

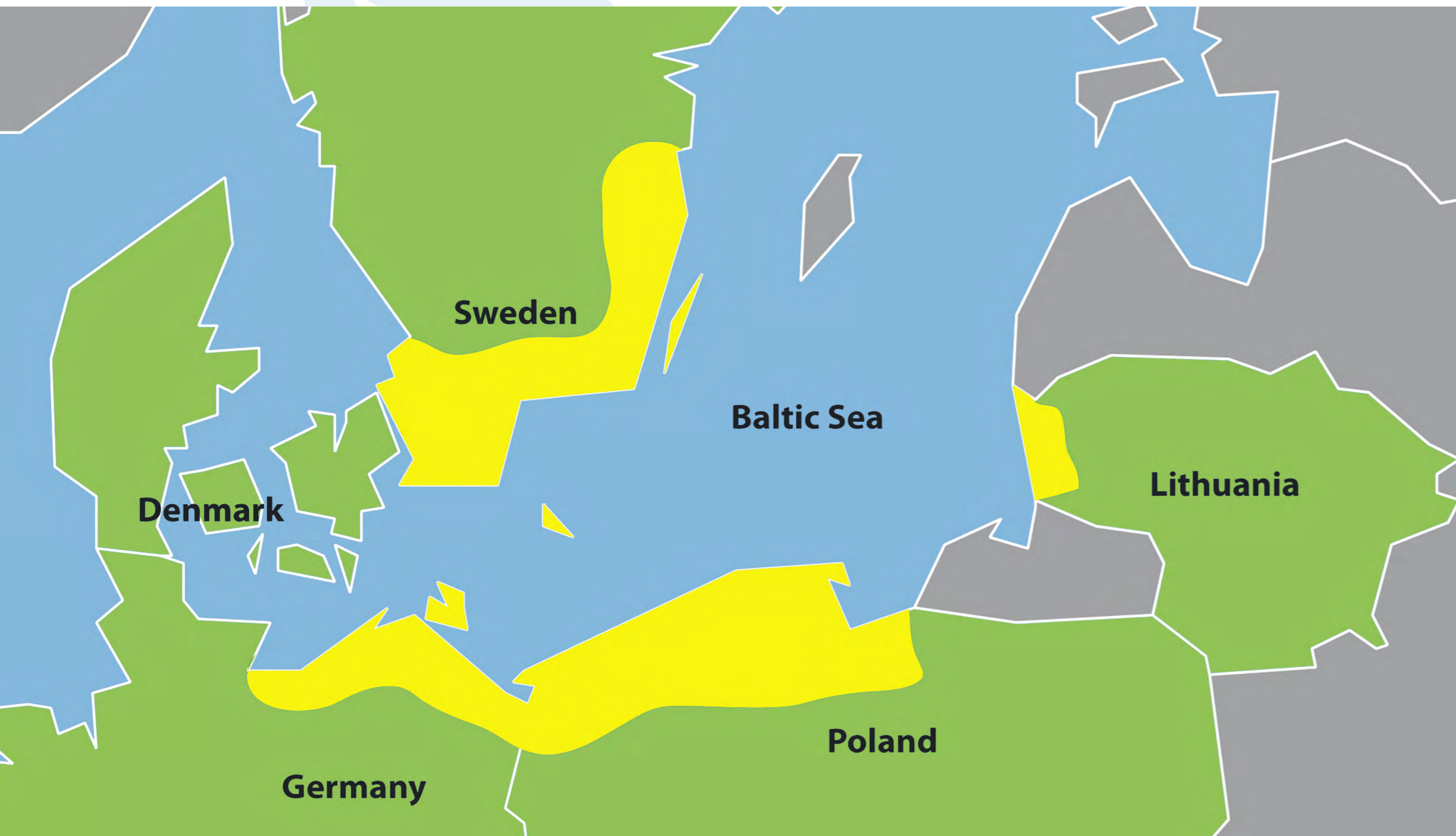


EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION



Part-financed by the European Union
(European Regional Development Fund)





