exmar Group.

The company owns the small 'Tango' FLNG.

Eni will use the FLNG in the Republic of Congo, as part of the natural gas development project in the Marine XII block.

'Tango' FLNG was built in 2017 and has a capacity of around 3 mill cu m per day of LNG, a production capacity of about 0.6 mill tonnes per year and an LNG storage capacity of 16,100 cu m.

This acquisition will allow Eni to fast-track the project, as the FLNG's high flexibility and mobility characteristics will help the development and enhancement of the company's equity gas by accelerating the production start-up time, it said.

'Tango' will begin operating in the Congo in the second half of 2023, following the completion of moorings and the connections necessary to tie-in with the Marine XII network and infrastructure.

Marine XII LNG production is expected to begin in 2023, and when fully operational, it will provide volumes in excess of 3 mill tonnes per year, Eni said.

Confirming the deal, Exmar said that the value of the transaction is in the range of \$572 to \$694 mill. The actual amount will depend on the FLNG's performance during the first six months on site.

'Tango' will be handed over to Eni at the closing date of the transaction, which is expected in the second half of this month.

As part of the deal, Eni and Exmar also agreed a 10-year charter for an FSU, which will be a converted LNGC.

Furthermore, the Antwerp-based company will provide operations & maintenance services for both the FLNG and the FSU and engineering services for the project, which will be the subject of separate contracts.

Exmar's Executive Chairman, Nicolas Saverys, said: "We are pleased to work with Eni to help increase their LNG supplies on a fast track basis. This represents a significant milestone for

EXMAR in its ambition and proof of our ability to further develop LNG infrastructure solutions."

Eni plans second Mozambique FLNG

Italian energy giant Eni has confirmed that it is planning to install a second FLNG offshore Mozambique.

The unit could be built in less than four years and help Europe diversify its supplies, according to a company executive, talking with Bloomberg.

Eni's project would complement the \$7 bill 'Coral-Sul' FLNG moored off Mozambique's northern coast, which is scheduled to start exporting LNG this year.

If Eni decides to proceed early next year, output could begin before TotalEnergies' \$20 bill onshore project that the company abruptly halted construction of last year, due to security issues, Bloomberg said.

For Mozambique, a second FLNG export platform would help boost gas exports hindered by multiple delays.

"This is a great opportunity, to develop its resources and bring significant revenues," Guido Brusco, Eni's COO of natural resources said in an online interview with Bloomberg last week. "It is also a great opportunity for Europe to diversify their supplies. In this context, a project that could be delivered in less than four years has a tremendous opportunity window."

Before reaching a final investment decision (FID), the company will need to agree the addition with its partners, including ExxonMobil, China National Petroleum Corp and Mozambican state-owned Empresa Nacional de Hidrocarbonetos.

Eni is responsible for offshore projects with ExxonMobil heading up onshore assets.

Coral-Sul remains on schedule for first exports this year, despite supply chain problems caused by the pandemic.

Located more than 50 km offshore, it was unaffected by an insurgency linked to Islamic State that led TotalEnergies to stop work last year on its onshore project that's planned to have almost four times the capacity of the FLNG.

"I believe that to fully develop Mozambique's considerable gas resources, the right decision is to move toward both an onshore concept and an offshore concept," Brusco said.

Earlier, it was reported that Samsung was in talks to build the unit.

Eni reports strong results

Italian energy company Eni reported group adjusted second quarter 2022 EBIT of €5.84 bill, up 13% quarter-on-quarter and more than doubling the year-on-year figures.

The rise was driven by the favourable commodity price environment, strong refining margins and the focus on cost management and business operating performance.

After a strong first quarter thanks to the LNG business and portfolio flexibility, GGP was at break-even in the second quarter, reflecting normal seasonal patterns in profitability, Eni said.

Group adjusted net profit for the second quarter was €3.81 bill (€7.08 bill in the first half 2022), an improvement of €2.9 bill y-o-y (€5.9 bill increase in the first half), reflecting the strong EBIT result and further helped by the performance of Eni's equity-accounted entities and a lower tax rate.

Eni CEO, Claudio Descalzi, said: "Amid uncertainty and volatility in markets, we moved fast to secure new energy supplies.

"After new gas agreements with our partners in Algeria, Congo and Egypt earlier in the year, in June Eni entered the North Field East venture in Qatar, part of the world's largest LNG project. In East Africa, gas production started from the Eni's operated Coral South FLNG, the first development of Mozambique's large potential.

"In Italy, we have invested to rebuild gas storage ahead of winter and our refineries raised their processing rates significantly to ensure oil products are available for the market.

While maximising our efforts on energy security, we continue to execute our de-carbonisation strategy.

"Financial delivery is underpinned by our continued efforts on efficiency and cost control. The Group adjusted EBIT for the quarter was €5.8 bill driven by E&P and R&M and adjusted net income was €3.8 bill.

"With an adjusted cash flow of €10.8 bill, we are able to cover our organic capex of €3.4 bill, and our distribution policy for the full year. Based on these robust results and our updated market outlook, we are enhancing shareholders' distribution by raising the 2022 share buyback to €2.4 bill," he said.

Firebird's liquefaction project moves forward

Firebird LNG, a joint venture of Houston-based Phoenix Development Holding Co

and Idaho's MAD Energy, has advanced the project to gather associated natural gas from oil production facilities offshore Suriname and Guyana in South America.

The gas will be liquefied it at an onshore facility, once built.

This project is now fully funded through to final investment decision (FID), CEO Walter Teter, said.

As a result, the stakeholders estimated that the 4 mill tonnes per year LNG facility will be operational by the end of 2024.

"With so much of the world in turmoil, the Firebird project has the advantage of being located in a country free of conflict and governed by a parliamentary democracy," MAD Energy CEO, Georte Wentz, said. "We think that kind of stability will be a real asset for us and for our customers."

Firebird is underpinned by an open access pipeline that will gather associated gas from all producers in the Suriname-Guyana basin and deliver it onshore, either to gas-to-power markets or to the liquefaction plant, which is to be built near Nickerie, Suriname.

"As the anchor project of the deepwater port, the liquefaction plant will represent the single largest onshore industrial investment in Suriname to date," Teter claimed.

The LNG facility's initial capacity could be expanded if demand warrants, the company said. Associated gas resources in the basin have been estimated at some 35 trill cu ft, well in excess of what the initial Firebird LNG project will require.

In addition, the LNG facility could be enhanced to produce hydrogen, which would be primarily marketed in Europe.

Freeport signs agreement to restart partial operations

Freeport LNG Development and the US Pipeline Hazardous Materials Safety Administration (PHMSA) have signed a Consent Agreement to enable the possible restart of partial operations in October.

The facility was closed, following an 8th June fire and explosion, which occurred at the Texas Freeport LNG's liquefaction plant.

Under the terms of the agreement, the obligations are intended to ensure that Freeport LNG can safely resume initial LNG production and thereafter ultimately return to full operation of all its liquefaction facilities.

In the near term, the agreement includes certain corrective measures,

many of which are currently underway, that Freeport LNG is to take to obtain PHMSA approval for an initial resumption of LNG production at its liquefaction facility.

Freeport LNG said that it believed that it can still complete the necessary measures, along with repair and restoration activities, in order to resume initial operations in early October.

Initial operations are expected to include three liquefaction trains, two LNG storage tanks and one LNG loading dock, which the company said will enable it to deliver around 2 bill cu ft per day of LNG - enough to support its existing long-term customer agreements.

In addition to the repair and replacement of Freeport LNG's infrastructure that was damaged in the incident, and as part of the corrective measures to be taken under the agreement, the company is evaluating and promoting initiatives on training, process safety management, operations and maintenance procedure improvements, and facility inspections, the operator said.

Freeport was the second largest US LNG export facility, supplying up to 20% of exports before the fire and explosion caused the complete shutdown of the facilities.

The explosion was caused by an over-pressurised pipeline, US investigators have reported.

As a result of the announcement, US natgas prices jumped by more than 7% on Wednesday.

FSRU sales boost Golar

Golar LNG Limited has reported net income of \$230 mill and adjusted EBITDA of \$101 mill for the second quarter of this year, compared to \$471.43 and \$39.67 mill for 2Q21, respectively.

During the period, Golar sold the FSRU 'Golar Tundra' for \$350 mill and agreed to sell the steam turbine LNGC 'Golar Arctic' as a converted FSRU to Italy's Snam Group for €269 mill.

The company also completed the sale of remaining TFDE carriers, The Cool Pool Limited, and Golar's shipping and FSRU management organisation to Cool Company Ltd. (CoolCo).

In addition, Golar's share of second quarter contractual debt decreased from \$1.7 bill at 1Q22 to \$1 bill at 2Q22.

Following the end of the quarter, the FLNG 'Hilli's' customer exercised its optional capacity increase of 0.2 mill tonnes per annum of TTF linked

production volumes from 2023 to 2026.

Golar also advanced MKII newbuilding activities scheduled for delivery in 2025 and said that there should be an FLNG project announcement this year.

The FLNG 'Gimi' conversion for its 20-year contract with bp scheduled to commence in 4Q23 is 86% technically complete.

Once commissioned and delivered to bp, the FLNG is expected to unlock around \$3 bill of earnings backlog to Golar, equivalent to \$151 mill in annual adjusted EBITDA.

Golar also reported that multiple new client engagements were made during the quarter, as well as a strong development of the existing FLNG growth pipeline across both integrated and tolling based projects.

Yard availability and updated pricing for both MKI and MKII designs were confirmed during the quarter, and discussions were held for MKIII.

Indicative pricing suggested a capex per tonne of liquefaction capacity of between \$500-600 mill. Both MKI and MKII designs can be delivered within 2025 if ordered during 2H22. Competitive construction and long-term lease financing term sheets for the FLNG growth projects have already been received.

Golar is ramping up construction engineering work and planning to order long-lead items during the second half of this year for a MKII design FLNG, with a liquefaction capacity of up to 3.5 mill tonnes per annum. A suitable conversion candidate vessel has been identified and inspected.

As of 30th June, 2022 Golar had \$528.8 mill of cash and cash equivalents and \$91.5 mill of restricted cash. Restricted cash included \$16.7 mill relating to the 'Hilli' lessor-owned VIE.

Golar's total cash amounted to \$603.5 mill, which included \$253 mill of net proceeds from the sale of New Fortress Energy (NFE) shares, \$193.1 mill net proceeds from the sale of FSRU 'Golar Tundra', repayment of the \$131 mill corporate RCF, and settlement of the \$66.4 mill legacy UK tax lease case.

A full \$200 mill undrawn corporate RCF is still available for future drawdown and is secured by Golar's remaining 12.4 mill NFE shares.

Iran to revive long-delayed LNG project

Iran's huge gas deposits, which have lain dormant for several years, could

be extracted soon.

According to local media, Iran's Oil Ministry has approved a 5 mill tonnes per year production train for Iran LNG, one of three projects.

These projects have been delayed for several years, due to US sanctions on the Iranian petroleum sector.

An Iranian Oil Ministry subsidiary said yesterday on its news feed that it had obtained a Government permit for the LNG production train.

Iran LNG was the third project, which had been approved during the past decade to enable the country to start exporting LNG on ships, rather than natural gas via pipelines.

However, the project, which was initially planned to reach an output target of 10.8 mill tonnes per year, hit the buffers in 2018 when the US pulled out of the international agreement on Iran's nuclear programme and imposed sanctions on the country.

The sanctions prevented a German supplier from sending equipment to build the Iran LNG trains, despite all the preparations having been completed by early 2017.

A report appearing on the Oil Ministry's news service Shana yesterday said that Iran's Oil Pension Fund, which owns Iran LNG, had carried out major changes to the management structure of the project over the past 10 months.

Previous reports published in Iranian media had indicated that the Iran Liquefied Natural Gas Company (ILC), which is heading up the project, had contracted the domestic energy engineering firm, MAPNA to work on Iran LNG.

Japan and South Korea to ramp up storage ahead of winter

The crucial pre-winter shoulder months of August, September and October will determine the level of LNG storage at which countries will start the winter.

Commodity analytical company ICIS estimated that Japan and South Korea bought a combined 5.5 mill tonnes of spot LNG during this period last year.

China alone bought 1.5 times this combined amount last year. However, it is unlikely to be competing for much spot LNG in the coming months, due to high prices and a slowing economy.

ICIS forecast that Japan and South Korea will seek to secure slightly more than 5 mill tonnes of spot LNG this month and in September and October –

assuming that there is not much flexibility or uplift available from their long-term contract suppliers.

This amount is less than the two countries bought last year, but is still the equivalent of almost 80 spot LNG cargoes just before the winter season sets in.

To secure these cargoes during the current gas shortage occurring in Europe, the North Asia spot price will need to close the gap with the European gas price.

Yesterday, South Korean energy statistics provider KESIS confirmed that the country's storage inventory is around 1.8 mill tonnes. This is 0.9 mill tonnes lower than ICIS had forecast, which is estimated to be the 'normal' level of inventory for previous early Augusts.

In addition, the mandated 90% storage needed by the end of October will mean that an additional 0.5 mill tonnes of LNG will be required to fill the gap.

Consequently, ICIS Analytics predicted that the country will seek to purchase 2.4 mill tonnes of spot LNG this year, some 0.3 mill tonnes more than in the same period of 2021.

ICIS also estimated that Japan's storage inventory level should be at 4.9 mill tonnes. This is 26% higher than the past five years' average, but just slightly below the record high for the same month in previous years. There are signs, however, that a few storage outlets could be full soon, creating logistical and storage management problems going into the winter.

This is likely, due to several factors, such as over-stocking the summer demand and the general sentiment to maintain a high level of storage, especially when transitioning into the second half of the year.

ICIS said that it expected companies to draw down another 0.6 mill tonnes of LNG this month, as Japan goes through its summer peak, followed by three months of gas input into storage, well into November.

Japan is forecast to buy nearly 2.7 mill tonnes of spot LNG in the coming three months, 20% less than in the same period last year. This will lead to a decent storage level of 4.9 mill tonnes by the end of October and 5.4 mill tonnes by November, just before the winter withdrawal season begins.

Overall, ICIS believed that the North Asia spot market will be tight in the coming pre-winter months, as the two countries will be looking for around 80 spot LNG cargoes to reach the storage



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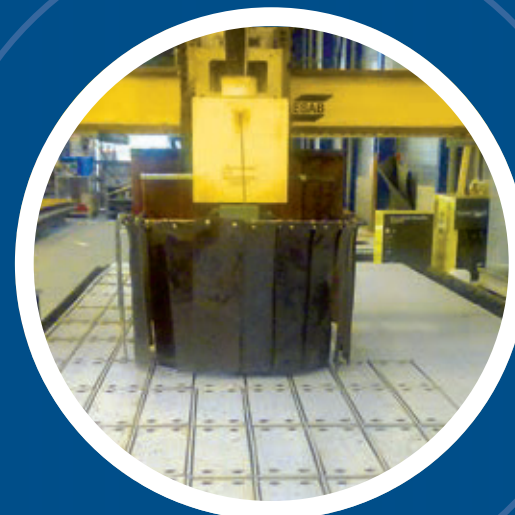
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levels needed, competing with Europe for the cargoes.

However, the competition would have been even stronger, if China was buying more LNG, but it is currently less active and being priced out of the spot market.

Japanese trading houses take a hit on Russian LNG project

Japanese trading houses, Mitsui & Co and Mitsubishi Corp have cut the value of their stakes in Russia's Sakhalin-2 LNG project by 217.7 bill yen (\$1.66 bill).

This follows Moscow's move to seize control of the project.

Russian President Vladimir Putin signed a decree on 30th June to create a company to take over Sakhalin-2's rights and obligations.

State-run Gazprom has a 50% plus one share stake in Sakhalin Energy, the joint venture that operates Sakhalin-2, while Shell owns 27.5% minus one share. Mitsui and Mitsubishi hold 12.5% and 10%, respectively.

Mitsui trimmed the investment value of its stake by 136.6 bill yen to 90.2 bill yen at the end of June and Mitsubishi has lowered the value by 81.1 bill yen to 62.3 bill yen, the companies said separately to newswires on Tuesday.

"Details of the presidential decree are still not clear and we have made a conservative evaluation," Mitsui Chief Financial Officer, Tetsuya Shigeta, told local media at a news conference, adding there would be no impact on its profit or loss, or on cash flow.

Mitsubishi Chief Financial Officer, Yuzo Nouchi, said the financial impact is negligible given the company's equity capital of more than 7 trillion yen.

The Japanese government has said that it plans to support the trading companies in their attempts to remain in the Sakhalin-2 project. Japan imports about 10% of its LNG from Russia, mainly from Sakhalin-2.

A surge in energy prices, driven by concern over supply disruption linked to leading oil and gas producer Russia's invasion of Ukraine last February, led both trading houses to report bumper profits for the April/June first quarter.

Mitsubishi's net profit for the quarter nearly tripled from the previous year to a record 533.95 bill yen while Mitsui's profit rose 44% to 275 bill yen, a record for the time of year.

Both companies maintained their annual profit estimates, but said uncertainty over the global economy could lead to changes in the future.

Kosmos' West African gas projects on track

Oil and gas developer, Kosmos Energy has announced it generated net income of \$117 mill, or \$0.25 per diluted share for the second quarter of this year.

When adjusted for certain items that impact the comparability of results, the company generated an adjusted net income of \$132 mill, or \$0.28 per diluted share.

In the gas sector, the company reported that Phase One of the Greater Tortue Ahmeyim LNG project was more than 80% complete at the end of the quarter.

Commenting on the company's performance, Chairman and CEO Andrew Inglis, said: "Kosmos delivered another quarter of strong operational and financial performance. Production at the upper end of guidance and continued free cash flow delivery helped reduce debt and drive net leverage lower.

"Following the robust underlying business performance year-to-date, and despite seeing some inflationary cost pressures, we expect full year free cash flow generation and debt reduction to be in line with previous guidance with year-end net leverage expected to be lower than our 1.5x target.

"We continued to make good progress on our three core development projects -- Tortue Phase 1, Jubilee Southeast and Winterfell -- which we expect will collectively grow production by about 50% by 2024. We are also advancing our other gas projects in Mauritania and Senegal, which are expected to drive the next phase of growth beyond 2024, as we continue to materially increase the gas weighting of the portfolio.

"With low-cost, high margin oil assets that generate material cash to both de-lever and fund our investment in our world class gas assets, we believe we have the right portfolio at the right time. We are well positioned for the energy transition and expect to play an increasingly important role alongside our host countries in providing energy security to nations looking to diversify current supply sources," he concluded.

LNG fuelled vessel interest continues

According to the latest figures from DNV's Alternative Fuels Insight (AFI) platform, nine LNG fuelled vessels were added to the worldwide orderbook in July, bringing the total to 162 for the year to date.

So far this year, LNG fuelled vessels order growth was driven by containerships and car carriers, making up 51% and 25% of the orders, respectively.

Commenting on the figures, Martin Wold, Principal Consultant in DNV's Maritime Advisory business, said: "Although the growth in orders has slowed down somewhat in line with the general newbuild ordering activity, there are several large orders in the pipeline.

"It is also encouraging to see some innovative pilot projects hitting the order books, including cruise ships run on liquid hydrogen powered fuel cells. These types of projects are key to driving technology maturity and establishing safety frameworks, and to accelerating the de-carbonisation of shipping," he said.

AFI provides the shipping industry with an open platform for evaluating the uptake of alternative fuels and technologies, DNV explained.

Elsewhere, V.Group will be providing full technical management for three LNG dual-fuel newbuilding VLCCs currently under construction at Daewoo Shipbuilding & Marine Engineering (DSME) for tanker owner, International Seaways.

They will be joining V.Group's fleet management in the first quarter of next year and will operate under a long term charter to Shell once delivered.

Nakilat increases net profit by 14.9%

Nakilat, the world's largest LNGC fleet owner, has reported a net profit of QAR730 mill for the first half of this, compared to QAR636 mill for the same period in 2021 - an increase of 14.9%.

During 1H22, the company took delivery of two chartered newbuilding LNGCs.

CEO Eng Abdullah Al-Sulaiti, said: "We are pleased with Nakilat's solid financial performance for the first half of 2022, reflecting the company's superior operational excellence in energy transportation and maritime services.

"With a greater global demand for maritime shipping, Nakilat remains determined to meet customer needs and find both urgent and long-term diversified, secure and reliable energy transportation solutions, providing value to our customer base and asset portfolio growth and sustainable returns for our shareholders," he said.

Nakilat also achieved the British Safety Council's five-star rating for the

fifth consecutive year after completing the Council's comprehensive audit scheme for safety, occupational health, and environmental management.

The company was also awarded the 2021 Qatarization Award at the energy sector for supporting staff learning and professional development, which Nakilat claimed was a pillar of its operations.

Since it was established in 2004, Nakilat now has the world's largest fleet of 69 LNGCs, Nakilat also manages and operates one FSRU, and four VLGCs. In addition, the company provides shiprepair and offshore fabrication services, shipping agency services, as well as towage and other marine support services through its joint ventures - Nakilat-Keppel Offshore & Marine (N-KOM), Qatar Fabrication Company (QFAB), Nakilat SvitzerWisjmulder (NSW), and Nakilat Agency Company Ltd (NAC).

One-off charge hits Excelerate's bottom line

FSRU owner and operator, Excelerate Energy reported a net loss of \$4 mill for the second quarter of this year, which reflected an expected \$21.8 mill one-time charge for an IPO-related FSRU acquisition.

Adjusted net income, excluding the expected one-time charge and IPO-related restructuring expenses, was \$20.4 mill for the period, while the adjusted EBITDAR was \$75.2 mill.

"Our second quarter financial results demonstrate the continued strong momentum of our integrated business model," said Excelerate's President and CEO, Steven Kobos. "We are executing our strategy to deploy our flexible LNG infrastructure and pursue downstream opportunities to expand our reach in both new and existing markets.

"Importantly, the strategic expansion downstream of our floating terminals is accelerating the growth of our gas sales business and positioning Excelerate for increased profitability,

"This past year has highlighted the important role flexible access to LNG plays in providing energy security and supporting the de-carbonisation efforts of countries around the world," he added. "Excelerate is committed to delivering stable, reliable energy, so countries and industries can keep the lights on and homes can stay warm in the winter.

"We look forward to continuing to develop our geostrategic asset base to meet the energy needs of customers in the

future, while delivering meaningful value creation for our stakeholders,” he concluded.

Second quarter adjusted EBITDA and adjusted EBITDAR increased over the previous year’s period primarily due to incremental gas sales margins at the Bahia Terminal in Brazil, which commenced in December, 2021.

The sequential increase was driven by the start up of regasification services at Bahia Blanca in Argentina in May, the ‘Express’ resuming operations under its long-term regasification charter in early April, and higher gas sales volumes at the Bahia terminal in Brazil, all of which were partially offset by higher vessel operating costs.

Excelerate continued to execute on its regasification business through a seasonal charter for the FSRU ‘Exemplar’ at the Bahia Blanca GasPort regasification terminal in Argentina. The FSRU arrived at Bahia Blanca in May, 2022 and will provide regasification services through 31st August, 2022.

‘Exemplar’ will be deployed to Finland in the fourth quarter of this year.

As of 30th June, 2022, Excelerate had \$386 mill in cash and cash equivalents.

The company said that it expected adjusted EBITDA to range between \$249 mill and \$269 mill for 2022. In addition, it expected adjusted EBITDAR to range between \$285 mill and \$305 mill.

Pakistan in huge LNG cargo bid

Energy strapped Pakistan has asked for bids for 72 LNG cargoes over a six-year period.

The tenders are being organised by state-owned Pakistan LNG Limited (PLL).

Suppliers have been requested to submit bids by 14th September on a DES basis at the Port Qasim LNG receiving terminal.

Bid documents will be available from 10th August to 13th September, PLL said, according to documents placed on its website.

PLL is looking for a 140,000 cu m cargo per month for the six-year period.

The company has been authorised by the Government to undertake the importing, buying, storing, supplying, distributing, transporting, transmitting, processing, measuring, metering and selling natural gas, LNG and regasified LNG, thereby managing the whole supply chain, the company claimed.

Last month, PLL tendered for 10

cargoes for delivery between July and September but didn’t receive a single bid.

Polish energy merger moves closer

On 29th July, 2022, the management boards of Polish utility and energy companies PGNiG and PKN ORLEN agreed on a plan to merge the two companies.

Also agreed was the exchange ratio at which PGNiG shares will be swapped for PKN ORLEN shares.

The merger will be implemented once the relevant decisions have been passed by the two companies general meetings.

“Building a large, strong multi-utility group is a landmark business project that will stimulate further economic growth and help enhance Poland’s energy security. When PKN ORLEN and the LOTOS Group join forces, it will be easier for us to achieve the energy transition that Poland and all the other countries in Europe simply must undergo.

“In order to secure a strong position on international markets and ensure Poland’s energy security for many years to come, we need to build a company capable of successfully competing in global markets,” Iwona Waksmundzka-Olejniczak, PGNiG’s President of the Management Board, explained.

“We have demonstrated our ability to effectively deliver projects that help to strengthen the Polish energy sector, build its resilience to market shocks and strengthen its independence from raw material suppliers. This approach will not change. Building strong corporate groups with diversified, complementary business lines is not only an international standard, but also a necessity considering the challenges posed by the energy transition and Poland’s economic growth prospects. Hence the importance of skillful strategic execution.

“Our key strategic goals focus on investments in zero- and low-carbon energy sources and the related modernisation of the energy sector in Poland and the rest of the region. Leveraging the strengths of both companies, we will deploy the resources necessary to invest in further promising business areas. In this way we build lasting value for our shareholders, customers and local communities,” added Daniel Obajtek, PKN ORLEN’s Management Board President.

It will be undertaken by transferring

all of PGNiG’s assets to PKN ORLEN in exchange for shares allocated to PGNiG shareholders. The shares issued to existing PGNiG shareholders will increase PKN ORLEN’s share capital.

In exchange for their holdings, PGNiG shareholders will receive new PKN ORLEN shares at a ratio of 0.0925 to 1, meaning that for each PGNiG share shareholders will receive 0.0925 PKN ORLEN share.

The merger will be pivotal for growth of the fuel and energy industry and will strengthen Poland’s energy security. Also, it will increase investment opportunities and improve the negotiating power of the combined group, further enhancing the security of raw material supplies for Poland, the companies said.

PGNiG’s experience in hydrocarbon exploration and production in Poland and abroad, the related competence and its team of specialists, combined with the upstream interests of Grupa LOTOS and PKN ORLEN, will open up growth opportunities for the multi-utility group, and ultimately improve Poland’s energy security.

PGNiG’s competences in gas distribution and storage will play an important role, as the Group has the largest distribution network in Europe, covering over 190,000 km. It is also the only entity that operates natural gas underground storage facilities.

With these resources, it is not only possible to develop the natural gas market in Poland, but also to implement hydrogen and biomethane projects by the multi-utility group, PGNiG said.

Port Arthur seeks completion time extension

Port Arthur LNG (PALNG) and Port Arthur Pipeline (PAPL) have asked the US Federal Energy Regulatory Commission (FERC) for an extension to 18th June, 2028, to complete construction of the liquefaction project.

This involves the construction of the Louisiana Connector and the Texas Connector projects.

The companies said that since an authorisation order was issued in 2019, Port Arthur has worked diligently to develop the projects.

PALNG also said that it had obtained all US federal, state, and local authorisations necessary for construction of the facilities, and has taken concrete steps toward construction of the liquefaction project.

PAPL is fully subscribed and entered

into 20-year precedent agreements with PALNG for 100% of the capacity on both the Louisiana Connector and Texas Connector projects, it claimed.

Mostly due to the impacts of the COVID-19 pandemic, the companies said that they have encountered unanticipated circumstances that have prevented them from meeting the construction and in-service deadlines established in the authorization order.

Port Arthur asked to extend the deadline to construct and place the project facilities into operation and confirmed that no significant changes in circumstances exist that threaten the commercial viability of the projects.

FERC said that as a matter of practice, it generally acts on requests for time extensions to complete the construction of Natural Gas Act facilities when such requests are contested before order issuance.

For those extension requests that are contested, FERC will aim to issue an order acting on the request within 45 days.

In addition to publishing the full text of this document in the US Federal Register, FERC provides all interested persons an opportunity to view and/or print the contents of the document via the internet, the commission explained.

Port Kembla LNG plant could alleviate Australia’s gas shortage

Australian gas customers could be shielded from future shortages on the east coast by bringing gas directly into New south Wales (NSW) via the soon to be completed Port Kembla Energy Terminal (PKET), developer Squadron Energy claimed.

On 1st August, the Australian Competition and Consumer Commission’s (ACCC) 2022 Interim gas report predicted significant gas shortfalls next year and beyond, as well as rising energy prices – resulting in a threat to local industry and jobs.

The ACCC will make a final decision on the way forward in October, it said.

Squadron Energy CEO, Eva Hanly, said that small and medium business customers who purchase gas on the spot market are increasingly worried about a gas shortage which could mean gas prices skyrocketing – putting pressure on their ability to continue.

“It is extremely concerning that the ACCC’s outlook for the east coast gas market has significantly worsened. We

There is new energy in the heart of the Mediterranean

OLT Offshore LNG Toscana is the company which manages the floating storage and regasification unit "FSRU Toscana". The Terminal is technologically innovative and well-advanced. It guarantees the maximum standards in terms of environmental sustainability and safety. "FSRU Toscana" is permanently moored off the Italian coast – between Livorno and Pisa – in the heart of the Mediterranean Sea. The Terminal has a maximum authorized regasification capacity of 3.75 billion Standard cubic meters per year and an LNG storage capacity of 137,100 cubic meters. New SSLNG service soon available.

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are focused on getting the energy terminal at Port Kembla finished as quickly as possible to ensure gas will be available to help commercial and industrial users, gas-powered generators (GPG) and retailers,” she said.

PKET is being constructed by Squadron Energy which is part of the Tattarang group, owned by Australian entrepreneurs, Andrew and Nicola Forrest. The wharf infrastructure is claimed to be 80% complete, and it is due to be operational at the end of 2023.

“Our terminal will be available to bring in gas next year. It is the only solution that can supply gas directly into the east coast gas network – the other proposals, such as developing new gas fields at Narrabri or building new pipelines from Queensland will not be able to deliver gas for years,” Hanly said.

The ACCC forecast said that Australia’s east coast could face a shortfall of 56 petajoules in 2023. PKET can deliver up to 130 petajoules per annum, or 75% of the gas needs of New South Wales, Squadron claimed.

While the ACCC is strongly encouraging LNG exporters to immediately increase their supply into the market, the challenge is physically getting the gas from Queensland into NSW and Victoria. The congestion within the gas pipelines means that there is not a lot of opportunity to bring more gas down from Queensland.

“The great thing about this terminal is that it has the potential to ship gas from Queensland directly into NSW, bypassing the congested pipeline infrastructure.” Hanly claimed.

In January, 2020 when the New South Wales Government signed the NSW Energy Package Memorandum of Understanding (MoU) with the Commonwealth, PKET was named as one of the solutions.

“Since that landmark MoU, we have been progressing construction of the terminal to ensure this solution will be in place as quickly as possible. We are speaking to energy retailers, energy customers, consumer groups and market bodies and I believe together we can

deliver a solution which secures future supply for NSW and Victoria,” Hanly said.

Squadron Energy is also focused on developing large scale renewable energy projects, she revealed.

“We are planning this terminal with a green hydrogen future in mind so it can be transitioned to bring in green energy. The pipeline connecting the PKET with the east coast gas network will be the first green hydrogen enabled pipeline under construction in Australia. However, in the short-term gas is urgently needed and we hope our Terminal can relieve this gas crisis,” she concluded.

QatarEnergy picks NYK consortium for new LNGCs

Japanese shipping major, NYK and its joint venture partners, “K” Line, MISC Berhad, and China LNG Shipping (Holdings) Limited have signed a long-term timecharter contract with QatarEnergy, one of the world’s largest LNG producers.

As a result a shipbuilding contract was signed with Hyundai Heavy Industries

(HHI) for seven 174,000 cu m LNGCs.

The seven new vessels will transport LNG to worldwide destinations, NYK said.

Over the past 39 years since the delivery of the LNGC ‘Echigo Maru’ in 1983, NYK has continued to enhance its LNG safety/expertise and worldwide LNG transport network.

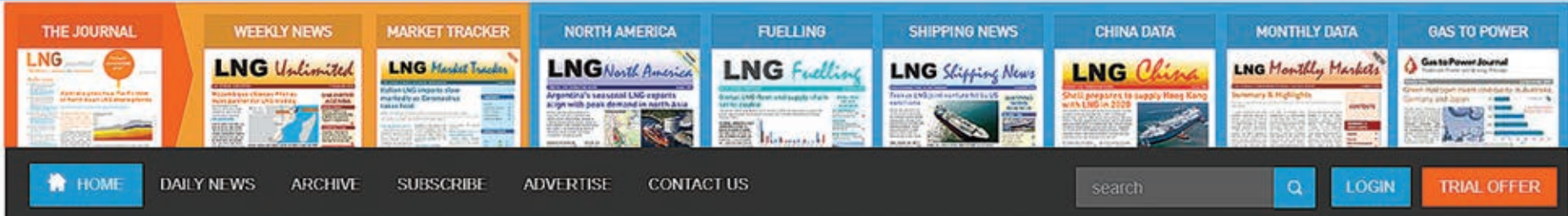
NYK claimed that the skills it has acquired in safe and optimised navigation, the construction of LNGCs, and high-level shipmanagement quality, have earned high regard from QatarEnergy, leading to the successful conclusion of this contract.

NYK and QatarEnergy already have had a long standing relationship involving several existing projects.

These seven vessels will each be equipped with an X-DF 2.1 iCER, dual-fuel 2-stroke engine and an air lubrication system, both of which will contribute to a reduction of GHG emissions and an improved environmental impact.

The vessels are due to be delivered in 2025/2026.

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Taiwan's LNG imports not compromised by Chinese manoeuvres

Taiwan's Government has claimed that its LNG imports were largely unaffected by the recent Chinese military exercises off its waters.

The country's Ministry of Economic Affairs (MOEA) said Taiwan has an LNG inventory for more than 10 days, as required by law.

Seven LNGCs were berthed and completed their offloading without disruption during the mainland Chinese exercises.

Local media said that this statement appeared to address concerns about the country's energy supplies that could have been impacted by Beijing's blockade manoeuvres.

The Ministry's statement also said that inbound and outbound shipping schedules were unaffected.

Tellurian enjoys huge increase in natural gas production

During the second quarter of this year, Tellurian generated \$61.3 mill in revenue from natural gas sales on a production increase of around 47%, compared to the previous quarter.

Following the quarter's end, Tellurian agreed to acquire various natural gas assets located on about 5,000 net acres, which included 44 producing wells.

President and CEO, Octávio Simões, said, "Tellurian's business model provides a unique proposition amongst US LNG producers. By having our own natural gas production, we create cash from domestic sales that we can use for further investment, and upon completion of Driftwood LNG, we have an economic hedge for natural gas purchases which creates additional value for our shareholders and Tellurian.

"While Tellurian continues to add natural gas production and sales revenue, we are also progressing with construction of Driftwood LNG, having cleared the site and begun an extensive pile driving programme to set the foundation for the first plant," Simões added.

Tellurian generated around \$61.3 mill in revenues from natural gas sales, compared to \$5.6 mill in the second quarter of 2021.

However, the company reported a net loss of about \$35,000 for the three month period.

Tellurian ended 2Q22 with about \$823 mill of cash and cash equivalents

and around \$1.34 bill in total assets, the company said.

Tilbury LNG to boost First Nations Group

LNG terminal developer, FortisBC Holdings and First Nation Musqueam Indian Band have signed an agreement, aimed at sharing the benefits associated with the Tilbury LNG projects.

The agreement will see Musqueam and FortisBC work in close collaboration as the projects develop, including the Tilbury marine jetty.

Their shared goal is to develop a world-leading LNG facility that will result in beneficial outcomes for Musqueam and the region, while improving the overall quality of these projects.

Tilbury LNG projects agreement is a direct result of an increasing mutual relationship between the two parties. It includes options, subject to regulatory approvals and certain conditions, for Musqueam to acquire equity ownership in the projects.

This includes the Tilbury LNG storage expansion project and the Tilbury marine jetty project.

Musqueam Chief, Wayne Sparrow, said; "Musqueam is looking forward to being an equity partner with FortisBC at Tilbury, on the shore of the Fraser River, in the heart of Musqueam territory.

"For thousands of years, Musqueam has lived along a trading route and supported trade in the region. Through our relationship with FortisBC, we are building on this strength while being leaders in energy stability and ensuring benefits for future generations," he said.

Tilbury LNG is claimed to be ideally positioned to meet market opportunities and the projects will elevate Tilbury's role in the global transition to lower carbon energy, according to FortisBC President & CEO. Roger Dall'Antonia.

He said; "Tilbury is powered by renewable hydroelectricity, which means it can produce LNG that is nearly 30% less carbon intensive than the average global LNG. We value our long-term relationship with Musqueam, and I am pleased we have the opportunity to advance these projects in full partnership with Musqueam. We look forward to continuing our collaboration with Musqueam as the projects are developed."

Tilbury LNG's Phase 1A expansion, commissioned in 2019, added a 46,000

cu m storage tank and LNG liquefaction capacity of 0.25 mill tonnes per annum. Further expansions are proposed to help strengthen FortisBC's gas system and provide more LNG to customers.

This includes Phase 1B, which will increase LNG liquefaction capacity by up to 0.65 mill tonnes per annum.

In addition, Phase 2 has two components and serves two functions. The first is an additional storage tank of up to 142,400 cu m to provide a backup energy supply to the Lower Mainland. Second is additional liquefaction of up to around 2.6 mill tonnes, which will produce LNG to help regional or international customers switch from higher carbon fuels like diesel or coal.

The marine jetty is being planned by Tilbury Jetty LP, an affiliate of FortisBC, and would be located adjacent to the Tilbury LNG facility.

This project, through providing ship loading services for LNG, will enable ship-to-ship LNG marine fuelling in Vancouver (BC), which can significantly reduce emissions from the shipping industry.

It will also enable the export for LNG.

US LNG exports hit the heights

Eighteen LNGCs left the US between 21st July and 27th July, according to the Energy Information Administration's (EIA) weekly report, using data from Bloomberg Finance.

Seven vessels sailed from Sabine Pass, four from Corpus Christi, three from Cameron, two from Calcasieu Pass, and one each from Cove Point and Elba Island.

They had a combined LNG carrying capacity of 67 bill cu ft.

In addition last week, Venture Global's Calcasieu Pass received approval from the US Federal Energy Regulatory Commission (FERC) to introduce hazardous fluids to Liquefaction Block 9.

This permit is among the last ones needed in the commissioning process for the terminal to operate all 18 liquefaction trains, the EIA said.

The agency also revealed that the US became the world's largest LNG exporter in the first half of 2022, according to data from CEDIGAZ.

Compared with the second half of 2021, US LNG exports increased by 12% in the first half of this year, to average 11.2 bill cu ft per day.

US LNG exports continued to grow

for three reasons—increased LNG export capacity, increased international natural gas and LNG prices, and increased global demand, particularly in Europe, the administration said.

According to its estimates, installed US LNG export capacity has expanded by 1.9 bill cu ft per day nominal (2.1 bill peak) since November, 2021.

As of July, 2022, the EIA estimated that US LNG liquefaction capacity averaged 11.4 bill cu ft per day (13.6 bill peak), increasing to 13.9 bill peak capacity once all of the LNG trains at the new Calcasieu Pass LNG achieve full production.

International natural gas and LNG prices hit record highs in the last quarter of 2021 and first half of 2022. Prices at the Title Transfer Facility (TTF) in the Netherlands have been trading at record highs since October, 2021, averaging \$30.94 per MMBtu during the first half of 2022.

LNG spot prices in Asia have also been high, averaging \$29.50 per MMBtu during the same period, the administration said.

Most of the US LNG exports went to the EU and the UK during the first five months of this year, accounting for 64%, or 7.3 bill cu ft per day.

Including Turkey, US LNG exports to Europe accounted for 71% (8.1 bill cu ft per day) of the total exports. Similar to 2021, the US accounted for most of EU and UK imports during the first half of this year, providing 47% of the 14.8 bill cu ft per day total LNG imported, followed by Qatar (15%), Russia (14%), and six African countries aggregating 19%.

However, last June, exports fell by 11%, mainly as a result of the unplanned outage at Freeport LNG. ■

Diary of events

Gastech Exhibition and Conference 2022

5-8 September
Fiera Milano, Italy
<https://www.canadagaslng.com>

22nd World LNG Summit & Awards

29 November - 2 December
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LNG Import Terminals

Explanatory Notes

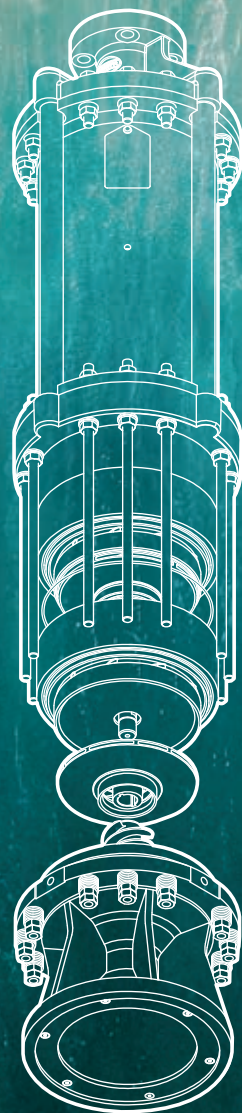
- The tables do not include the following types of LNG facilities :
 - ◆ Small marine satellite terminals receiving LNG from liquefaction plants in their own country (such as exist in Norway) or which receive LNG transhipped from nearby reception terminals in their own country (such as in Japan)
 - ◆ Satellite LNG storage facilities that receive LNG transported only by road or rail
- Expansions of LNG reception terminals are only shown if they involve new storage tanks
- Where there is a blank in the table the information is uncertain or unknown.