The Baltic Sea – an area for environment development and innovation

The environmental situation in and around the Baltic Sea is alarming and from an environmental point of view, we need to take responsibility for a cleaner Baltic Sea. The shipping industry is taking that responsibility and is now on the hunt in the Baltic Sea to reduce ship emissions in the area. As of January 2015 new IMO regulations are coming into force, requiring a significant reduction for Sox in ship emissions. The strict regulations leave the ship owners with limited options, both sustainable technical and financial solutions. But LNG is seen as being a realistic and functional option, with companies in the South Baltic Sea Region (SBSR) looking into the field of LNG, as a solid business investment. As a result companies and key LNG-stakeholders in the SBSR are supplying the maritime industry with state of the art LNG solutions, helping them get ready and able to meet the high standards of the the new IMO regulations.

The cross boarder EU-project MT LNG aims at presenting LNG in the SBSR and the different companies working with LNG. In this brochure we present a few of the key LNG-stakeholders currently operating in the SBSR. We hereby present companies with great expertise and experience in different areas of LNG.

Via six different categories, the brochure draws a broad picture of the many competences and services provided by companies. From bunkering and shipbuilding building of LNG-powered ferries, to ports and end-user technologies as well as research and training on LNG, we tell the story of a region being ready for the business of LNG and having a clear focus on creating a better environment in the future.

Steen Sabinsky, Maritime Development Center of Europe

Although the brochure gives a very limited presentation of the region, we hereby want to bring focus to the SBSR as a LNG-land of business opportunities and propose you look to this region when in search for a LNG-business partner in the near future.

For more information on the project MT LNG and on companies in the region, visit the website:

www.golng.eu



Business opportunities in connection with LNG development in the Baltic Sea.

In the Baltic Sea Region, the current development of an LNG infrastructure will create significant direct and indirect economic benefits for the countries, local communities and companies.

It is anticipated that enterprises (SMEs in particular) of the region will be able to create significant growth in the years to come, and that the companies will be able to use the knowledge and know-how gained from their LNG endeavors as an export commodity to new upcoming markets is also looking into developing the LNG infrastructure.

Throughout the planning, design, construction and operation of two major LNG terminals in Poland and Lithuania, opportunities for suppliers and vendors to participate in the procurement process will occur.

The engagement and development of local suppliers in the Baltic Sea Region is an important aspect of the MarTech LNG project. Supplier development could involve purchasing local goods and services, transferring knowledge and skills, or increasing the suppliers' capability to help them meet the global standards and needs that are expected from contracts with LNG terminal and infrastructure development in the years to come.

The overall objective of the MarTech LNG project is to provide opportunities for SMEs by supporting the development of capable, nationally-competitive service companies that will remain in the LNG business for a long period of time.

Do you want to be a part of this LNG development, and create partnerships and business opportunities, please contact the MARTECH LNG project partners at:

<http://www.golng.eu/>

Świnoujście LNG Terminal – the Baltic doors to the global natural gas market

Polskie LNG S.A. is a special purpose vehicle founded in 2007 to build the LNG Terminal in Świnoujście - the system for receiving and regasification of liquefied natural gas (LNG) delivered by sea from almost every direction in the world.

The facility built in Świnoujście is the first infrastructure project of this kind not only in Poland but also in Central and Eastern Europe, allowing diversification of gas supply sources and improving energy security in the region. For this reason the investment has been recognized by the Government as strategic for Polish economy.

In the first period of operations, the LNG terminal will receive 5 billion cubic meters of natural gas per year. In the future, depending on the demand for this type of fuel, the regasification capacity may be increased by 7.5 billion cubic meters, which comprises approx. 50% of current annual demand for gas in Poland (at present Polish consumption of gas amounts to 14,5 billion cubic meters per year).

Besides Polskie LNG S.A., there are three more entities involved in this project, namely the Maritime Office in Szczecin, Szczecin and Świnoujście Seaports Authority and OGP GAZ-SYSTEM S.A. – PLNG S.A.'s parent company. The construction of the LNG terminal is co-financed by the EU Infrastructure and Environment Operational Programme and the EU Energy Programme for Recovery.