Any comments on the tables, and corrections / additional information from terminal shareholders and project developers would be most welcome, and should be sent to editor@lngjournal.com

Country	Location (Project)	Owners	Start up	Storage	
				Tanks	Capacity
Belgium	Zeebrugge	Fluxys	1987	4	380,000
Canada	Canaport Saint John	Irving Oil, Repsol	2009	3	480,000
Chile	Quintero	ENAP, Metrogas, Enagas	2009	3	334,000
	Mejillones	Engie, Ameris Capital AGF	2010	1	175,000
China	Beihai LNG, Guangxi	Sinopec	2015	4	640,000
	Dalian	PetroChina	2011	3	480,000
	Dapeng ND Guangdong	CNOOC	2018	4	640,000
	Dongguan, Guangdong	Jovo Group	2013	2	160 000
	Fujian LNG (Xiuyu)	CNOOC, Fujian I&D Corp.	2008	2	640,000
	Guangdong	CNOOC,BP	2006	3	480,000
	Haikou, Hainan LNG	CNOOC	2014	3	480,000
	Ningbo, Zhejiang	CNOOC, Zhejiang Energy	2012	3	480,000
	Qidong, Jiangsu	Guanghui Energy	2018	1	60,000
	Qingdao, Shandong	Sinopec	2014	3	480,000
	Rudong	PetroChina	2011	3	530,000
	Shanghai	CNOOC, Shenergy Group	2009	3	495,000
	Shanghai, Mengtougou	Shanghai Gas	2008	3	120 000
	Shenzen, Diefu	CNOOC	2016	2	320,000
	Tangshan, Hebei	PetroChina	2013	3	480,000
	Tianjin North	Sinopec	2017	2	320,000
	Yuedong, Guangdong	CNOOC	2016	2	320,000
	Zhoushan Zhejiang	Enn Group	2018	2	320,000
	Zhuhai, Gaolan	CNOOC	2013	3	480,000
Dominican Republic	Punta Caucedo	AES Andres	2003	1	160 000
Finland	Pori	Gasum Skangas	2016	1	30,000
	Tornio	Gasum Skangas	2018	1	30,000
France	Fos Tonkin	Elengy	1972	3	150,000
	Montoir-de-Bretagne	Elengy	1980	3	360,000
	Fos Cavaou	Engie, Total	2010	3	330,000
	Dunkirk LNG	EDF, Fluxys, Total	2016	3	570,000
Gibraltar	Gasnor	Shell	2018	1	5,000
Greece	Revithoussa	DEPA	2000	3	225,000
India	Dabhol	GAIL, NTPC (Ratnagiri Gas & Power)	2009	3	480,000
	Dahej	Petronet LNG	2004	4	592,000
	Hazira	Shell India, Total	2005	2	320,000
	Kochi, Kerala	Petronet LNG	2013	2	320,000
	Mundra	Gujarat State Petroleum, Adani Group	2018	2	320,000
	Kamarajar (Ennore), Tamil Nadu	Indian Oil, DFC, ICICI Bank	2019	2	360,000
Indonesia	Arun	Pertamina	2015	5	507,000
Italy	Panigaglia	Snam	1969	2	100,000
	Porto Levante (offshore GBS)	ExxonMobil, Qatar Petroleum, Edison Gas	2009	2	250,000
Jamaica	Montego Bay	New Fortress	2018	1	7,000
Japan	Negishi	Tokyo Gas	1969	14	1,180,000
	Sodegaura	Tokyo Gas JERA Co. Inc	1973	35	2,660,000
	Ohgishima	Tokyo Gas	1998	4	850,000
	Higashi-Ohgishima	JERA Co. Inc.	1984	9	540,000
	Futtsu	JERA Co. Inc.	1985	10	1,360,000
	Yokkaichi LNG	JERA Co. Inc.	1988	4	320,000
	Kawagoe	JERA Co. Inc.	1997	6	840,000
	Yokkaichi Works	Toho Gas	1991	2	160,000
	Chita LNG Joint	Toho Gas, Chubu Electric	1978	4	300,000
	Chita LNG	Toho Gas, Chubu Electric	1983	7	640,000
	Chita - Midorihama	Toho Gas	2001	3	600,000
	Senboku I	Osaka Gas	1972	4	180,000
	Senboku II	Osaka Gas	1977	18	1,585,000
	Himeji	Osaka Gas	1984	8	740,000
	Himeji LNG	Kansai Electric	1979	7	520,000
	Yanai	Chugoku Electric	1990	6	480,000
	Niigata	Nihonkai LNG, Tohoku Electric	1984	8	720,000
	Oita	Oita Gas, Kyushu Electric	1990	5	460,000
	Tobata	Kitakyushu LNG	1977	8	480,000
	Fukuoka	Saibu Gas	1993	2	70,000
	Sodeshi	Shizuoka Gas	1996	3	337,200
	Hatsukaichi	Hiroshima Gas	1996	2	170,000
	Kagoshima	Nippon Gas	1996	2	136,000
	Shin-Minato	Sendai City Gas	1997	1	80,000
	Nagasaki	Saibu Gas	2003	1	36,000
	Sakai	Kansai Electric, Cosmo Oil	2006	3	420,000
	Mizushima	Nippon Oil, Chugoku Electric	2006	2	320,000

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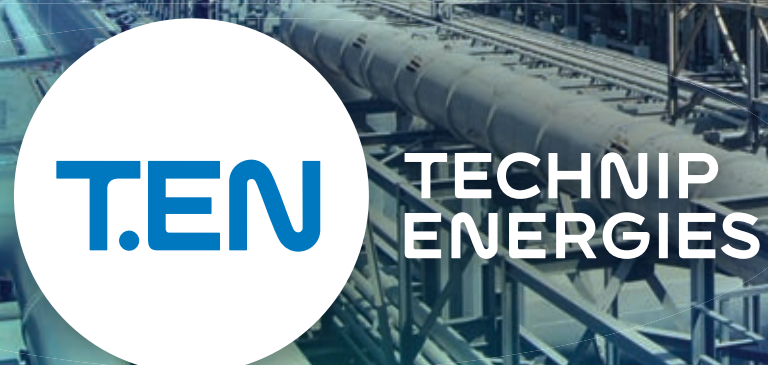
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LNG Import Terminals (continued)

Country	Location (Project)	Owners	Start up	Storage	
				Tanks	Capacity
Japan (continued)	Sakaide	Shikoku Electric, Cosmo Oil	2011	1	180,000
	Ishikari LNG	Hokkaido Gas, Hokkaido Electric	2012	2	380,000
	Okinawa	Okinawa Electric Power	2012	2	280,000
	Naoetsu	Inpex	2013	2	360,000
	Joetsu	JERA Co. Inc.	2011	3	540,000
	Hachinohe LNG	Nippon Oil	2015	2	280,000
	Hitachi LNG	Tokyo Gas	2015	1	230,000
Korea	Soma Fukushima	Japan Petroleum Exploration	2017	1	225,000
	Boryyeong	GS Energy, SK E&S	2017	3	200,000
	Incheon	Kogas	1996	20	2,880,000
	Kwangyang	POSCO SK E&S	2005	4	530,000
	Pyeong-Taek	Kogas	1986	23	3,360,000
	Samcheok	Kogas	2014	3	600,000
	Tong-Yeong	Kogas	2002	17	2,620,000
	Jeju	Kogas	2019	2	90,000
Kuwait	Al Zour LNG	KIPIC	2021	8	1,800,000
Malaysia	Pengerang Johor	Petronas Gas	2017	2	400,000
Mexico	Altamira	Vopak, Enagas	2006	2	300,000
	Energia Costa Azul	Sempre LNG	2008	2	320,000
	Manzanillo	Samsung, Kogas, Mitsui	2012	2	300,000
Netherlands	Gate LNG	Gasunie, Royal Vopak	2011	3	540,000
Panama	Costa Norte	AES	2018	1	130,000
Phillipines	Pagbilao LNG	Energy World Corp.	2017	1	130,000
Poland	Swinoujscie	Baltic Gaz System	2015	2	320,000
Portugal	Sines	REN Atlantico	2004	3	390,000
Puerto Rico	Penuelas	EcoElectrica	2000	1	160,000
Singapore	Singapore	Singapore Energy Authority	2013	3	540,000
Spain	Barcelona	Enagas	1969	8	840,000
	Huelva	Enagas	1988	5	610,000
	Cartagena	Enagas	1989	5	587,000
	Bilbao	Enagas, EVE	2003	3	450,000
	Sagunto	GNF, Osaka Gas, Oman Oil	2006	4	600,000
	Mugardos, El Ferrol	Reganosa, Sonatrach, Sojitz Corp.	2006	2	300,000
	El Musel, Gijón,	Enagas	2013	2	300,000
Sweden	Lysekil	Gasum	2014	1	30,000
	Nynashamn	AGA Gas	2011	1	20,000
Taiwan	Yung-An	CPC	1990	6	690,000
	Tai-Chung	CPC	2009	5	800,000
Thailand	Map Ta Phut	PTT LNG	2011	2	320,000
Turkey	Marmara Ereglisi	Botas	1994	3	255,000
	Izmir	EgeGaz	2006	2	280,000
USA	Everett	Suez LNG NA	1971	2	155,000
	Lake Charles	Shell, ETE	1982	4	425,000
	Freeport	Freeport LNG Development	2008	2	320,000
	Golden Pass, TX	Qatar Petroleum, ExxonMobil	2010	5	775,000
	Pascagoula, MS	Gulf LNG, Kinder	2012	2	320,000
UK	Isle of Grain	National Grid	2005	8	1,000,000
	South Hook	ExxonMobil, Qatar Petroleum, Total	2009	5	775,000
	Dragon LNG, Milford Haven	Shell, Petronas	2009	2	310,000

LNG Import Terminal Projects

Country	Location/Project	Owners/Project Developers	Start up	Storage	
				Tanks	Capacity
China	Shenzhen	CNPC Yudean Power	2021	2	120,000
	Tianjin (Nangang)	Beijing Energy	2022	10	2,000,000
	Yangjiang	CNPC Yudean Power	2023	2	120,000
	Zhangzhou Fujian	CNOOC	2022	2	160,000
India	Dhamra Odisha	Indian Oil, Adani, GAIL	2020	2	320,000
	Jaigarh	Hiranandani Group	2021	2	320,000
	Kodinar	Hindustan Petroleum Corp.	2022	1	160,000
Japan	Himuka	Diagas Group-Osaka Gas	2022	1	65,000

LNG FSRU Import Facilities

Country	Location (Project)	Owners	Start up
Argentina	Escobar GasPort	Excelerate/Enarsa	2011
Bangladesh	Moheshkhali	Excelerate, PetroBangla	2018
	Cox's Bazar	Summit Power International, Excelerate Energy	2019
Brazil	Pecem, FSRU	Petrobras	2009
	Guanabara Bay FSRU	Petrobras	2009
	Salvador, Bahia FSRU	Petrobras	2013
	Porto Sergipe FSRU	Golar LNG/Stonepeak	2020
	Porto do Acu FSRU	GNA	2020
China	Tianjin FSRU	CNOOC, Hoegh, various	2013
Croatia	Hrvatska LNG	Hrvatska Elektroprivreda Plc, Plinacro Ltd	2021
Colombia	Cartagena FSRU	Promigas, Sociedad Portuaria El Cayao	2016
Egypt	Ain Sokhna, Suez	EGAS, BW Gas	2015
Ghana	Tema LNG	Helios/GNPC	2021
Indonesia	Lampung	Hoegh LNG, PGN LNG	2014
	Nusantara (Jakarta Bay)	Golar LNG, Pertamina	2012
	Benoa LNG	PT Pertagas Niaga	2016
	Amurang	Karadeniz	2020
	Jawa Satu FSRU	Pertamina	2021
Israel	Hadera Gateway	Israel Electric	2013
Italy	Livorno	OLT Offshore LNG Toscana	2013
Jamaica	Old Harbour	Golar FSRU, New Fortress	2019
Jordan	Aqaba, Jordan	Golar LNG	2015
Kuwait	Mina Al-Ahmadi	KPC	2009
Lithuania	Klaipeda	Klaipedos Nafta Hoegh LNG	2014
Malaysia	Malacca FSRU	Petronas	2012
Malta	FSU Armada Mediterrana	ElectroGas	2016
Myanmar	Thanlyin	CNTIC Vpower	2020
Pakistan	Port Qasim	Excelerate, Engro Corp	2015
	Port Qasim	BW-Mitsui, GGP Consortium	2017
Russia	Kaliningrad FSRU	Gazprom	2020
Turkey	Aliaga FSRU, Turquoise FLNG	Etki LNG	2016
	Dortyol FSRU Terminal	Botas	2018
UAE	Ruwais, Abu Dhabi	Gasco (UAE)	2016
	Jebel Ali Port, Dubai	DSA (UAE)	2010

LNG Export Projects

Country	Location/Project	Project Developers	Planned Start Up	Number of Trains	Capacity In MTPA
AUSTRALIA	Pluto LNG expansion	Woodside	2021+	2	10.0
CANADA	Bear Head LNG, Nova Scotia	LNG Ltd.	2024	4	8.0
	Goldboro LNG, Nova Scotia	Pieridae Energy	2024	2	10.0
	Kitimat LNG, BC	Woodside, Chevron	2024	2	10.0
	LNG Canada, BC	Shell, Mitsubishi, Kogas, PetroChina, Petronas	2024	2	12.0
	Kwispaa FLNG, Vancouver	Steelhead LNG	2024	4	12.0
	Vancouver Tilbury	WesPac Midstream	2021	1	3.25
	Woodfibre LNG, Squamish	Pacific Oil & Gas Co	2020	2	2.1
INDONESIA	Sengkang LNG	Energy World Corp.	2021+	4	2.0
MALAYSIA	Rotan FLNG (Sabah)	Petronas, Murphy Oil	2021	1	1.5
MOZAMBIQUE	Area 1 Onshore	Anadarko Petroleum and partners	2023+	2	10.0
	Area 4 Onshore	Eni and partners	2023+	2	10.0
	Area 4 FLNG	Eni and partners	2022	1	3.4
NIGERIA	NLNG Train 7	NNPC, Shell, Eni, Total	2022+	1	7.0
PAPUA NEW GUINEA	Elk-Antelope LNG	Total, ExxonMobil Oil Search, Petromin	Studies		
RUSSIA	Sakhalin II expansion	Gazprom, Shell, Mitsui, Mitsubishi	2021	studies	
	Vladisvostok LNG	Gazprom, Itochu, various	2023+	2	10.0
	Arctic LNG II Siberia	Novatek, Total	2023	3	19.8
USA	Alaska LNG Nikiski	Alaska Gasline Development Corp.	2023+	3	20.0
	Annova LNG, Brownsville	Exelon Corp.	2023+	6	6.0
	Commonwealth LNG, Louisiana	Commonwealth LNG LLP	2023+	8	9.0
	Delfin LNG, Louisiana	Delfin	2023+	3	9.0
	Driftwood LNG, Louisiana	Tellurian, Total and others	2023	6	27.6
	Galveston Bay LNG	NextDecade	2023+	6	27.0
	Golden Pass, Texas	Qatar Petroleum, ExxonMobil	2024	3	15.6
	Jacksonville, St John's River	Eagle LNG, Ferus Natural Gas Fuels	2021+	small	TBC
	Jordan Cove, Coos Bay	Pembina Corp.	2024	2	7.8
	Lake Charles, Louisiana	Shell, ETE	2024	3	15.0
	Magnolia LNG	Louisiana LNG Ltd.	2023+	4	8.0
	Port Arthur LNG	Sempra	2023+	2	10.0
	Rio Grande LNG	NextDecade	2023+	6	27.0
	Sabine Pass LNG, Louisiana	Cheniere	2016-19	1	4.5
	Texas LNG Brownsville	Chandra, Meyer, Samsung, others	2023+	2	4.0
	VG LNG (Cameron Parish)	Venture Global	2022	5	12.0
	VG LNG (Plaquemines)	Venture Global	2022	10	20.0
	VG LNG (Delta-Plaquemines)	Venture Global	2024	36	22.5

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LNG Exporters

Country	Location/Project	Shareholders	Start up	Liquefaction		Storage	
				Trains	capacity (nominal) mtpa	No. of tanks	Total capacity m³
ABU DHABI (UAE)	Das Island (Adgas)	ADNOC, Mitsui, BP, Total	1977 1994	2 1	3.2 2.5	3	240,000
ALGERIA	Arzew	Sonatrach GL4Z	1964	3	1.1	3	35,000
	Arzew	Sonatrach GL1Z	1978	6	7.8	3	300,000
	Arzew	Sonatrach GL2Z	1980	6	8.0	3	300,000
	Arzew	Sonatrach	2014	1	4.7		
	Skikda	Sonatrach GL1K II	1980	3	3.0	5	308,000
	Skikda	Sonatrach (rebuild)	2013	1	4.5		
ANGOLA	Soyo	Sonangol, Chevron, BP, ENI, Total	2012	1	5.2	2	370,000
AUSTRALIA	Karratha	NWS Woodside, Shell, BHP	1989	2	5.0	4	260,000
		(BP, Chevron	1992	1	2.5	1	130,000
		(Mistubishi/Mitsui)	2004	1	4.4	1	130,000
		NWS partners	2008	1	4.4	1	130,000
		Darwin (Bayu Undan) ConocoPhillips, Santos, Eni, Inpex, TEPCO, Tokyo Gas	2006	1	3.5	1	188,000
	Australia Pacific LNG Gladstone LNG Gorgon LNG Pluto LNG QCLNG Wheatstone LNG Ichthys LNG Prelude FLNG	ConocoPhillips, Origin Energy, Sinopec	2016	2	7.5	2	320,000
		Santos, Petronas, Total, Kogas	2015	2	7.8	2	280,000
		Chevron, Shell, ExxonMobil	2016	3	15.6	2	360,000
		Woodside, Tokyo Gas, Kansei	2012	1	4.8	2	240,000
		Shell, CNOOC	2014	2	8.0	2	280,000
		Chevron, Woodside, Kuwait (KUFPEC), Jera, Kyushu	2017	2	8.9	2	300,000
		Inpex Corp., Total	2018	2	8.9	2	330,000
		Shell, Inpex, Kogas CPC	2019	1	3.5		
BRUNEI	Lumut	Brunei/Shell/Mitsubishi/Total	1972-74	5	7.2	3	176,000
CAMEROON	Hilli Episeyo FLNG	Kribi Perenco	2018	1	1.2	1	125,000
EGYPT	Damietta	Union Fenosa, EGPC, EGAS	2004	1	5.0	2	300,000
	Idku	EGPC, EGAS, Shell, Total, Petronas	2005	2	7.2	2	280,000
EQ.GUINEA	Bioko Island	Marathon, Sonagas, Mitsui, Marubeni	2007	1	3.4	2	272,000
INDONESIA	Bontang I	Pertamina, VICO, JILCO, Total	1977	2	5.2	5	635,000
	Bontang II		1983	2	5.2		
	Bontang III		1989	1	2.8		
	Bontang IV		1993	1	2.8		
	Bontang V		1997	1	2.8		
	Bontang VI		1999	1	3.0		
	Sulawesi LNG	Medco Energi, Pertamina, Mitsubishi	2015	1	2.0	1	170,000
	Tangguh	BP, MI Berau, CNOOC, Nippon, LNG Japan	2008	2	7.6	2	340,000
MALAYSIA	Bintulu (MLNG Satu)	Petronas, Sarawak, Mitsubishi	1983	3	8.1	4	260,000
	Bintulu (MLNG Dua)	Petronas, Shell, Sarawak, Mitsubishi	1995	3	7.8	1	65,000
	Bintulu (MLNG Tiga)	Petronas, Shell, Sarawak, Mitsubishi, Nippon Oil	2003	2	6.8	1	120,000
	Bintulu Train 9	Petronas	2016	1	3.6		
	Kanowit FLNG	Petronas	2016	1	1.2		
NIGERIA	Bonny Island	NNPC, Shell, Total, Eni	1999	2	6.4	2	168,400
		Nigeria LNG (formed by above)	2002	1	3.2	1	84,200
		Nigeria LNG	2006	2	8.2		
		Nigeria LNG	2008	1	4.1	1	84,200
NORWAY	Snøhvit/Melkoya	Equinor, Total, Petoro	2007	1	4.2	2	280,000
OMAN	Oman LNG	Oman Govt., Shell, Total, Korea LNG	2000	2	7.1	2	240,000
		Mitsubishi, Mitsui, Partex and Itochu					
		Oman Govt., Oman LNG Union Fenosa, Osaka Gas, & Itochu	2006	1	3.7	2	240,000
PAPUA NEW GUINEA	PNG LNG	ExxonMobil, Oil Search, Santos, JX Nippon Oil	2014	2	6.9	2	320,000
PERU	Peru LNG	Hunt Oil, Shell, Marubeni, SK Group	2010	1	4.4	2	260,000
QATAR	Qatargas 1-T1&2	QP, ExxonMobil, Total, Marubeni, Mitsui	1997	2	6.4	4	340,000
	Qatargas 1-T3	QP, ExxonMobil, Total, Marubeni, Mitsui	1999	1	3.1		
	Qatargas II-T1	QP, ExxonMobil	2009	1	7.8		
	Qatargas II-T2	QP, ExxonMobil, Total	2009	1	7.8	8	1,160,000
	Qatargas III-T1	QP, ConocoPhillips, Mitsui	2010	1	7.8		
	Qatargas IV-T1	QP, Shell	2010	1	7.8		
	RasGas I- T1&2	QP, ExxonMobil, Kogas, Itochu, LNG Japan	1999	2	6.6		
	RasGas II- T3	QP, ExxonMobil	2004	1	4.7		
	RasGas II- T4	QP, ExxonMobil	2005	1	4.7	6	840,000
	RasGas II- T5	QP, ExxonMobil	2007	1	4.7		
	Rasgas III – T6	QP, ExxonMobil	2009	1	7.8		
	Rasgas III – T7	QP, ExxonMobil	2010	1	7.8		
RUSSIA	Sakhalin Island	(Sakhalin Energy) Gazprom, Shell, Mitsui, Mitsubishi	2009	2	9.6	2	200,000
	Yamal LNG Siberia	Novatek, Total, CNPC, Silk Fund	2017	3	16.5	4	640,000
TRINIDAD & TOBAGO	Point Fortin Train 1	BP, Shell, CIC, NGC	1999	1	3.0	2	204,000
	Train 2	BP, Shell	2002	1	3.3	1	160,000
	Train 3	BP, Shell	2003	1	3.3	1	160,000
	Train 4	BP, Shell, NGC	2005	1	5.2	1	160,000
USA	Cheniere Sabine Pass	Cheniere Energy	2016	5	22.5	5	800,000
	Cove Point LNG	Dominion Energy	2017	1	5.3	7	695,000
	Cheniere Corpus Christi	Texas Cheniere	2018	3	15.0	3	480,000
	Cameron Hackberry	Sempra, Total, Mitsui, Mitsubishi	2019	2	9.8	3	480,000
	Elba Island Georgia	Kinder Morgan, EIG Energy	2019	10	2.5	5	535,000
	Freeport LNG, Texas	Freeport LNG	2019	2	10.2	3	483,000
	Calcasieu Pass LNG	Venture Global	2022	18	11	2	400,000
YEMEN	Bal-Haf	Yemen LNG, Total, Yemen Gas, Hunt Oil, SK Group, Hyundai	2009	2	6.7	2	320,000

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World LNG Carrier Fleet

LNG Carrier	Capacity m ³	Registered Owner	Builder	Delivery	Flag	Power Plant	Cargo System	No. of Tanks	Original Project	Hull Number
Aamira	268,000	Nakilat SHI 1753 Inc.	Samsung	Apr-10	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas IV	1753
Abadi	135,000	Tost Two (NBD) Sendirian Berhad	Mitsubishi	May-02	Brunei	Steam	Moss	5	Lumut	2163
Adam LNG	162,000	Oman Shipping Co.	HHI	Jul-14	Malta	Diesel	TZ Mk. III Flex	4	Oman LNG	2584
Adamastos	170,800	Shin Doun Kisen Co. Ltd.	HHI	Aug-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3109
Adriano Knutsen	180,000	Knutsen OAS Shipping	HHI	Jul-19	Spain	ME-GI	TZ Mk. III Flex	4	Corpus Christi	2963
Al Aamriya	210,168	J5 Nakilat No.1 Ltd.	Daewoo	May-08	M. Islnds.	Diesel	GT NO 96	5	RasGas III	2249
Al Areesh	148,786	Al Areesh LLC	Daewoo	Jan-07	Bahamas	Steam	GT NO 96	4	RasGas II	2239
Al Bahiya	210,100	Nakilat DSME 2286 Inc.	Daewoo	Dec-09	M. Islnds.	Diesel	GT NO 96	5	Qatargas IV	1726
Al Bidda	137,339	Mitsui O.S.K. Lines	Kawasaki	Nov-99	Japan	Steam	Moss	5	Qatargas I	1470
Al Daayen	148,853	Seaspirit Leasing	Daewoo	Mar-07	Bahamas	Steam	GT NO 96	4	RasGas II	2240
Al Dafna	268,000	Nakilat SHI 1726 Inc.	Samsung	Oct-09	M. Islnds.	Diesel	TZ Mk. III	10	RasGas	1726
Al Deebel	145,000	Peninsula LNG Transport No. 3	Samsung	Nov-05	Bahamas	Steam	TZ Mk. III	4	RasGas II	1442
Al Gattara	216,200	Overseas LNG H1 Corp.	HHI	Nov-07	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas II	1791
Al Ghariya	210,150	Neptora Schiffsbetriebsgesellschaft mbH & Company ts Julia KG	Daewoo	Dec-07	Bahamas	Diesel	GT NO 96	4	Qatargas II	2248
Al Gharrafa	216,200	Overseas LNG H2 Corp.	HHI	Jan-08	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas II	1792
Al Ghashamiya	217,591	Nakilat SHI 1696 Inc.	Samsung	Apr-09	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas III	1696
Al Ghuwairiya	263,300	Nakilat Al Ghuwairiya Inc.	Daewoo	Dec-08	M. Islnds.	Diesel	GT NO 96	5	Qatargas II	2255
Al Hamla	216,200	Overseas LNG S2 Corp.	Samsung	Feb-08	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas II	1606
Al Hamra	137,000	Al Hamra Ltd.	STX	Nov-96	Liberia	Steam	Moss	4	Das Island	1332
Al Huwaila	217,000	Al Huwaila Inc.	Samsung	May-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1643
Al Jasra	137,227	Mitsui O.S.K. Lines	Mitsubishi	Jun-00	Japan	Steam	Moss	5	Qatargas I	2117
Al Jassasiya	145,700	Venice Maritime Inc.	Daewoo	May-07	Bermuda	Steam	GT NO 96	4	RasGas II	2243
Al Karaana	210,100	Nakilat DSME 2284 Inc.	Daewoo	Oct-09	M. Islnds.	Diesel	GT NO 96	4	Qatargas III	2284
Al Kharaitiyat	216,300	Nakilat HHI 1909 Inc.	HHI	Jun-09	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas III	1909
Al Kharsaah	217,000	Al Kharsaah Inc.	Samsung	Jun-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1644
Al Khattiya	210,150	Nakilat DSME 2283 Inc.	Daewoo	Jul-09	M. Islnds.	Diesel	GT NO 96	4	Qatargas IV	2283
Al Khaznah	135,496	Al Khaznah Inc.	Mitsui E&S	Jul-94	Liberia	Steam	Moss	5	Das Island	1390
Al Khor	137,354	Mitsui O.S.K. Lines	Mitsubishi	Nov-96	Japan	Steam	Moss	5	Qatargas I	2089
Al Khuwair	217,000	Al Khuwair Inc.	Samsung	Jun-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1646
Al Mafyar	266,000	Nakilat SHI 1697 Inc.	Samsung	Apr-09	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas III	1697
Al Marrouna	149,539	Seaspirit Leasing	Daewoo	Sep-06	Bahamas	Steam	GT NO 96	4	RasGas II	2238
Al Mayeda	266,000	Nakilat SHI 1694 Inc.	Samsung	Jan-09	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas III	1694
Al Nuaman	210,100	Nakilat DSME 2285 Inc.	Daewoo	Dec-09	M. Islnds.	Diesel	GT NO 96	4	Qatargas III	2286
Al Oraiq	210,200	J5 Nakilat No.3 Ltd.	Daewoo	Jun-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	2250
Al Rayyan	137,420	Mitsui O.S.K. Lines	Kawasaki	Mar-97	Japan	Steam	Moss	5	Qatargas I	1445
Al Rekayyat	216,293	Nakilat HHI 1910 Inc.	HHI	Jun-09	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas III	1910
Al Ruwais	210,150	Neptana Schiffsbetriebsgesellschaft mbH & Company ts Alexandra KG	Daewoo	Aug-07	Bahamas	Diesel	GT NO 96	4	Qatargas II	2245
Al Sadd	210,200	Nakilat DSME 2265 Inc.	Daewoo	Mar-09	M. Islnds.	Diesel	GT NO 96	12	Qatargas III	2265
Al Safliya	210,150	Nausola Schiffsbetriebsgesellschaft mbH & Company ts Britta KG	Daewoo	Sep-07	Bahamas	Diesel	GT NO 96	5	Qatargas II	2246
Al Sahla	216,200	J5 Nakilat No.5 Ltd.	HHI	Jun-08	M. Islnds.	Diesel	TZ Mk. III	4	RasGas III	1863
Al Samriya	263,300	Nakilat Al Samriya Inc.	Daewoo	Feb-09	M. Islnds.	Diesel	GT NO 96	5	Qatargas II	2257
Al Shamal	217,000	Al Shamal Inc.	Samsung	Apr-08	Bahamas	Diesel	TZ Mk. III	10	RasGas III	1645
Al Sheehaniya	210,100	Nakilat DSME 2264 Inc.	Daewoo	Feb-09	M. Islnds.	Diesel	GT NO 96	12	Qatargas III	2264
Al Thakhira	145,000	Peninsula LNG Transport No. 2	Samsung	Aug-05	Bahamas	Steam	TZ Mk. III	4	RasGas II	1441
Al Thumama	216,200	J5 Nakilat No.2 Ltd.	HHI	Feb-08	M. Islnds.	Diesel	TZ Mk. III	4	RasGas III	1862
Al Utouriya	215,000	J5 Nakilat No.8 Ltd.	HHI	Sep-08	M. Islnds.	Diesel	TZ Mk. III	4	RasGas III	1875
Al Wajbah	137,308	Mitsui O.S.K. Lines	Mitsubishi	Jun-97	Japan	Steam	Moss	5	Qatargas I	2090
Al Wakrah	137,371	Mitsui O.S.K. Lines	Kawasaki	Nov-98	Japan	Steam	Moss	5	Qatargas I	1446
Al Zubarah	137,573	Mitsui O.S.K. Lines	Mitsui E&S	Nov-96	Japan	Steam	Moss	5	Qatargas I	1411
Alto Acrux	147,798	Bahamas LNG Shipping	Mitsubishi	Mar-08	Bahamas	Steam	Moss	4	Darwin LNG	2219
Amadi	154,800	Brunei Gas Carriers	HHI	Jul-15	Brunei	Steam	TZ Mk. III	4	Lumut	2607
Amali	148,000	BGC SPV NBD	Daewoo	Aug-11	Brunei	Steam	GT NO 96	4	Lumut	2277
Amani	154,800	Brunei Gas Carriers	HHI	Oct-14	Brunei	Steam	TZ Mk. III	4	Lumut	H2606
Amberjack LNG	174,000	LNGShips	HHI	Apr-20	Malta	X-DF	TZ MK. III Flex	–	Portfolio	3021
Amur River	149,700	Seacrown Maritime	HHI	Nov-07	M. Islnds.	Steam	TZ Mk. III	4	Sakhalin II	1734
Arctic Aurora	155,000	Fareastern Shipping	HHI	Jul-14	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Snøhvit LNG	2580
Arctic Discoverer	142,612	Northern LNG Transport II Company S.A.	Mitsui E&S	Feb-06	Bahamas	–	Moss	4	Hammerfest	1564
Arctic Lady	147,200	Leif Hoegh (UK) Ltd.	Mitsubishi	Apr-06	Norway	Steam	Moss	4	Hammerfest	2185
Arctic Princess	147,200	R.B. Quadrangle Leasing	Mitsubishi	Jan-06	Norway	Steam	Moss	4	Hammerfest	2184



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Arctic Voyager	142,759	Lloyds TSB Equipment Leasing (No.1)	Kawasaki	Jul-06	Bahamas	Steam	Moss	4	Hammerfest	1532
Aristarchos	174,000	Dias Gas Carrier Corp.	HHI	Jun-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3107
Aristidis I	174,000	Atrotos Gas Carrier Corp.	HHI	Jan-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3106
Aristos I	174,000	Xiang Ch25 HK International	HHI	Nov-20	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3105
Arkat	148,000	BGC SPV NBD	Daewoo	Feb-11	Brunei	–	GT NO 96	4	Lumut	2273
Aseem	155,003	India LNG Transport Company No.3 S.A.	Samsung	Nov-09	Malta	Diesel	TZ Mk. III	4	RasGas	1686
Asia Endeavour	154,948	Chevron Global Technology Services Co.	Samsung	Jun-15	Bahamas	Diesel/Gas-Electric	TZ MK. III	4	Gorgon	1942
Asia Energy	154,948	Chevron Global Technology Services Co.	Samsung	Oct-14	Bahamas	Diesel/Gas-Electric	TZ MK. III	4	Gorgon	1921
Asia Excellence	154,948	Chevron Global Technology Services Co.	Samsung	Jan-15	Bahamas	Diesel/Gas-Electric	TZ MK. III	4	Gorgon	1941
Asia Integrity	154,948	Chevron Global Technology Services Co.	Samsung	Feb-17	Bahamas	Diesel/Gas-Electric	TZ Mk. III	4	Wheatstone	2069
Asia Venture	154,948	Chevron Global Technology Services Co.	Samsung	Jul-17	Bahamas	Diesel/Gas-Electric	TZ Mk. III	4	Wheatstone	2070
Asia Vision	154,948	Chevron Global Technology Services Co.	Samsung	Jul-14	Bahamas	Diesel/Gas-Electric	TZ MK. III	4	Gorgon	1920
Asklipios	170,816	Sea 199 Leasing Co Ltd.	HHI	Sep-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3110
Attalos	170,800	Sea 200 Leasing Co. Ltd.	HHI	Aug-21	Malta	X-DF	TZ Mk. III Flex	4	–	3108
Barcelona Knutsen	173,400	Norspan LNG V AS	Daewoo	Jan-10	Spain	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2267
Beidou Star	172,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Sep-15	H.K., China	Diesel	GT NO 96	4	PNG LNG	H1672A
Berge Arzew	138,088	Sonatrach Berge Arzew Corp.	Daewoo	Jul-04	Norway	Steam	GT NO 96	4	Arzew	2217
Bilbao Knutsen	138,000	Norspan LNG AS	Izar	Jan-04	Spain	Steam	GT NO 96	4	Portfolio	321
Bishu Maru	164,700	"K" Line - Kawasaki Kisen Kaisha	Kawasaki	Dec-17	Panama	TFDE	Moss	4	Wheatstone	1713
Bonito LNG	174,000	LNGShips	HHI	May-20	Malta	X-DF	TZ Mk. III Flex	4	–	3022
Boris Davydov	172,410	Arctic LNG 4 Ltd.	Daewoo	Dec-18	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2428
Boris Vilkitsky	172,410	Arctic LNG 1 Ltd.	Daewoo	Jun-17	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2421
British Achiever	173,644	BP	Daewoo	Nov-18	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2442
British Contributor	173,644	BP	Daewoo	Dec-18	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2443
British Listener	173,644	BP	Daewoo	Jan-19	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2444
British Mentor	173,644	BP	Daewoo	Mar-19	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2445
British Partner	173,400	BP	Daewoo	Jun-18	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2441
British Sapphire	155,000	RBSSAF (19) Ltd.	HHI	Jun-08	Isle of Man	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1779
British Sponsor	173,644	BP	Daewoo	May-19	Isle of Man	ME-GI	GT NO 96 GW	4	Freeport	2446
Broog	137,529	Mitsui O.S.K. Lines	Mitsui E&S	Apr-98	Japan	Steam	Moss	5	Qatargas I	1412
Bu Samra	266,000	Nakilat Bu Samra Inc.	Samsung	Dec-08	M. Islnds.	–	TZ Mk. III	5	Qatargas II	1677
Bushu Maru	180,000	Mitsui O.S.K. Lines	Mitsubishi	Jul-19	Bahamas	Reheat Steam Turbine	TZ Mk. III Flex	4	Sabine Pass	2327
BW Boston	138,059	Partrederiet BW Gas GDF Suez EMT DA	Daewoo	Jan-03	Norway	Steam	GT NO 96	4	Atlantic LNG	2207
BW Brussels	162,400	Ines LNG	Daewoo	Aug-09	Bermuda	Diesel/Gas-Electric	GT NO 96	4	Balhaf	2259
BW Everett	138,028	BW Gas SLNG	Daewoo	Jun-03	Norway	Steam	GT NO 96	4	Atlantic LNG	2212
BW Helios	174,000	Selene Navigation Pte Ltd.	Daewoo	May-21	Bermuda	ME-GI	GT NO 96 GW	4	–	2497
BW Lesmes	174,000	BW Gas AS	Daewoo	Mar-21	Bermuda	ME-GI	GT NO 96 GW	4	–	2496
BW Lilac	173,400	BW Maritime	Daewoo	Mar-18	Isle of Man	ME-GI	GT NO 96 GW	4	–	2436
BW Magna	173,000	BW Group	Daewoo	Mar-19	Singapore	ME-GI	GT NO 96	4	–	2488
BW Magnolia	173,400	Helen Navigation Pte Ltd.	Daewoo	Feb-20	Singapore	ME-GI	GT NO 96 GW	–	–	2490
BW Paris	162,400	SNC Elias	Daewoo	Jul-09	Bermuda	Diesel/Gas-Electric	GT NO 96	4	Balhaf	2258
BW Pavilion Aranda	173,400	BW Group	Daewoo	Sep-19	Singapore	ME-GI	GT NO 96 GW	4	Portfolio	2489
BW Pavilion Aranthera	173,400	BW Diamond LNG Pte Ltd.	Daewoo	Jul-20	Singapore	ME-GI	GT NO 96 GW	4	Portfolio	2491
BW Pavilion Leeara	158,629	BW LPG FPSOI	HHI	Jun-15	Singapore	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2572
BW Pavilion Vanda	155,000	BW LPG FPSOI	HHI	Feb-15	Singapore	DFDS	TZ Mk. III Flex	4	Portfolio	2571
BW Tatiana	135,269	Shell Tankers Singapore	Mitsubishi	Dec-02	Singapore	Steam	Moss	5	Atlantic LNG	2173
BW Tulip	173,400	BW Maritime	Daewoo	Dec-17	Singapore	ME-GI	GT NO 96 GW	4	–	2435
Cadiz Knutsen	138,826	Norspan LNG II AS	Navantia	Apr-04	Spain	Steam	GT NO 96	4	Portfolio	103
Cape Ann	145,130	SRV Joint Gas Two Ltd.	Samsung	Apr-10	Norway	Diesel/Gas-Electric	TZ Mk. III	4	Jaigarh LNG	1689
Castillo de Caldelas	176,300	Empresa Naviera Elcano	Imabari Shipbuilding	Jun-18	Malta	ME-GI	TZ Mk. III Flex	–	Portfolio	8188
Castillo De Merida	176,300	Empresa Naviera Elcano	Imabari Shipbuilding	Mar-18	Spain	ME-GI	TZ MK. III Flex	4	Portfolio	8177
Castillo de Santisteban	170,000	Naviera Trans Gas AIE	STX	Jun-10	Malta	Diesel Electric	GT NO 96	4	Portfolio	3008
Castillo de Villalba	138,000	Empresa Naviera Elcano	Navantia Cadiz	Sep-03	Spain	Steam	GT NO 96	4	Portfolio	87
Catalunya Spirit	138,000	Teekay Shipping Spain S.L.	Izar	Jun-03	Spain	Steam	GT NO 96	4	Atlantic LNG	319
Celsius Canberra	180,000	Xiang CH27 HK International	Samsung	Jan-21	Marshall Isl.	X-DF	TZ Mk. III Flex	4	US Portfolio	2298
Celsius Carolina	180,000	Oriental Fleet LNG 03 Ltd.	Samsung	Aug-21	Marshall Isl.	X-DF	TZ Mk. III Flex	4	US Portfolio	2314
Celsius Charlotte	180,000	Xiang CH28 HK International	Samsung	Jun-21	Marshall Isl.	X-DF	TZ Mk. III Flex	4	US Portfolio	2313
Celsius Copenhagen	180,000	Greenheart Gas Shipco I LLC	Samsung	Nov-20	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2297
CESI Beihai	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Jun-17	H.K., China	DFDS	GT NO 96	4	APLNG	1717A
CESI Gladstone	174,000	China Shipping Co.	Hudong Zhonghua	Oct-16	H.K., China	–	GT NO 96	4	APLNG	1715A