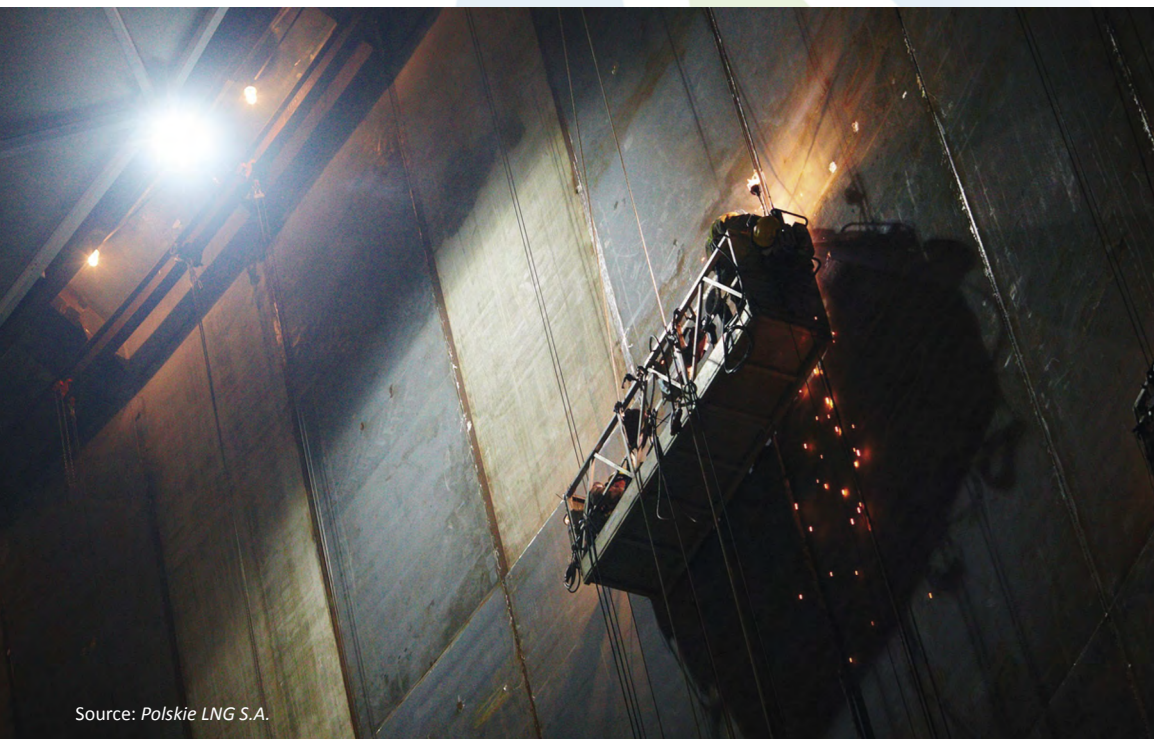
In order to meet the expectations of the prospective clients, Polskie LNG launched a Market Screening procedure to determine the potential future preferences of trading partners regarding the possible technical expansion of the Terminal and the provision of additional services. These services would primarily include LNG truck and rail cistern loading, bunkering services and reloading to smaller vessels, including LNG storage in the terminal in the period from 2015 to 2029.

The results of the Market Screening conducted in late 2012 and early 2013 indicate a significant demand for increased regasification capacity, as well as other services that may be provided by Świnoujście LNG Terminal. The findings will complete the on-going analyses, and support further development of Terminal's functionality.

'These results are very promising for the LNG Terminal. The market is sending us a clear message that we should continue the works which will further allow us to make a decision about LNG Terminal's expansion. The demand for LNG-related services turned out to be so high that it may outstrip Terminal's capacity, even after the said expansion. Moreover, the market is not only interested in increased regasification capacity, but it also seeks additional services, mainly truck and rail cistern loading, and reloading to smaller vessels. These findings demonstrate how rapidly the LNG trading market and related opportunities are changing', said Rafał Wardziński, President of Polskie LNG S.A.



Świnoujście LNG Terminal will start the operations in 2014.