CESI LianYungAng	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Jun-18	H.K., China	Diesel-Electric	GT NO 96	4	APLNG	1720A
CESI Qingdao	174,000	China Shipping Co.	Hudong Zhonghua	Feb-17	H.K., China	DFDS	GT NO 96	4	APLNG	1716A
CESI Tianjin	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Jul-17	China	TFDE	GT NO 96	4	APLNG	1718A
CESI Wenzhou	174,000	COSCO Shipping Energy Transportation Co.	Hudong Zhonghua	Feb-18	China	Diesel-Electric	GT NO 96	4	APLNG	1719A
Cheikh Bouamama	75,558	Skikda LNG Transport Corp.	Universal SB	Jul-08	Liberia	Steam	TZ Mk. III	4	Arzew/Skikda	88
Cheikh el Mokrani	75,759	Mediterranean LNG Transport Corp.	Japan Marine United	Jun-07	Liberia	Steam	TZ Mk. III	4	Skikda	55
Christophe De Margerie	170,000	DY Shipping Limited	Daewoo	Nov-16	Russia	Diesel/Gas-Electric	GT NO 96 GW	—	Yamal	2418
Clean Cajun	180,000	Platia Shipping Ltd.	HHI	May-22	Panama	X-DF	Membrane	4	—	3137
Clean Energy	149,700	Pegasus Shipholding	HHI	Mar-07	M. Islnds.	Steam	TZ Mk. III	4	Portfolio	1748
Clean Horizon	162,000	Dynagas	HHI	Apr-15	Malta	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2566
Clean Ocean	162,000	Dynagas	HHI	May-14	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Sabine Pass	2558
Clean Planet	162,000	Dynacom Tankers Management	HHI	Aug-14	M. Islnds.	Diesel Electric	TZ Mk. III Flex	4	Yamal	H2565
Clean Vision	162,000	Olinda	HHI	Aug-15	Malta	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2567
CNTIC VPower Energy	127,500	Shell Tankers Australia	Mitsubishi	Jan-92	Bermuda	Steam	Moss	4	North West Shelf	2041
Cobia LNG	174,000	Cardiff LNG ETA Owning LLC	HHI	Feb-21	Malta	X-DF	TZ Mk. III Flex	4	—	3038
Cool Discoverer	174,000	Serendipity Maritime Ltd.	HHI	Sep-20	Greece	X-DF	TZ MK. III Flex	4	Portfolio	S970
Cool Explorer	160,000	Thenamaris Ships Management Inc.	Samsung	Jan-15	Malta	DFDS	TZ Mk. III Flex	4	Spot	2049
Cool Racer	174,000	Eloquent Shipping Ltd.	HHI	Feb-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3126
Cool Rider	155,000	RBSSAF (19) Ltd.	HHI	May-07	Malta	—	TZ Mk. III	4	Portfolio	1777
Cool Runner	160,000	Thenamaris Ships Management Inc.	Samsung	Mar-14	Malta	Diesel Electric	TZ Mk. III Flex	4	Wheatstone	H2046
Cool Voyager	160,000	Energy Shipping & Trading	Samsung	Oct-13	Malta	TFDE	TZ Mk. III Flex	4	Wheatstone	—
Corcovado LNG	160,162	Drytank	Daewoo	Apr-14	Malta	Diesel Electric	GT NO 96 L03	4	Spot	H2297
Cubal	160,276	Mint LNG IV	Samsung	Jan-12	Bahamas	—	TZ Mk. III	4	Soyo	1813
Cygnus Passage	145,400	Cygnus LNG Shipping	Mitsubishi	Jan-09	Panama	Steam	Moss	4	Sakhalin II	2235
Dapeng Moon	147,200	Yue Gang LNG Ship Management Co.	Hudong Zhonghua	Jul-08	H.K., China	Steam	GT NO 96	4	Pluto	1309
Dapeng Star	147,210	Yue Peng LNG Shipping Co.	Hudong Zhonghua	Nov-09	H.K., China	Steam	GT NO 96	4	Pluto	1379
Dapeng Sun	147,200	Yue Peng LNG Shipping Co.	Hudong Zhonghua	Apr-08	H.K., China	Steam	GT NO 96	4	North West Shelf	1308

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Diamond Gas Crystal	174,000	Diamond LNG Shipping 5 Pte Ltd.	Hyundai Samho	Jun-21	Singapore	X-DF	TZ Mk. III Flex	4	–	8030
Diamond Gas Metropolis	174,000	Diamond LNG Shipping 4 Ltd.	HHI	Nov-20	Bahamas	X-DF	TZ Mk. III Flex	4	Portfolio	8029
Diamond Gas Orchid	165,000	NYK Line	Mitsubishi	Jun-18	Japan	STaGE	Sayaringo	4	Cameron	2325
Diamond Gas Rose	165,000	NYK Line	Mitsubishi	Aug-18	Bahamas	STaGE	Sayaringo	4	Cameron	2325
Diamond Gas Sakura	165,000	Tokyo Gas	Japan Marine United	May-19	Panama	STaGE	Sayaringo	4	Cameron	2332
Diamond Gas Victoria	174,000	Diamond LNG Shipping 6 Pte Ltd.	Hyundai Samho	Jun-21	Bahamas	X-DF	TZ MK. III Flex	4	–	8031
Disha	136,025	India LNG Transport Company No.1 Ltd.	Daewoo	Dec-03	Malta	Gas Turbine	GT NO 96	4	RasGas	2210
Doha	137,262	Mitsui O.S.K. Lines	Mitsubishi	Jun-99	Japan	Steam	Moss	5	Qatargas I	2091
Dorado LNG	174,000	Hai Kuo Shipping 2052G Ltd.	Samsung	Dec-20	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	2276
Duhail	210,150	Nauranto Schiffsbetriebsgesellschaft mbH & Company ts Gabriela KG	Daewoo	Dec-07	Bahamas	Diesel	GT NO 96	4	Qatargas II	2247
Dukhan	137,661	Qatar LNG Transport	Mitsui E&S	Sep-04	Liberia	Steam	Moss	5	Qatargas II	1561
East Energy	122,255	Bonny Gas Transport	STX	Aug-82	Bermuda	Steam	Membrane	4	NLNG	26B
Eduard Toll	172,410	Teekay Corp.	Daewoo	Sep-17	Bahamas	TFDE - Azipod	GT NO 96 GW	4	Yamal	2423
Ejnan	145,000	Peninsula LNG Transport No. 3	Samsung	Jan-07	Bahamas	Steam	TZ Mk. III	4	RasGas II	1594
Ekaputra 1	136,400	Cometco Shipping Inc.	Mitsubishi	Jan-89	Liberia	Steam	Moss	5	Bontang	2011
Elisa Aquila	174,000	Caroline 82 SASU	Hyundai Samho	04/03/2022	France	X-DF	TZ Mk. III Flex	4	Portfolio	S917
Elisa Larus	174,000	Caroline 77 SASU	Hyundai Samho	May-20	France	X-DF	TZ Mk. III Flex	4	Portfolio	S970
Energy Advance	147,624	Tokyo LNG Tanker Co. & Toho LNG Shipping Co.	Kawasaki	Mar-05	Japan	Steam	Moss	4	Portfolio	1521
Energy Atlantic	156,000	Alpha Tankers	STX	Sep-15	Greece	TFDE	GT NO 96 L03	4	Sabine Pass	1670
Energy Confidence	153,000	Tokyo LNG Tanker Co. & NYK	Kawasaki	Apr-09	Japan	Steam	Moss	4	Darwin LNG	1611
Energy Endeavour	173,400	Rossini Navigation SA	Daewoo	Jan-21	M. Islnds.	ME-GI	GT NO 96 GW	–	–	2484
Energy Frontier	147,599	Tokyo LNG Tanker Co.	Kawasaki	Sep-03	Japan	Steam	Moss	4	Sakhalin II	1520
Energy Glory	165,000	NYK Line	Japan Marine United	Mar-19	Japan	TFDE	TZ Mk. III Flex+	4	Cove Point	5071
Energy Horizon	177,000	Tokyo LNG Tanker Co. & NYK	Kawasaki	Aug-11	Japan	Steam	Moss	4	Pluto	1664
Energy Innovator	165,000	Tokyo Gas	Japan Marine United	Jun-19	Panama	TFDE	TZ Mk. III Flex+	4	Cove Point	5072
Energy Integrity	173,400	Mozart Navigation SA	Daewoo	May-21	M. Islnds.	ME-GI	GT NO 96 GW	4	–	2485
Energy Intelligence	173,400	Strauss Navigation SA	Daewoo	Jun-21	M. Islnds.	ME-GI	GT NO 96 GW	4	–	2500
Energy Liberty	165,000	Mitsui O.S.K. Lines	Japan Marine United	Oct-18	Japan	TFDE	TZ Mk. III Flex+	4	Cove Point	5070
Energy Navigator	145,000	Tokyo LNG Tanker Co.	Kawasaki	May-08	Japan	Steam	Moss	4	Sakhalin II	1600
Energy Pacific	173,400	Ravel Navigation SA	Daewoo	Aug-20	M. Islnds.	ME-GI	GT NO 96 GW	4	Portfolio	2483
Energy Progress	147,558	Jovial Shipping Navigation	Kawasaki	Nov-06	Bahamas	Steam	Moss	4	Darwin LNG	1540
Energy Universe	166,571	Tokyo LNG Tanker Co.	Japan Marine United	Aug-19	Panama	TFDE	TZ Mk. III Flex	4	Cove Point	5073
Enshu Maru	164,700	Mitsui O.S.K. Lines	Kawasaki	Aug-18	Panama	Reheat Steam Turbine	Moss	4	Wheatstone	1720
Esshu Maru	153,000	Mitsui O.S.K. Lines	Mitsubishi	Dec-14	Bahamas	–	Sayaendo	4	Portfolio	–
Etyfa Prometheas	135,269	Shell Bermuda (Overseas) Ltd.	Mitsubishi	Oct-02	Singapore	Steam	Moss	5	Peru LNG	2172
Excalibur	138,034	Exmar Excalibur Shipping Co.	Daewoo	May-02	Belgium	Steam	GT NO 96	4	Portfolio	2206
Fedor Litke	172,410	Arctic LNG 2 Ltd.	Daewoo	May-17	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2422
Flex Amber	174,000	Bund 10 Holding Ltd.	HHI	Oct-20	M. Islnds.	X-DF	TZ Mk. III Flex	4	Portfolio	8011
Flex Artemis	174,000	Flex LNG Rreliance Ltd.	Daewoo	Aug-20	M. Islnds.	ME-GI	NO-96-GW+FRS	4	Portfolio	2479
Flex Aurora	174,000	Flex LNG Aurora Ltd.	HHI	Jun-20	M. Islnds.	X-DF	TZ Mk. III Flex	4	Portfolio	8010
Flex Constellation	173,400	Frontline	Daewoo	Jun-19	M. Islnds.	ME-GI	NO-96-GW+PRS	4	Portfolio	H2470
Flex Courageous	173,400	Frontline	Daewoo	Aug-19	M. Islnds.	ME-GI	NO-96-GW+PRS	4	–	2471
Flex Endeavour	172,400	Flex LNG	Daewoo	Jan-18	U.K.	ME-GI	NO-96-GW+PRS	4	–	2447
Flex Enterprise	172,400	Flex LNG	Daewoo	Jan-18	U.K.	ME-GI	NO-96-GW+PRS	4	Portfolio	2448
Flex Freedom	173,400	Flex Freedom Ltd.	Daewoo	Jan-21	M. Islnds.	ME-GI	NO-96-GW+FRS	4	Portfolio	2492
Flex Rainbow	174,000	Flex LNG	Samsung	Jun-18	Isle of Man	ME-GI	TZ Mk. III Flex	4	–	2108
Flex Ranger	174,101	Flex LNG	Samsung	Jun-18	Isle of Man	ME-GI	TZ Mk. III Flex	4	–	2107
Flex Resolute	173,400	Flex LNG Resolute Ltd.	HHI	Sep-20	M. Islnds.	ME-GI	NO-96-GW+FRS	4	Portfolio	2480
Flex Vigilant	174,000	Flex Vigilant Ltd.	HHI	May-21	Liberia	X-DF	TZ Mk. III Flex	4	Portfolio	8013
Flex Volunteer	174,000	Flex Volunteer Ltd.	HHI	Jan-21	M. Islnds.	X-DF	TZ Mk. III Flex	4	–	8012
Fraiha	210,100	J5 Nakilat No.6 Ltd.	Daewoo	Aug-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	2252
Fuji LNG	149,172	Aletheia Owning Co.	Kawasaki	Mar-04	Malta	Steam	Moss	4	Sabine Pass	1527
Fuwairit	138,200	Camartina Shipping Co.	Samsung	Jan-04	Bahamas	Steam	TZ Mk. III	4	RasGas II	1406
Gail Bhuwan	180,000	Primavera Montana SA	Daewoo	Feb-21	M. Islnds.	X-DF	GT NO 96 GW	4	Portfolio	2499
GasLog Chelsea	153,000	Gas-Fifteen Ltd.	Hanjin (Busan)	Jun-10	Bermuda	TFDE	TZ Mk. III	4	–	193
GasLog Galveston	174,000	Gas-Thirty Three Ltd.	Samsung	Jan-21	Bermuda	X-DF	TZ Mk. III Flex+	4	US Portfolio	2301
GasLog Geneva	174,000	GasLog	Samsung	Oct-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2102
GasLog Genoa	174,000	GasLog	Samsung	Mar-18	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2130
GasLog Georgetown	174,000	Gas-Thirty Two Ltd.	Samsung	Nov-20	Bermuda	–	TZ Mk. III Flex+	4	Portfolio	2300
GasLog Gibraltar	174,000	Gas-Fourteen Ltd.	Samsung	Nov-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2103
GasLog Gladstone	174,000	GasLog	Samsung	Mar-19	Bermuda	X-DF	TZ Mk. III Flex+	4	Portfolio	2131
GasLog Glasgow	174,000	GasLog	Samsung	Jul-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2073
GasLog Greece	174,000	GasLog	Samsung	Mar-16	Bermuda	TFDE	TZ Mk. III Flex	4	Portfolio	2072
GasLog Hong Kong	174,000	GasLog	HHI	Mar-18	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2801
GasLog Houston	174,000	GasLog	HHI	Dec-18	Bermuda	X-DF	TZ Mk. III Flex	4	GoM	2800

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GasLog Salem	155,000	GasLog	Samsung	May-15	Bermuda	TFDE	TZ Mk. III	4	Portfolio	2044
GasLog Santiago	155,000	Gas-Four Ltd.	Samsung	Mar-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	1947
GasLog Saratoga	155,000	GasLog	Samsung	Dec-14	Bermuda	TFDE	TZ Mk. III	4	Spot	2043
GasLog Savannah	155,000	Gas-One Ltd.	Samsung	May-10	Liberia	TFDE	TZ Mk. III	4	Portfolio	1641
GasLog Seattle	155,000	Gas-Seven Ltd.	Samsung	Oct-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	2041
GasLog Shanghai	155,000	Gas-Three Ltd.	Samsung	Feb-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	1946
GasLog Singapore	155,000	Gas-Two Ltd.	Samsung	Aug-10	Liberia	TFDE	TZ Mk. III	4	Portfolio	1642
GasLog Skagen	155,000	Gas-Six Ltd.	Samsung	Aug-13	Bermuda	TFDE	TZ Mk. III	4	Portfolio	2017
GasLog Sydney	155,000	Gas-Five Ltd.	Samsung	Jun-13	Bermuda	–	TZ Mk. III	4	Portfolio	2016
GasLog Wales	180,000	GasLog	Samsung	May-20	Bermuda	X-DF	TZ Mk. III Flex+	4	Portfolio	2274
GasLog Warsaw	180,000	GasLog	Samsung	Jul-19	Bermuda	X-DF	TZ Mk. III Flex+	4	Portfolio	2212
GasLog Wellington	176,400	GAS-Thirty Four Ltd.	Samsung	Jun-21	Bermuda	X-DF	TZ Mk. III Flex+	4	US Portfolio	2311
GasLog Westminster	180,000	Gas-Thirty Ltd.	Samsung	Jul-20	MAIta	X-DF	TZ Mk. III Flex	4	Portfolio	2262
GasLog Winchester	176,400	Gas-Thirty Five Ltd.	Samsung	Aug-21	Bermuda	X-DF	TZ Mk. III Flex+	4	US Portfolio	2312
GasLog Windsor	180,000	GasLog	Samsung	Apr-20	Bermuda	X-DF	TZ Mk. III Flex	4	Portfolio	2213
Georgiy Brusilov	172,410	Arctic LNG 3 Ltd.	Daewoo	Nov-18	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2427
Georgiy Ushakov	172,652	Teekay Corp.	Daewoo	Sep-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2433
Ghasha	137,000	Ghasha Inc.	Mitsui E&S	Jun-95	Liberia	Steam	Moss	5	Das Island	1392
Gigira Laitebo	177,419	Cleopatra LNG Shipping Co.	HHI	Feb-10	Bahamas	–	TZ Mk. III	4	RasGas	1876
Global Energy	74,100	GDF Armateur 2	STX	Jan-04	France	Diesel/Gas-Electric	CS1	4	Portfolio	32M
Global Energy	173,400	Hai Kuo Shipping 2118G Ltd.	Daewoo	May-20	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2478
Global Sea Spirit	169,932	Global Sea Spirit Inc	Daewoo	Oct-21	Greece	ME-GI	–	4	US Portfolio	2502
Global Star	173,400	Hai Kuo Shipping 2119G Ltd.	Daewoo	Jan-21	M. Islnds.	ME-GI	GT NO 96 GW	4	Portfolio	2487
Golar Arctic	140,648	Golar LNG 2216 Corp.	Daewoo	Oct-03	Singapore	Steam	GT NO 96	4	Jamaica LNG	2216
Golar Bear	160,000	Golar LNG	Samsung	Sep-14	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2027
Golar Celsius	160,000	Golar Hull M2026 Corp.	Samsung	Oct-13	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2026
Golar Crystal	159,800	Golar LNG	Samsung	Sep-14	M. Islnds.	–	TZ Mk. III Flex	4	Spot	2022
Golar Frost	160,000	Golar LNG	Samsung	Oct-14	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Portfolio	2055
Golar Glacier	162,000	Golar LNG	Hyundai Samho	Nov-14	M. Islnds.	TFDE	TZ Mk. III Flex	4	Spot	–
Golar Ice	160,000	Golar LNG	Samsung	Jan-15	Bermuda	Diesel Electric	TZ Mk. III Flex	4	Spot	2048
Golar Kelvin	162,000	Golar LNG	Hyundai Samho	Jan-15	M. Islnds.	DFDS	TZ Mk. III Flex	4	Spot	S659
Golar Maria	145,700	Golar LNG 2234 LLC	Daewoo	Jun-06	M. Islnds.	Steam	GT NO 96	4	Spot	2234
Golar Penguin	160,000	Golar LNG	Samsung	Sep-14	M. Islnds.	–	TZ Mk. III Flex	4	Spot	2023
Golar Seal	160,000	Golar Hull M2021 Corp.	Samsung	Sep-13	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2021
Golar Snow	160,000	Golar LNG	Samsung	Jan-15	Bermuda	Diesel/Gas-Electric	TZ Mk. III Flex	4	Spot	2047
Grace Acacia	149,700	Algawin Shipping Inc.	HHI	Feb-07	Bahamas	Steam	TZ Mk. III	4	Spot	1728
Grace Barleria	149,700	NYK LNG Shipmanagement	HHI	Apr-07	Bahamas	–	TZ Mk. III	4	Portfolio	1729
Grace Cosmos	150,000	Algahunt Shipping Inc.	HHI	Feb-08	Bahamas	Steam	TZ Mk. III	4	Portfolio	1730
Grace Dahlia	177,000	NYK Line	Kawasaki	Sep-13	Japan	Steam	Moss	4	Spot	1665
Grace Emilia	174,000	Akizuki Maritima SA	Hyundai Samho	Oct-21	Bahamas	X-DF	–	4	Portfolio	8032
Grace Freesia	174,000	Okusankichi Maritima SA	Hyundai Samho	Mar-22	Bahamas	X-DF	–	4	Portfolio	8033
Grand Aniva	145,000	NYK-SCF LNG Shipping No. 1	Mitsubishi	Jan-08	Cyprus	Steam	Moss	4	Sakhalin II	2230
Grand Elena	145,580	NYK-SCF LNG Shipping No. 1	Mitsubishi	Oct-07	Cyprus	Steam	Moss	4	Sakhalin II	2229
Grand Mereya	147,000	Ice Gas LNG Shipping Co.	Mitsui E&S	Mar-08	Cyprus	Steam	Moss	4	Sakhalin II	1681
Gui Ying	170,701	Fortune Power Shipping Ltd.	Hudong Zhonghua	Oct-21	Singapore	X-DF	GT NO 96 L03+	4	Portfolio	H1828A
Hanjin Muscat	138,366	Pluto Lease Corp.	Hanjin (Busan)	Jul-99	Panama	Steam	GT NO 96	4	Oman LNG	54
Hanjin Pyeongtaek	130,636	Hanjin Shipping Co.	Hanjin (Busan)	Sep-95	Panama	Steam	GT NO 96	4	Bontang	16
Hanjin Ras Laffan	138,214	KSH International	Hanjin (Busan)	Jul-00	Panama	Steam	GT NO 96	4	RasGas I	62
Hanjin Sur	138,333	KSG International	Hanjin (Busan)	Feb-00	Panama	Steam	GT NO 96	4	Oman LNG	61
Hellas Athina	170,520	Kronos Shipping LLC	Hyundai Samho	Sep-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	8040
Hellas Diana	174,000	Zeus Shipping LLC	Hyundai Samho	Mar-21	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	8039
HongKong Energy	138,000	Chevron LNG Shipping Co.	Daewoo	Feb-04	Australia	Steam	GT NO 96	4	North West Shelf	2214
Hyundai Aquapia	137,415	H&S Shipping	HHI	May-00	Panama	Steam	Moss	4	Oman LNG	1156
Hyundai Cosmopia	137,415	H&B Shipping	HHI	Feb-00	Panama	Steam	Moss	4	RasGas I	1074
Hyundai Ecopia	149,745	KLT 1 International	HHI	Nov-08	Panama	–	TZ Mk. III	4	Balhaf	1903
Hyundai Greenpia	125,000	Hyundai Merchant Marine	HHI	May-96	Panama	Steam	Moss	4	MLNG	853
Hyundai Oceanpia	135,000	H&T Shipping	HHI	Jun-00	Panama	Steam	Moss	4	Oman LNG	1157
Hyundai Peacepia	174,000	Hyundai LNG Shipping	Daewoo	Jun-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2452
Hyundai Princepia	174,000	Hyundai LNG Shipping	Daewoo	May-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2451
Hyundai Technopia	137,415	H&K Shipping	HHI	Jul-99	Panama	Steam	Moss	4	RasGas I	1073
Hyundai Utopia	125,182	Hyundai Merchant Marine	HHI	Jun-94	Panama	Steam	Moss	4	Donggi Senoro	760
Iberica Knutsen	138,000	Norspan LNG III AS	Daewoo	Aug-06	Norway	Ultra Steam Turbine	GT NO 96	4	Portfolio	2236
Ibra LNG	147,000	SNC Corentin	Samsung	Jul-06	Panama	Steam	TZ Mk. III	4	Oman LNG	1573
Ibri LNG	147,569	Dune LNG Carrier	Mitsubishi	Jul-06	Panama	Steam	Moss	4	Oman LNG	2215
Isabella	169,932	Kasimia Marine Co.	Daewoo	Jul-21	Greece	ME-GI	GT NO 96 GW	4	–	2495
Ish	137,000	Ish Inc.	Mitsubishi	Nov-95	Liberia	Steam	Moss	5	Das Island	2067



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John A. Angelicoussis	174,000	Varta Shipping Ltd	Daewoo	Mar-22	Greece	ME-GI	–	4	–	2508
K. Acacia	138,017	Horizon Maritime Shipholding	Daewoo	Dec-99	Panama	Steam	GT NO 96	4	Oman LNG	2203
K. Freesia	138,015	Meridian Maritime Shipholding	Daewoo	Aug-00	Panama	Steam	GT NO 96	4	RasGas I	2204
K. Jasmine	145,878	Kolt JV No. 1	Daewoo	May-08	Panama	Steam	GT NO 96	4	Sakhalin II	2260
K. Mugungwha	151,812	Kolt JV No. 2	Daewoo	Nov-08	Panama	Steam	GT NO 96	4	Oman LNG	2261
KARMOL LNGT Powership Asia	127,500	BHP Consortium	Kawasaki	Jan-91	Bermuda	Steam	Moss	4	North West Shelf	1410
Kinisis	173,400	Chandris Group	Daewoo	Oct-18	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2464
Kita LNG	147,895	Cardiff LNG	Daewoo	May-14	Malta	Diesel Electric	GT NO 96 L03	4	Spot	H2298
Kmarin Diamond	155,000	RBSSAF (19) Ltd.	Hyundai Samho	Jul-08	Isle of Man	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	S297
Kool Baltic	170,200	Sovcomflot	STX	Jan-15	Liberia	Diesel Electric	GT NO 96 GW	4	Portfolio	1912
Kool Boreas	170,200	Sovcomflot	STX	Apr-15	Liberia	Diesel Electric	GT NO 96 GW	4	Portfolio	1913
Kool Firn	174,000	Heliconia Maritime SA	HHI	Sep-20	Liberia	DFDS	TZ Mk. III Flex	4	Portfolio	8007
Kool Orca	174,000	Headliner Maritime SA	HHI	Jan-21	Liberia	X-DF	NO-96-GW+PRS	4	Portfolio	8008
Kumul	170,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Dec-15	H.K., China	Diesel	GT NO 96	4	PNG LNG	1673A
La Mancha Knutsen	176,300	Norspan LNG IX	HHI	Sep-16	Spain	ME-GI	TZ Mk. III Flex	4	Portfolio	2733
La Seine	174,000	Xiang CH16 HK International	HHI	Feb-20	Malta	X-DF	TZ MK. III Flex	4	Portfolio	3020
Lagenda Serenity	79,960	Kawasaki Kisen Kaisha	Hudong Zhonghua	Jun-22	Panama	LP-DF	–	3	Malaysia LNG	H1789A
Lagenda Suria	79,960	Silk LNG Transport No 1 Pte Ltd	Hudong Zhonghua	May-22	Singapore	LP-DF	–	3	Malaysia LNG	H1788A
Lalla Fatma N'Soumer	145,000	Algerian Nippon Gas Transport Corp.	Kawasaki	Oct-04	Bahamas	Steam	Moss	4	Arzew	1534
Lena River	155,000	Solana Holdings	HHI	Sep-13	M. Islnds.	–	TZ Mk. III	4	Portfolio	H2557
Lijmiliya	263,300	Nakilat Lijmiliya Inc.	Daewoo	Dec-08	M. Islnds.	Diesel	GT NO 96	5	Qatargas II	2256
LNG Abalamabie	162,000	Bonny Gas Transport	Samsung	Jul-16	Bermuda	DFDS	TZ Mk. III Flex	4	NLNG	2079
LNG Abuja II	162,000	Bonny Gas Transport	Samsung	Mar-16	Bermuda	–	TZ Mk. III Flex	4	NLNG	2078
LNG Adamawa	141,000	Bonny Gas Transport	HHI	Apr-05	Bermuda	Steam	Moss	4	NLNG	1470
LNG Adventure	174,000	Diderot Financement 28 SNC	Samsung	Mar-21	M. Islnds.	X-DF	TZ Mk. III Flex	4	Portfolio	2302
LNG Akwa Ibom	141,000	Bonny Gas Transport	HHI	Oct-04	Bermuda	Steam	Moss	4	NLNG	1469
LNG Alliance	154,472	NYK Armateur	STX	Mar-07	France	Diesel/Gas-Electric	CS1	4	Portfolio	32P
LNG Aquarius	126,300	P.T. Hanochem Shipping	General Dynamics	Jan-77	Indonesia	Steam	Moss	5	Bontang	41
LNG Barka	155,982	Lloyd's TSB General Leasing (No. 3)	Kawasaki	Dec-08	Bahamas	Steam	Moss	4	Oman LNG	1591
LNG Bayelsa	137,500	Bonny Gas Transport	HHI	Mar-03	Bermuda	–	Moss	4	NLNG	1429
LNG Benue	145,952	BW Gas LNG Carriers	Daewoo	Apr-06	Bermuda	Steam	GT NO 96	4	NLNG	2224
LNG Bonny II	174,000	Nigeria LNG	HHI	Dec-15	Bermuda	Diesel/Gas-Electric	TZ Mk. III Flex	4	NLNG	2636
LNG Borno	149,600	Okra Shipping No. 1	Samsung	Aug-07	Bermuda	Steam	TZ Mk. III	4	NLNG	1563
LNG Cross River	141,000	Bonny Gas Transport	HHI	Aug-05	Bermuda	Steam	Moss	4	NLNG	1471
LNG Dream	145,000	Osaka Gas Consortium	Kawasaki	Sep-06	Bahamas	Steam	Moss	4	North West Shelf	1545
LNG Dubhe	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-19	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1810A
LNG Ebisu	147,546	LNG Ebisu Shipping Corp.	Kawasaki	Jul-08	Bahamas	–	Moss	4	Pluto	1588
LNG Endeavour	170,520	Fortune Great Shipping Ltd.	Samsung	Oct-21	France	X-DF	TZ Mk. III Flex	4	Portfolio	2355
LNG Endurance	170,520	DuPlessis Bail SNC	Samsung	Dec-21	France	X-DF	TZ Mk. III Flex	4	Portfolio	2307
LNG Enterprise	170,520	Hanovre Financement 20 SASU	Samsung	Oct-21	France	X-DF	TZ Mk. III Flex	4	Portfolio	2360
LNG Enugu	145,926	BW Gas LNG Carriers	Daewoo	Oct-05	Bermuda	Steam	GT NO 96	4	NLNG	2222
LNG Finima II	162,000	Bonny Gas Transport	Samsung	Dec-15	Bermuda	–	TZ Mk. III Flex	4	NLNG	2076
LNG Fukurokuju	164,700	Mitsui O.S.K. Lines	Kawasaki	Jul-16	Panama	Steam	Moss	4	APLNG	1712
LNG Imo	148,452	Bergesen LNG XI Ltd.	Daewoo	Jun-08	Bermuda	–	GT NO 96	4	NLNG	2232
LNG Jamal	135,333	Osaka Gas Consortium	Mitsubishi	Oct-00	Japan	Steam	Moss	5	Oman LNG	2157
LNG Juno	180,000	Mitsui O.S.K. Lines	Mitsubishi	Oct-18	Japan	STaGE	Moss	–	Freeport	2323
LNG Jupiter	153,000	Osaka Gas Consortium	Kawasaki	Jul-09	Panama	Steam	Moss	4	PNG LNG	1592
LNG Jurojin	160,000	LNG Jurojin Shipping Corp.	Mitsubishi	Nov-15	Bahamas	Steam	Moss	4	Portfolio	2299
LNG Kano	148,565	Bergesen LNG IX Ltd.	Daewoo	Jan-07	Bermuda	Steam	GT NO 96	4	NLNG	2230
LNG Kolt	153,595	KLT 5 International	Hanjin (Busan)	Dec-08	Panama	Steam	TZ Mk. III	4	Portfolio	192
LNG Lagos II	174,000	Nigeria LNG	HHI	Jan-16	Bermuda	DFDS	TZ Mk. III Flex	4	NLNG	2637
LNG Lerici	65,000	LNG Shipping S.p.A.	Sestri Ponente	Apr-98	Italy	Steam	GT NO 96	4	Portfolio	5911
LNG Lokoja	148,471	Bergesen LNG VIII Ltd.	Daewoo	Nov-06	Bermuda	Steam	GT NO 96	4	NLNG	2229
LNG Maleo	127,544	Mitsui O.S.K. Lines	Mitsui E&S	Jan-89	Japan	Steam	Moss	4	North West Shelf	1351
LNG Mars	155,693	Osaka Gas Consortium	Mitsubishi	Oct-16	Japan	Steam	Moss	4	PNG LNG	2296
LNG Megrez	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-20	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1813A
LNG Merak	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Jan-20	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1811A
LNG Ogun	149,000	Okra Shipping No. 1	Samsung	Jul-07	Bermuda	Steam	TZ Mk. III	4	NLNG	1564
LNG Ondo	148,478	Bergesen LNG X Ltd.	Daewoo	Sep-07	Bermuda	Steam	GT NO 96	4	NLNG	2231
LNG Oyo	145,842	BW Gas LNG Carriers	Daewoo	Jan-06	Bermuda	Steam	GT NO 96	4	NLNG	2223
LNG Phecda	174,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Sep-20	Panama	ME-GI	GT NO 96 L03+	4	Yamal	1812A
LNG Port Harcourt II	162,000	Bonny Gas Transport	Samsung	Dec-15	Bermuda	–	TZ Mk. III Flex	4	NLNG	2077
LNG Prima Carrier	137,000	Pacific Eurus Shipping	Mitsubishi	Mar-06	Bahamas	Steam	Moss	4	Das Island	2187
LNG River Niger	141,000	Bonny Gas Transport	HHI	Jul-06	Bermuda	Steam	Moss	4	NLNG	1472
LNG River Orashi	145,914	BW Gas LNG Carriers	Daewoo	Nov-04	Bermuda	Steam	GT NO 96	4	NLNG	2221

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LNG Rivers	137,200	Bonny Gas Transport	HHI	Jun-02	Bermuda	–	Moss	4	NLNG	1295
LNG Rosenrot	176,523	Fair Wind Navigation SA	Daewoo	Jan-21	M. Islnds.	X-DF	GT NO 96 GW	4	Portfolio	2498
LNG Sakura	177,000	Mitsui O.S.K. Lines	Kawasaki	Feb-18	Bahamas	TFDE	Moss	–	Freeport	1731
LNG Saturn	155,300	Mitsui O.S.K. Lines	Mitsubishi	Feb-16	Bahamas	Ultra Steam Turbine	Moss	4	Gorgon	2311
LNG Schneeweisschen	180,000	Mitsui O.S.K. Lines	Daewoo	Sep-18	Bermuda	TFDE	GT NO 96 GW	–	Freeport	2462
LNG Sokoto	137,425	Bonny Gas Transport	HHI	Sep-02	Bermuda	–	Moss	4	NLNG	1296
LNG Unity	154,472	GDF Armateur 2	STX	Nov-06	France	Diesel/Gas-Electric	CS1	4	Portfolio	32N
LNG Venus	153,000	Mitsui O.S.K. Lines	Mitsubishi	Nov-14	Japan	–	Sayaendo	4	North West Shelf	2295
LNG Vesta	127,386	Tokyo LNG Tanker Co.	Mitsubishi	Jun-94	Japan	Steam	Moss	4	–	2061
LNGShips Athena	170,618	Cardiff LNG Iota Owning LLC	HHI	Mar-21	Malta	X-DF	TZ Mk. III Flex	4	–	112
LNGShips Empress	174,000	Cardiff LNG Kappa Owning LLC	Samsung	Mar-21	Malta	X-DF	TZ Mk. III Flex	4	QCLNG	2380
LNGShips Manhattan	174,000	Cardiff LNG Theta Owning LLC	HHI	May-21	Malta	X-DF-HPSCR	NO-96-GW+PRS	4	QCLNG	3039
Lobito	160,276	Mint LNG III	Samsung	Nov-11	Bahamas	–	TZ Mk. III	4	Soyo	1812
Lusail	145,000	Peninsula LNG Transport No. 1	Samsung	May-05	Bermuda	–	TZ Mk. III	4	RasGas II	1440
Macoma	145,400	Teekay LNG Partners	Daewoo	Sep-17	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2417
Magdala	173,400	Teekay Corp.	Daewoo	Feb-18	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2453
Malaga Knutsen	174,000	Millenaire Financement 17 SASU	Hyundai Samho	Jul-22	France	X-DF	TZ Mk. III Flex+	4	Portfolio	8092
Malanje	160,276	Mint LNG II	Samsung	Oct-11	Bahamas	–	TZ Mk. III	4	Soyo	1811
Maran Gas Achilles	174,000	Maran Gas Maritime	Hyundai Samho	Jan-16	Greece	DFDS	TZ Mk. III Flex	4	Portfolio	S689
Maran Gas Agamemnon	174,000	Maran Gas Maritime	Hyundai Samho	May-16	Greece	DFDS	TZ Mk. III Flex	4	Portfolio	S690
Maran Gas Amorgos	169,932	Vero Maritime Inc	Daewoo	19/11/2021	Greece	ME-GI	GT NO 96	4	–	2506
Maran Gas Alexandria	161,870	Maran Gas Maritime	Hyundai Samho	Oct-15	Greece	–	TZ Mk. III Flex	4	QCLNG	S627
Maran Gas Amphipolis	174,000	Maran Gas Maritime	Daewoo	Aug-16	Greece	–	GT NO 96 L03	4	Portfolio	2412
Maran Gas Andros	173,400	Maran Gas Maritime	Daewoo	Nov-19	Greece	ME-GI	GT NO 96 GW	4	Freeport	2467
Maran Gas Apollonia	161,870	Maran Gas Maritime	Hyundai Samho	Jan-14	Greece	Diesel Electric	TZ Mk. III Flex	4	Punta Europa	S624
Maran Gas Asclepius	145,000	Sea Satin Corp.	Daewoo	Jul-05	Greece	Steam	GT NO 96	4	RasGas II	H2227
Maran Gas Chios	170,000	Maran Gas Maritime	Daewoo	Mar-19	Greece	ME-GI	GT NO 96 GW	4	–	2456
Maran Gas Coronis	145,700	Jopica Shipping Company	Daewoo	Jul-07	Greece	Steam	GT NO 96	4	RasGas II	2244
Maran Gas Delphi	159,800	Maran Gas Maritime	Daewoo	Feb-14	Greece	Diesel Electric	GT NO 96 L03	4	Portfolio	2296
Maran Gas Efessos	159,800	Maran Gas Maritime	Daewoo	Jun-14	Greece	–	GT NO 96 L03	4	Portfolio	H-2291
Maran Gas Hector	174,000	Maran Gas Maritime	Hyundai Samho	Nov-16	Greece	Diesel/Gas-Electric	TZ Mk. III Flex	–	Portfolio	S691
Maran Gas Hydra	173,400	Maran Gas Maritime	Daewoo	Feb-19	Greece	ME-GI	GT NO 96 GW	4	Sabine Pass	2459
Maran Gas Ithaca	174,000	Arona Maritime Inc.	Daewoo	Oct-21	Greece	X-DF	TZ Mk. III Flex	4	Portfolio	2507
Maran Gas Kalymnos	169,932	Hai Kuo Shipping 2028G Ltd	Daewoo	Sep-21	Greece	ME-GI	Membrane	4	–	2504
Maran Gas Leto	174,000	Maran Gas Maritime	Hyundai Samho	Mar-16	Greece	DFDS	TZ Mk. III	4	Portfolio	S688
Maran Gas Lindos	161,870	Maran Gas Maritime	Daewoo	Jul-15	Greece	DFDS	GT NO 96 L03	4	Punta Europa	2292
Maran Gas Mystras	155,900	Maran Gas Maritime	Daewoo	Aug-15	Greece	DFDS	GT NO 96 L03	4	QCLNG	2405
Maran Gas Olympias	174,000	Maran Gas Maritime	Daewoo	Feb-17	Greece	ME-GI	GT NO 96 L03	–	Portfolio	2415
Maran Gas Pericles	173,400	Maran Gas Maritime	Hyundai Samho	Aug-16	Greece	DFDS	TZ Mk. III Flex	4	Portfolio	S734
Maran Gas Posidonia	161,870	Maran Gas Maritime	Hyundai Samho	May-14	Greece	–	TZ Mk. III Flex	4	Punta Europa	S625
Maran Gas Psara	173,595	Highseas Shiptrade Co.	Daewoo	May-20	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2469
Maran Gas Roxana	174,000	Maran Gas Maritime	Daewoo	Jan-17	Greece	ME-GI	GT NO 96 L03	4	Portfolio	2413
Maran Gas Sparta	159,800	Maran Gas Maritime	Hyundai Samho	Apr-15	Greece	–	TZ Mk. III Flex	4	QCLNG	S626
Maran Gas Spetses	173,400	Maran Gas Maritime	Daewoo	Jul-18	Greece	ME-GI	GT NO 96 GW	4	GoM	2458
Maran Gas Troy	155,000	Maran Gas Maritime	Daewoo	Sep-15	Greece	DFDS	GT NO 96 L03	4	–	2406
Maran Gas Ulysses	173,400	Maran Gas Maritime	Hyundai Samho	Jan-17	Greece	Diesel/Gas-Electric	TZ Mk. III Flex	–	Portfolio	S735
Maran Gas Vergina	174,000	Santa Lucia Enterprises Inc.	Daewoo	Dec-16	Greece	ME-GI	GT NO 96	–	Portfolio	2414
Maria Energy	174,000	Tsakos Energy Navigation	HHI	Sep-16	Greece	Diesel/Gas-Electric	TZ Mk. III Flex	4	–	2612
Marib Spirit	165,500	Membrane Shipping	Samsung	Apr-08	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Balhaf	1608
Marshal Vasilevskiy	170,000	Gazprom	HHI	Jan-19	Russia	Diesel/Gas-Electric	TZ Mk. III Flex	4	Kaliningrad LNG	2854
Marvel Crane	177,000	NYK Line	Mitsubishi	Mar-19	Japan	STaGE	Moss	–	Cameron	2321
Marvel Eagle	155,000	Mitsui O.S.K. Lines	Kawasaki	Oct-18	Panama	Reheat Steam Turbine	Moss	–	Cameron	1728
Marvel Falcon	174,000	Mitsui O.S.K. Lines	Samsung	Apr-18	Singapore	TFDE	TZ Mk. III Flex	4	Cameron	2148
Marvel Hawk	177,000	Mitsui O.S.K. Lines	Samsung	Dec-18	Japan	TFDE	TZ Mk. III Flex	4	Cameron	2149
Marvel Heron	177,000	Mitsui O.S.K. Lines	Mitsubishi	Sep-19	Japan	STaGE	Moss	–	Cameron	2322
Marvel Kite	177,000	Mitsui O.S.K. Lines	Samsung	Jan-19	Japan	TFDE	TZ Mk. III	4	Cameron	2150
Marvel Pelican	156,265	Mitsui O.S.K. Lines	Kawasaki	Dec-19	Panama	Reheat Steam Turbine	Moss	4	Cameron	1729
Marvel Swan	174,000	MIF I NO 20 K/S	Samsung	Apr-21	Denmark	X-DF	TZ MK. III Flex	4	–	2310
Megara	173,400	Teekay LNG Partners	Daewoo	Jul-18	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2455
Mekaines	266,000	Nakilat SHI 1695 Inc.	Samsung	Apr-09	M. Islnds.	–	TZ Mk. III	5	Qatargas III	1695
Merchant	138,000	Sea Breeze Leasing	Samsung	Jul-03	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1381
Meridian Spirit	165,500	Meridian Spirit Aps	Samsung	Jan-10	Denmark	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1633
Mesaimeer	216,312	Nakilat HHI 1908 Inc.	HHI	Mar-09	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas III	1908
Methane Alison Victoria	145,000	Lloyds TSB Leasing No.8 Ltd.	Samsung	Apr-07	Bahamas	Steam	TZ Mk. III	4	Punta Europa	1587
Methane Becki Anne	170,000	Methane Services (Shell)	Samsung	Sep-10	Bermuda	–	TZ Mk. III	4	Singapore	1858
Methane Heather Sally	145,000	Lloyds TSB Leasing No.8 Ltd.	Samsung	Jan-07	Bahamas	Steam	TZ Mk. III	4	Punta Europa	1586
Methane Jane Elizabeth	145,000	British Gas Asia Pacific	Samsung	Jun-06	Bermuda	Steam	TZ Mk. III	4	Idku	1554



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Methane Julia Louise	170,000	Methane Services (Shell)	Samsung	Apr-10	Bermuda	–	TZ Mk. III	9	Singapore	1745
Methane Lydon Volney	145,000	BG Group	Samsung	Aug-06	Bermuda	Steam	TZ Mk. III	4	Idku	1555
Methane Mickie Harper	170,000	Methane Services (Shell)	Samsung	Dec-10	Bermuda	Diesel/Gas-Electric	TZ Mk. III	4	Singapore	1859
Methane Nile Eagle	145,000	Egypt LNG Shipping	Samsung	Dec-07	Bermuda	Steam	TZ Mk. III	4	Idku	1588
Methane Patricia Camila	170,000	Methane Services (Shell)	Samsung	Oct-10	Bermuda	–	TZ Mk. III	4	Singapore	1746
Methane Princess	138,000	Golar LNG	Daewoo	Aug-03	U.K.	Steam	GT NO 96	4	Portfolio	2215
Methane Rita Andrea	145,000	British Gas Asia Pacific	Samsung	Apr-06	Bermuda	Steam	TZ Mk. III	4	Idku	1553
Methane Shirley Elisabeth	145,000	Lloyds TSB Leasing No.8 Ltd.	Samsung	Feb-07	Bermuda	Steam	TZ Mk. III	4	Punta Europa	1585
Milaha Qatar	145,500	Qatar Shipping Co.	Samsung	Apr-06	Malta	Steam	TZ Mk. III	4	RasGas II	1562
Milaha Ras Laffan	138,270	Milaha Ras Laffan GmbH & Co. KG	Samsung	Apr-04	Malta	Steam	TZ Mk. III	4	RasGas II	1425
Min Lu	147,100	Minlu LNG Shipping Co.	Hudong Zhonghua	Aug-09	H.K., China	–	GT NO 96	4	Tangguh	1378
Min Rong	145,000	Min Rong LNG Shipping Co.	Hudong Zhonghua	Feb-09	H.K., China	–	GT NO 96	4	Tangguh	1320
Minerva Chios	170,520	Peninsula Shipping SA	Samsung	Aug-21	Greece	X-DF	TZ Mk. III Flex+	4	–	2305
Minerva Kalymnos	174,000	Koje Shipping SA	Samsung	Feb-21	Malta	X-DF	GT NO 96 GW	4	–	2304
Minerva Limnos	173,400	Roland Shipping SA	Daewoo	Jun-21	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2482
Minerva Psara	173,400	Wimbledon Shipping SA	Daewoo	Jan-21	Malta	–	GT NO 96 GW	4	–	2481
MOL Hestia	173,400	LNG Harmonia Shipping Corp	Daewoo	Jul-21	M. Islnds.	X-DF	GT NO 96 GW	4	–	2505
Mozah	266,000	Nakilat Haloul Inc.	Samsung	Aug-09	M. Islnds.	Diesel	TZ Mk. III	5	Qatargas II	1675
Mraweh	137,000	Mraweh Ltd.	STX	Apr-96	Liberia	Steam	Moss	4	Das Island	1331
Mu Lan	174,400	Fortune Great Shipping Ltd.	Hudong Zhonghua	Aug-21	Liberia	X-DF	GT NO 96 L03+	4	Portfolio	1827A
Mubaraz	137,000	Mubaraz Ltd.	STX	Dec-95	Liberia	Steam	Moss	4	Das Island	1330
Murex	173,400	Teekay LNG Partners	Daewoo	Jul-17	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2416
Murwab	210,100	J5 Nakilat No. 4 Ltd.	Daewoo	Jun-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	251
Myrina	173,400	Teekay Corp.	Daewoo	May-18	Bahamas	ME-GI	GT NO 96 GW	4	Portfolio	2454
Neo Energy	150,000	Sea Optima	HHI	Jan-07	Liberia	Steam	TZ Mk. III	4	Portfolio	1754
Neptune	145,130	SRV Joint Gas Ltd.	Samsung	Nov-09	Norway	–	TZ Mk. III	4	Portfolio	1688
NFE Grand	145,700	Golar Grand Corp.	Daewoo	Jan-06	M. Islnds.	Steam	GT NO 96	4	Gorgon	2226
Nikolay Urvantsev	172,658	China Shipping Development Co.	Daewoo	Jul-19	H.K., China	ME-GI	GT NO 96 GW	4	Yamal	2432
Nikolay Yevgenov	172,410	Teekay Corp.	Daewoo	Apr-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2430
Nikolay Zubov	172,410	Arctic LNG 5 Ltd.	Daewoo	Nov-18	Cyprus	TFDE - Azipod	GT NO 96 GW	4	Yamal	2429
Nizwa LNG	147,684	Oryx LNG Carrier	Kawasaki	Dec-05	Panama	Steam	Moss	4	Oman LNG	1562
Nohshu Maru	180,000	Mitsui O.S.K. Lines	Mitsubishi	Feb-19	Bahamas	Reheat Steam Turbine	Moss	4	–	2326
Northwest Sanderling	127,525	Shell Tankers Australia	Mitsubishi	Jan-89	Australia	Steam	Moss	4	North West Shelf	1996
Northwest Sandpiper	125,042	Shell Tankers Australia	Mitsui E&S	Jan-93	Australia	Steam	Moss	4	North West Shelf	1370
Northwest Snipe	127,500	International Gas Transportation Co., Ltd.	Mitsui E&S	Jan-90	Australia	Steam	Moss	4	North West Shelf	1352
Northwest Stormpetrel	127,500	Shell Tankers Australia	Mitsubishi	Dec-94	Australia	Steam	Moss	4	North West Shelf	2074
Oak Spirit	173,400	Teekay LNG Partners	Daewoo	Mar-16	Bahamas	ME-GI	GT NO 96 GW	–	Sabine Pass	2408
Ob River	149,700	Lance Shipping	HHI	May-07	M. Islnds.	Steam	TZ Mk. III	4	Sakhalin II	1719
Oceanic Breeze	155,300	"K" Line - Kawasaki Kisen Kaisha	Mitsubishi	Apr-18	Japan	Reheat Steam Turbine	Moss	4	Ichthys	2310
Onaiza	210,150	Nakilat DSME 2266 Inc.	Daewoo	Apr-09	M. Islnds.	Diesel	GT NO 96	12	Qatargas III	2266
Orion Sea	170,852	Meridian 23 Ltd.	Samsung	Jan-22	Liberia	X-DF	TZ Mk. III	4	Portfolio	2336
Orion Star	174,000	Jupiter 3 Ltd	Samsung	Apr-22	Liberia	–	–	4	–	2319
Orion Sun	174,000	Meridian 24 Ltd.	Samsung	Jul-22	Liberia	X-DF	–	4	Portfolio	2337
Ougarta	170,000	Hyproc Shipping Co.	HHI	Mar-17	Algeria	DFDS	TZ Mk. III Flex	4	Arzew	2814
Pacific Arcadia	145,400	Bahamas LNG Shipping	Mitsubishi	Oct-14	Bahamas	–	Moss	4	PNG LNG	MHISB 2289
Pacific Breeze	180,000	"K" Line - Kawasaki Kisen Kaisha	Kawasaki	Mar-18	Japan	TFDE	Moss	4	Ichthys	1718
Pacific Enlighten	145,400	Pacific Hope Shipping	Mitsubishi	Mar-09	Panama	Steam	Moss	4	North West Shelf	2236
Pacific Mimosa	155,300	NYK Line	Mitsubishi	Mar-18	Japan	Reheat Steam Turbine	Moss	–	Wheatstone	2316
Pacific Notus	137,006	Pacific LNG Shipping	Mitsubishi	Sep-03	Bahamas	Steam	Moss	5	Darwin LNG	2176
Palu LNG	159,800	Cardiff LNG	Daewoo	Nov-14	Malta	TFDE	GT NO 96 L03	4	Spot	2400
Pan Africa	174,000	Teekay LNG Partners	Hudong Zhonghua	Jan-19	H.K., China	TFDE	GT NO 96	4	QCLNG	1666A
Pan Americas	174,000	Teekay LNG Partners	Hudong Zhonghua	Jan-18	H.K., China	TFDE	GT NO 96	4	QCLNG	H1664A
Pan Asia	174,000	Teekay LNG Partners	Hudong Zhonghua	Sep-17	H.K., China	TFDE	GT NO 96	4	QCLNG	1663A
Pan Europe	174,000	Teekay LNG Partners	Hudong Zhonghua	Jul-18	H.K., China	TFDE	GT NO 96	4	QCLNG	H1665A
Papua	170,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Nov-14	H.K., China	–	GT NO 96	4	PNG LNG	H1670A
Patris	174,000	Chandris Group	Daewoo	Jan-18	Liberia	ME-GI	GT NO 96 GW	4	Freeport	2460
Pearl LNG	174,000	Cardiff LNG Delta Owning LLC	Samsung	Aug-20	Malta	X-DF	NO-96-GW+PRS	4	Portfolio	2275
Pioneer Spirit	138,121	M & S Shipping 3 S.A.	Daewoo	Jul-05	Bahamas	Steam	GT NO 96	4	Das Island	2219
Point Fortin	154,200	Los Halillos Shipping Co.	Koyo Dockyard	Jan-10	Panama	Steam	TZ Mk. III	4	Portfolio	2263
Portovenere	65,000	LNG Shipping S.p.A.	Sestri Ponente	Apr-97	Italy	Steam	GT NO 96	4	Portfolio	5910
Portovyy	138,107	Monteriggioni Inc.	Daewoo	Aug-03	Belgium	Steam	GT NO 96	4	Portfolio	2213
Prachi	162,000	India LNG Transport Company No. 4 Ltd.	HHI	Nov-16	Singapore	Diesel/Gas-Electric	TZ Mk. III Flex	–	Gorgon	2633
Prima Concord	138,267	BG Group	Samsung	May-04	Bermuda	Steam	TZ Mk. III	4	Singapore	1428
Prism Agility	180,000	SK Shipping	HHI	May-19	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2937
Prism Brilliance	180,000	SK Shipping	HHI	May-19	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2938



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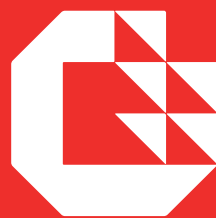


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Prism Courage	176,462	Millenaire Financement 12 SASU	HHI	Oct-21	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2939
Prism Diversity	176,400	HHIENS4 Shipholding SA	HHI	Jun-22	M. Islnds.	X-DF	–	4	–	3145
Pskov	170,200	Sovcomflot	STX	Sep-14	Liberia	–	GT NO 96	4	Portfolio	1911
Puteri Delima	130,400	Puteri Delima S.Bhd.	STX	Jan-95	Malaysia	Steam	GT NO 96	4	MLNG II	30F
Puteri Delima Satu	137,100	MISC	Mitsui E&S	Oct-02	Malaysia	Steam	GT NO 96	4	MLNG III	1506
Puteri Firus Satu	137,100	Puteri Firus S.Bhd.	Mitsubishi	Aug-04	Malaysia	Steam	GT NO 96	4	MLNG III	2177
Puteri Intan	137,100	Puteri Intan S.Bhd.	STX	Aug-94	Malaysia	Steam	GT NO 96	4	MLNG II	30E
Puteri Intan Satu	137,100	MISC	Mitsubishi	Aug-02	Malaysia	Steam	GT NO 96	4	MLNG III	2165
Puteri Mutiara Satu	137,100	MISC	Mitsui E&S	Apr-05	Malaysia	Steam	GT NO 96	4	MLNG III	1562
Puteri Nilam	130,400	Puteri Nilam S.Bhd.	STX	Jul-95	Malaysia	Steam	GT NO 96	4	MLNG II	30G
Puteri Nilam Satu	137,100	Puteri Nilam S.Bhd.	Mitsubishi	Jul-03	Malaysia	Steam	GT NO 96	4	MLNG III	2169
Puteri Zamrud	130,400	Puteri Zamrud S.Bhd.	STX	Jun-96	Malaysia	Steam	GT NO 96	4	MLNG II	30H
Puteri Zamrud Satu	137,100	MISC	Mitsui E&S	Feb-04	Malaysia	–	GT NO 96	4	MLNG III	1507
Qogir	174,000	LNGShips	Samsung	Jun-20	Malta	X-DF	TZ MK. III Flex	–	Portfolio	2271
Raahi	138,076	India LNG Transport Company No.2 Ltd.	Daewoo	Oct-04	Malta	Steam	GT NO 96	4	RasGas	2211
Rasheeda	266,000	Nakilat SHI 1754 Inc.	Samsung	Aug-10	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas IV	1754
Rias Baixas Knutsen	180,000	Knutsen OAS Shipping	HHI	Sep-19	Norway	ME-GI	TZ Mk. III Flex	4	Corpus Christi	2964
Ribera del Duero Knutsen	173,400	Norspan LNG VIII AS	Daewoo	Dec-10	Norway	–	GT NO 96	4	Portfolio	2275
Rioja Knutsen	170,000	Norspan LNG X	HHI	Dec-16	Norway	ME-GI	TZ Mk. III Flex	4	Portfolio	2734
Rudolf Samoylovich	172,410	Teekay Corp.	Daewoo	Aug-18	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2425
Salalah LNG	147,000	Tiwi LNG Carrier S.A.	Samsung	Dec-05	Panama	Steam	TZ Mk. III	4	Oman LNG	1536
Santander Knutsen	174,000	Sea 194 Leasing Co Ltd.	Hyundai Samho	Jun-22	Norway	X-DF	TZ Mk. III Flex+	4	Portfolio	8091
SCF La Perouse	174,000	Albus Shipping Ltd.	HHI	Feb-20	Liberia	X-DF	NO-96-GW+PRS	4	Portfolio	8006
Seapeak Arctic	89,800	Artic Spirit LLC	Ishikawajima	Dec-93	Liberia	Steam	IHI SPB	4	Atlantic LNG	3016
Seapeak Arwa	165,500	Membrane Shipping	Samsung	Aug-08	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Balhaf	1625
Seapeak Catalunya	138,000	Teekay Shipping Spain S.L.	Izar	Jun-03	Spain	Steam	GT NO 96	4	Atlantic LNG	319
Seapeak Creole	173,400	Teekay LNG Partners	Daewoo	Feb-16	Bahamas	ME-GI	GT NO 96 GW	–	Sabine Pass	2407
Seapeak Galicia	140,624	Teekay Gas II	Daewoo	Jul-07	Liberia	Steam	GT NO 96	4	Portfolio	2209
Seapeak Glasgow	174,162	Teekay LNG Partners	Hyundai Samho	Dec-18	Bermuda	ME-GI	TZ Mk. III Flex	–	Freeport	S856
Seapeak Hispania	145,500	Teekay Gas Naviera SL	Daewoo	Aug-02	Spain	Steam	GT NO 96	4	Peru LNG	2205
Seapeak Madrid	138,000	Teekay Shipping Spain S.L.	Navantia	Dec-04	Spain	Steam	GT NO 96	4	Atlantic LNG	105
Seapeak Magellan	165,500	Magellan Spirit ApS	Samsung	Apr-09	Denmark	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1626
Seapeak Methane	165,500	Malt Singapore Pvt. Ltd.	Samsung	Feb-08	M. Islnds.	Diesel/Gas-Electric	TZ Mk. III	4	Atlantic LNG	1607
Seapeak Polar	89,800	Polar Spirit LLC	Ishikawajima	Jun-93	Liberia	Steam	IHI SPB	4	Atlantic LNG	3015
Seapeak Vancouver	173,400	Teekay LNG Partners	Daewoo	Nov-16	Bahamas	ME-GI	GT NO 96 GW	–	Portfolio	2411
Seishu Maru	138,000	Mitsui O.S.K. Lines	Mitsubishi	Sep-14	Bahamas	–	Moss	4	PNG LNG	2297
Seri Alam	145,572	MISC	Samsung	Jul-05	Malaysia	–	TZ Mk. III	4	Bintulu	1502
Seri Amanah	145,709	MISC	Samsung	Mar-06	Malaysia	Steam	TZ Mk. III	4	Bintulu	1503
Seri Anggun	145,731	MISC	Samsung	Oct-06	Malaysia	Steam	TZ Mk. III	4	North West Shelf	1589
Seri Angkasa	145,130	MISC	Samsung	Dec-06	Malaysia	Steam	TZ Mk. III	4	Bintulu	1590
Seri Ayu	145,894	MISC	Samsung	Oct-07	Malaysia	Steam	TZ Mk. III	4	Bintulu	1591
Seri Bakti	152,944	MISC	Mitsubishi	Apr-07	Malaysia	Steam	GT NO 96	4	Gladstone	2220
Seri Balhaf	152,000	MISC	Mitsubishi	Jan-09	Malaysia	Steam	GT NO 96	4	Bontang	2223
Seri Balqis	152,000	MISC	Mitsubishi	Mar-09	Malaysia	Steam	GT NO 96	4	NLNG	2224
Seri Begawan	152,900	MISC	Mitsubishi	Nov-07	Malaysia	Steam	GT NO 96	4	Bintulu	2221
Seri Bijaksana	152,300	MISC	Mitsubishi	Apr-08	Malaysia	Steam	GT NO 96	4	Bintulu	2222
Seri Camar	150,000	MISC	HHI	Feb-18	Malaysia	Ultra Steam Turbine	Moss	4	Pacific Northwest	2732
Seri Camellia	159,800	MISC	HHI	Sep-16	Malaysia	Ultra Steam Turbine	TZ MK. III Flex	4	Pacific Northwest	2729
Seri Cemara	150,200	MISC	HHI	Apr-18	Malaysia	Ultra Steam Turbine	Moss	4	Portfolio	2735
Seri Cempaka	162,000	MISC	HHI	Aug-17	Malaysia	Ultra Steam Turbine	TZ MK. III Flex	4	Pacific Northwest	2731
Seri Cenderawasih	162,000	MISC	HHI	Feb-17	Malaysia	Ultra Steam Turbine	Moss	4	Pacific Northwest	2730
Sestao Knutsen	136,947	Norspan LNG IV AS	Navantia Cadiz	Oct-07	Spain	Steam	GT NO 96	4	Portfolio	331
Sevilla Knutsen	173,400	Norspan LNG VI AS	Daewoo	May-10	Spain	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2269
Shagra	268,000	Nakilat SHI 1751 Inc.	Samsung	Nov-09	M. Islnds.	Diesel	TZ Mk. III	10	Qatargas IV	1751
Shahamah	135,496	Shahamah Inc.	Kawasaki	Oct-94	Liberia	Steam	Moss	5	Das Island	1438
Shandong Juniper	135,269	Shell Bermuda (Overseas) Ltd.	Mitsubishi	Feb-04	Singapore	Steam	Moss	5	Peru LNG	2183
Shen Hai	147,200	Shanghai LNG Shipping Co.	Hudong Zhonghua	Dec-12	H.K., China	Steam	GT NO 96	4	Bintulu	H1621A
Shinshu Maru	180,000	Mitsui O.S.K. Lines	Kawasaki	Feb-19	Japan	DERST (aka STaGE)	Moss	4	Freeport	1734
Simaisma	145,889	Greenwell Corporation	Daewoo	Jul-06	Bermuda	Steam	GT NO 96	8	RasGas II	2235
Singapore Energy	138,000	Sea Breeze Leasing	Samsung	Feb-03	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1416
SK Audace	174,000	Milestone LNG Transport	Samsung	Aug-17	Panama	X-DF	TZ Mk. III Flex	4	Portfolio	2080
SK Resolute	180,000	Milestone LNG Transport	Samsung	Nov-17	Panama	X-DF	TZ Mk. III Flex	4	Ichthys	2081
SK Serenity	174,000	SK Shipping	Samsung	Feb-18	South Korea	TFDE	KC-1	4	Sabine Pass	2153
SK Spica	174,117	SK Shipping	Samsung	Mar-18	South Korea	TFDE	KC-1	–	Sabine Pass	2154
SK Splendor	138,370	Optima Leasing	Samsung	May-00	Panama	Steam	TZ Mk. III	4	Oman LNG	1258
SK Stellar	138,375	Stellar Shipholding	Samsung	Dec-00	Panama	Steam	TZ Mk. III	4	RasGas I	1259



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SK Summit	138,003	Omnia Enterprises	Daewoo	Aug-99	Panama	Steam	GT NO 96	4	RasGas I	2202
SK Sunrise	138,306	Methane Navigation S.A.	Samsung	Aug-03	Panama	Steam	TZ Mk. III	4	RasGas II	1405
SK Supreme	138,225	Celeste Maritime	Samsung	Feb-00	Panama	Steam	TZ Mk. III	4	RasGas I	1207
SM Eagle	174,000	Korea Line Corp.	Daewoo	May-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2449
SM Seahawk	174,000	Korea Line Corp.	Daewoo	Jun-17	Panama	ME-GI	GT NO 96 GW	4	Sabine Pass	2450
Sohar LNG	137,248	Energy Spring LNG Carriers	Mitsubishi	Oct-01	Malta	Steam	Moss	5	Oman LNG	2162
Sohshu Maru	177,000	Mitsui O.S.K. Lines	Kawasaki	Jul-19	Japan	DERST (aka STaGE)	Moss	4	Freeport	1735
Solaris	155,000	GasLog	Samsung	Jul-14	Bermuda	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	2042
Sonangol Benguela	160,500	Sonangol Benguela Ltd.	Daewoo	Dec-11	Bahamas	–	GT NO 96	4	Soyo	2282
Sonangol Etosha	160,500	Sonangol Etosha Ltd.	Daewoo	Sep-11	Bahamas	–	GT NO 96	4	Soyo	2281
Sonangol Sambizanga	160,500	Sonangol Sambizanga Ltd.	Daewoo	Aug-11	Bahamas	–	GT NO 96	4	Soyo	2280
Southern Cross	172,000	Mitsui O.S.K. Lines	Hudong Zhonghua	Jul-15	H.K., China	ME-GI	GT NO 96	4	PNG LNG	H1671A
Soyo	160,276	Mint LNG I	Samsung	Aug-11	Bahamas	–	TZ Mk. III	4	Soyo	1810
Spirit of Hela	177,000	Nefertiti LNG Shipping Co.	Hyundai Samho	Nov-10	Bahamas	Diesel Electric	TZ Mk. III	4	PNG LNG	S324
Stena Blue Sky	145,700	Blue Sky LNG	Daewoo	Aug-06	Panama	Steam	GT NO 96	4	Spot	2233
Stena Clear Sky	171,800	Clear Sky LNG Shipping	Daewoo	May-11	U.K.	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2278
Stena Crystal Sky	171,800	Stena Drilling Cyprus	Daewoo	May-11	U.K.	Diesel/Gas-Electric	GT NO 96	4	Portfolio	2268
Symphonic Breeze	145,394	Reborn Maritime	Kawasaki	Dec-07	Bahamas	Steam	Moss	4	Portfolio	H1587
Taitar No 1	145,000	NiMic No 1 S.A.	Mitsubishi	Oct-09	Panama	–	Moss	4	RasGas	2241
Taitar No 2	145,000	NiMic No 2 S.A.	Kawasaki	Dec-09	Panama	–	Moss	4	RasGas	1625
Taitar No 3	145,000	NiMic No 3 S.A.	Mitsubishi	Dec-09	Panama	–	Moss	4	RasGas	2242
Taitar No 4	147,000	NiMic No 4 S.A.	Kawasaki	Aug-10	Panama	–	Moss	4	RasGas	1626
Tangguh Batur	145,700	LNG North-South Shipping Co.	Daewoo	Dec-08	Singapore	Steam	GT NO 96	4	Tangguh	2242
Tangguh Foja	155,000	Ocean 1919 Shipping No. 1	Samsung	Nov-08	Panama	–	TZ Mk. III	4	Tangguh	1619
Tangguh Hiri	155,000	Tangguh Hiri Finance Ltd.	HHI	Dec-08	Isle of Man	–	TZ Mk. III	4	Tangguh	1780
Tangguh Jaya	155,000	Ocean 1919 Shipping No. 2	Samsung	Dec-08	Panama	–	TZ Mk. III	4	Tangguh	1620
Tangguh Palung	155,000	Ocean 1919 Shipping No. 3	Samsung	Mar-09	Panama	–	TZ Mk. III	4	Tangguh	1634
Tangguh Sago	155,000	Teekay Shipping (Canada) Limited	Hyundai Samho	Dec-08	Bahamas	Diesel/Gas-Electric	TZ Mk. III	4	Tangguh	S298
Tangguh Towuti	145,700	LNG East-West Shipping Co.	Daewoo	Oct-08	Singapore	Steam	GT NO 96	4	Tangguh	2241
Tembek	216,200	Overseas LNG S1 Corp.	Samsung	Nov-07	M. Islnds.	Diesel	TZ Mk. III	4	Qatargas II	1605
Tenergy	170,520	Briety Shipping Inc	HHI	Jan-22	Greece	X-DF	TZ Mk. III	4	Portfolio	3157
Tessala	170,000	Hyproc Shipping Co.	HHI	Feb-17	Algeria	Diesel/Gas-Electric	TZ Mk. III Flex	–	Arzew	2813
Trader	138,000	K Line LNG Shipping (UK) Ltd.	Samsung	Nov-02	Isle of Man	Steam	TZ Mk. III	4	Portfolio	1380
Traiano Knutsen	180,000	Hai Kuo Shipping 1901 G Ltd.	HHI	Jul-20	Belgium	ME-GI	TZ Mk. III Flex	4	Portfolio	3086
Trinity Arrow	154,982	Luster Maritime S.A. & Cypress Maritime Panama & Los Halillos Shipping Co.	Koyo Dockyard	Feb-08	Panama	Steam	TZ Mk. III	4	Portfolio	2258
Trinity Glory	154,000	Cypress Maritime Consortium	Koyo Dockyard	Nov-08	Panama	Steam	TZ Mk. III	4	Bontang	2260
Tristar Ruby	155,000	RBSSAF (19) Ltd.	HHI	Apr-08	Isle of Man	Diesel/Gas-Electric	TZ Mk. III	4	Portfolio	1778
Umm Al Amad	210,200	J5 Nakilat No. 7 Ltd.	Daewoo	Sep-08	M. Islnds.	Diesel	GT NO 96	18	RasGas III	2253
Umm Al Ashtan	137,000	Umm Al Ashtan Ltd.	STX	May-97	Liberia	Steam	Moss	4	Das Island	1333
Umm Bab	145,000	Sea Trade International Inc.	Daewoo	Nov-05	Greece	Steam	GT NO 96	4	RasGas II	2228
Umm Slal	266,000	Nakilat Umm Slal Inc.	Samsung	Nov-08	M. Islnds.	–	TZ Mk. III	5	Qatargas II	1676
Valencia Knutsen	173,400	Norspan LNG VII AS	Daewoo	Sep-10	Spain	–	GT NO 96	4	Portfolio	2274
Velikiy Novgorod	170,200	Sovcomflot	STX	Dec-13	Liberia	–	GT NO 96	4	Portfolio	1910
Vivit Americas LNG	174,000	Cardiff LNG Zeta Owning LLC	HHI	Oct-20	Malta	X-DF	TZ Mk. III Flex	4	Portfolio	3037
Vivit Arabia LNG	174,000	Kaiser 2 SA	Hyundai Samho	Jun-22	Liberia	X-DF	TZ Mk. III Flex	4	Portfolio	8026
Vivit City LNG	174,103	Kaiser SA	Hyundai Samho	Dec-21	Liberia	X-DF	TZ Mk. III Flex	4	Portfolio	8025
Vladimir Rusanov	174,000	Mitsui O.S.K. Lines	Daewoo	Jan-18	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2424
Vladimir Vize	172,000	China Shipping Development Co.	Daewoo	Sep-18	H.K., China	ME-GI	GT NO 96 GW	4	Yamal	2426
Vladimir Voronin	172,652	Teekay Corp.	Daewoo	Jul-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2431
WilForce	155,900	Wilforce LLC	Daewoo	Sep-13	Norway	–	GT NO 96	4	–	H2289
WilPride	155,900	Wilpride LLC	Daewoo	Nov-13	Norway	–	GT NO 96	4	–	H2290
Woodside Chaney	174,000	Maran Gas Maritime	Daewoo	Jul-19	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2457
Woodside Charles Allen	173,400	Hai Kuo Shipping 2027G Ltd.	Daewoo	Oct-20	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2486
Woodside Donaldson	165,500	Malt Singapore Pvt. Ltd.	Samsung	Oct-09	Singapore	Diesel/Gas-Electric	TZ Mk. III	4	Pluto	1632
Woodside Goode	159,800	Armour Company Ltd.	Daewoo	Nov-13	Greece	Diesel Electric	GT NO 96 GW	4	RasGas	H2295
Woodside Rees Withers	173,400	Maran Gas Maritime	Daewoo	Oct-19	Greece	ME-GI	GT NO 96 GW	4	–	2466
Woodside Rogers	159,800	Margie Seaway Corp.	Daewoo	Jul-13	Greece	Diesel/Gas-Electric	GT NO 96 GW	4	Pluto	H2288
Yakov Gakkel	172,658	DSME Hull No.2434 LLC	Daewoo	Nov-19	Bahamas	ME-GI	GT NO 96 GW	4	Yamal	2434
Yamal Spirit	174,000	Teekay LNG Partners	Hyundai Samho	Jan-19	Bermuda	ME-GI	TZ Mk. III Flex	–	Freeport	S857
Yari LNG	159,800	Cardiff LNG	Daewoo	Nov-14	Malta	TFDE	GT NO 96 L03	4	Spot	2401
Yenisei River	155,000	Navajo Marine	HHI	Jul-13	M. Islnds.	–	TZ Mk. III	4	Yamal	2556
Yiannis	169,932	Onerato Marine SA	Daewoo	Sep-21	Greece	ME-GI	GT NO 96 GW	4	Portfolio	2501
YK Sovereign	127,125	SK Shipping	HHI	Dec-94	Panama	Steam	Moss	4	MLNG	761
Zarga	268,000	Nakilat SHI 1752 Inc.	Samsung	Jan-10	M. Islnds.	–	TZ Mk. III	5	Qatargas IV	1752
Zekreet	137,482	Mitsui O.S.K. Lines	Mitsui E&S	Dec-98	Japan	Steam	Moss	5	Qatargas I	1432

Fleet – LNG Bunkering

Name	Built	Capacity	Registered Owner	Builder	Flag	Engine Type	Cargo System	No. of tanks	Project
Seagas	Sep-74	170	Linde Gas AB	Havyard Leirvik	Sweden	Diesel	Cylinder	1	Stockholm Viking Line
Coral Methane	Apr-09	7,551	Coral Methane Shipping BV	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinder	4	Portfolio
Oizmendi	Jul-09	600	Itsas Gas Bunker Supply SL	Astilleros Zamakona	Spain	Diesel	Cylinder	2	Huelva
Green Zeebrugge	Feb-17	5,000	LNG Link Investment AS	Hanjin Heavy Industries	Belgium	Diesel/Gas-Electric	Cylinder	2	Zeebrugge
Cardissa	Jun-17	6,500	Shell Western LNG BV	STX	Netherlands	Diesel/Gas-Electric	Cylinder	1	Portfolio
Coralius	Aug-17	5,800	Sirius Veder Gas AB	Bodewes Shipyards	Sweden	DFDE	Cylinder	4	Portfolio
Kairos	Oct-18	7,500	Uranos Vermögensverwaltung	Hyundai Mipo	Cyprus	Gas-Diesel	Type C	4	Portfolio
Bunker Breeze	Oct-18	6,050	Molucas Naviera AIE	Astilleros Zamakona	Spain	Gas-Diesel	Cylinder	4	Algeciras
LNG London	Apr-19	3,000	LNG Shipping S.A.	Severnav S.A.	Belgium	LNGPac	Cylinder	6	ARA
SM Jeju LNG 1	Sep-19	7,500	Jeju LNG 1 S.A.	Samsung	Panama	Diesel/Gas-Electric	KC-1	1	Portfolio
SM Jeju LNG 2	Jan-20	7,500	Jeju LNG 2 S.A.	Samsung	Panama	Diesel/Gas-Electric	KC-1	1	Portfolio
Gas Agility	Apr-20	18,600	Emerald Green Maritime Ltd.	Hudong Zhonghua	Malta	DFDE	TZ Mk III Flex	2	Rotterdam
Kaguya	Sep-20	3,469	Central LNG Shipping Japan	Kawasaki	Japan	Gas-Diesel	Cylinder	1	JERA TPS
Avenir Advantage	Oct-20	7,500	Avenir L Pte Ltd.	Keppel Nantong	Malta	Gas-Diesel	Type C	2	Portfolio
Avenir Accolade	Nov-20	7,500	Stolt-Nielsen Gas Ltd.	Keppel Nantong	Malta	Gas-Diesel	Type C	2	Portfolio
FueLNG Bellina	Nov-20	7,500	FueLNG Pte Ltd.	Kappel Nantong	Singapore	Diesel/Gas-Electric	Cylinder	2	Portfolio
Dalian No. 1	Dec-20	8,330	Xinao Marine Shipping Co. Ltd.	Dalian Yard	China	Gas-Diesel	Cylinder	2	Portfolio
Marine Vicky	Jan-20	9,900	Sinanju Tankers Pte. Ltd.	Keppel Nantong	Singapore	Gas-Diesel	TBC	TBC	Portfolio
Imperial Gas 92	Oct-17	3,800	Imperial Logistics International BV & Co. KG	Centromost	Germany	Diesel	Cylinder	TBC	Portfolio
Imperial Gas 93	Nov-17	3,800	Imperial Logistics International BV & Co. KG	Centromost	Germany	Diesel	Cylinder	TBC	Portfolio

Fleet – Small-scale/Multipurpose

Name	Built	Capacity	Registered Owner	Builder	Flag	Engine Type	Cargo System	No. of tanks	Project
Akebono Maru	Jun-11	3,500	Chuo Kaiun K.K.	Higaki	Japan	Diesel	Cylinders	2	Japan coastal trade
Aman Sendai	May-97	18,928	Asia LNG Transport	NKK	Malaysia	Steam	TZ Mk. III	3	Malaysia LNG
Coral Acropora	Dec-12	6,573	Coral Acropora Shipping	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinders	4	Portfolio
Coral Actinia	Jan-13	6,573	Coral Actinia Shipping	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinders	4	Portfolio
Coral Alicia	Dec-12	6,573	Coral Alicia Shipping	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinders	4	Portfolio
Coral Anthelia	May-13	6,500	Coral Anthelia Shipping	AVIC Dingheng	Netherlands	Gas-Diesel	Cylinders	4	Portfolio
Coral Energice	Feb-18	18,000	Anthony Veder Chartering	Neptun Werft	Netherlands	Gas-Diesel	TZ MK. III Flex	2	Portfolio
Coral Energy	Dec-12	15,600	Anthony Veder Rederijzaken	Meyer Werft	Netherlands	Gas-Diesel	IMO Type C	3	Portfolio
Coral Favia	Jul-10	10,000	Somargas II Pvt. Ltd.	Wuzhou Shipbuilding	Singapore	Diesel	Cylinders	2	Baltic portfolio
Coral Fraseri	Jan-10	10,000	Innovation Shipping Co.	Wuzhou Shipbuilding	Singapore	Diesel	Cylinders	2	Portfolio
Coral Fungia	Jan-11	10,000	Somargas II Pvt. Ltd.	Wuzhou Shipbuilding	Singapore	Diesel	Cylinders	2	Baltic portfolio
Coral Furcata	Nov-11	10,000	Conception Shipping Company	Wuzhou Shipbuilding	Singapore	Diesel	Cylinders	2	Portfolio
Hai Yang Shi You 301	Apr-15	30,000	COSL	Jiangnan Shipyard	China	Gas-Diesel	Membrane	4	Hainan LNG shuttle
Kakurei Maru	Nov-08	2,536	Tsurumi Sunmarine Co.	Higaki	Japan	Diesel	Cylinders	2	Japan coastal trade
Kakuyu Maru	Nov-13	2,538	Tsurumi Sunmarine Co.	Kawasaki	Japan	Diesel	Cylinders	1	Japan coastal trade
Lucia Ambition	Dec-93	18,927	Asia LNG Transport	NKK	Malaysia	Steam	TZ Mk. III	3	Malaysia-Hainan
North Pioneer	Nov-05	2,500	Japan Liquid & Gas Transport Co. & Japan Railway Agency	Shin Kurushima	Japan	Diesel	Cylinders	2	Japan coastal trade
Pioneer Knutsen	Mar-04	1,100	Knutsen Kyst LNG K/S	Bijlsma Lemmer B.V. Scheepswerf	Norway	LNG-Diesel	Cylinders	2	Norway coastal trade
Ravenna Knutsen	Feb-21	30,000	Norspan LNG 14 AS	Hyundai Mipo	Spain	X-DF	Cylinders	3	Italy coastal trade
Seoul Gas	Jul-98	4,365	Chemgas Schiffahrts GmbH & Co. mt Oste KG	Severnav Shipbuilding	Liberia	Diesel	Cylinders	2	S. Korea-China
Shinju Maru No. 1	Aug-03	2,538	JRTT & NS United Coastal Tankers	Kawasaki	Japan	Diesel	Cylinders	2	Japan coastal trade
Shinju Maru No. 2	Oct-08	2,536	Chuo Kaiun K.K.	Higaki	Japan	Diesel	Cylinders	2	Japan coastal trade
Sun Arrows	Sep-07	19,531	Maple LNG Transport Inc.	Kawasaki	Bahamas	Diesel	Moss	3	Malaysia LNG
Surya Aki	Feb-96	19,538	MCGC International Limited & Hiroshima Gas Co.	Kawasaki	Bahamas	Steam	Moss	3	Thanlyin LNG
Triputra	Dec-00	23,097	Nusantara Shipping	NKK	Indonesia	Steam	TZ Mk. III	3	Pertamina Portfolio
Unikum Spirit	Jun-11	12,000	DHJS Hull No.2007-001 LLC	AVIC Dingheng	Singapore	Diesel	Cylinders	2	Kuantan
Vision Spirit	Sep-11	12,000	I.M. Skaugen Marine Services	AVIC Dingheng	Singapore	Diesel	Cylinders	2	Portfolio

Any observations, additions or suggested revisions to the LNG journal World LNG Carrier Fleet list should be sent to editor@lngjournal.com



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