Source: Polskie LNG S.A.



The biggest 1A1 LNG powered ferry born in Klaipėda

The newest project coming from the Joint Venture Company of Lithuania and Norway, is the delivery of a LNG-bunkering vessel for Swedish company, Viking Line. The vessel will be maintaining the LNG fuelled ferry Viking Grace – the biggest LNG powered ship at the moment. As the company was one of the first to offer the LNG powered bunker ships to the market, one of the main goals of the company is to become the leading company, able to create modern LNG powered ships intended for bunkering.

Over the past years, Fiskerstrand BLRT AS has developed a flexible, effective and complimentary collaboration model, exploiting the full advantage of the yards collective resources by coordinating their activities. The new yard, Western Baltija Shipbuilding, extends the group's capacity and opens new opportunities in the field of specialized, modern shipbuilding. After a close collaboration for a number of years, Multi Maritime AS was incorporated in the group in 2010. This purchase secures unique competence in engineering and design for the group.

Fiskerstrand BLRT AS which has successfully claimed its place in the market of South Baltic region together with partners built another LNG powered vessel in 2011. Ferry "Boknafjord" built for Norwegian company "Fjord1" currently sails in Norwegian Bokna fjords, and became the world's biggest LNG powered ferry at the time. The ferry's length is 129, 90 metres, width - 19,2 metres, and it can contain 600 passengers and 242 cars.

"LNG bunkering is becoming a hot topic in numerous harbours around the globe. Aga Gas in Sweden has apprehended this reality. Early spring this year the company approached Fiskerstrand Verft AS to convert the former car ferry into a LNG bunkering vessel. In fact, it is the first operating LNG bunker ship. The Fiskerstrand Verft AS and the Fiskerstrand BLRT owned Multi Maritime has become pioneers in a new market niche of the shipping industry", - says Jevgenij Petrov, Fiskerstrand BLRT AS Sales Director of Renewable Energy, Offshore Oil & Gas.



At the moment, company Fiskerstrand BLRT AS specialises not only in the sector of LNG ship building. The Joint Venture Company of Lithuania and Norway builds conventional ferries. The company also specialises in the offshore wind energy industry. Together with partners that create design it develops conceptions of ships that maintain wind power-plants in the sea. The company builds specialised ships, and soon fish feeder vessels will begin to be built. The main clients are Norewgians, but, lately, the geographic scope of activity has been expanding – at the moment, Fiskerstrand BLRT AS is building four ship hulls in Turkey.

According to ship builders, as the green shipping becomes more popular, gas powered bunker ships are more perspective. For this reason, this new project opens the doors to wide possibilities for Fiskerstrand BLRT AS to become the leading shipbuilding and design company of such profile, able to implement projects from concept creation, design solutions to building the ship itself. This is one of the main advantages of the company, which allows clients to save both time and money, and implement the whole project at one place.



Source: Fiskerstrand BLRT AS.

AGA Nynäshamn LNG Terminal is the first step towards LNG fuel in the Baltic Sea

AGA's facility for liquefied natural gas (LNG) is located outside Nynäshamn, Sweden. The first of its kind in the Baltic Sea region, the terminal is AGA's largest venture ever.

AGA AB, previously AB Gasaccumulator and AB Svenska Gasaccumulator, was a Swedish industrial gas company founded in 1904. Nobel Prize laureate Gustaf Dalén was instrumental in the success of the company. Important inventions included the AGA cooker and the Dalén light. In the 1990s AGA conceived and developed HiQ for specialty gases. In 2000, AGA was integrated into Linde AG.

"The opening of the LNG terminal is a very important step for AGA and for the entire Linde Group," says Jan Bäckvall CEO of AGA AB. "It marks the turning point from being an industrial gases company to also being an energy gas company." The terminal facility includes the storage tank, the reliquefaction and gasification plant and the harbour.

The first LNG delivery arrived in mid-March 2012 from Risavika, Norway on a specially-constructed vessel. Deliveries every 3-5 weeks are continued to this day. This is the first time that natural gas has been delivered to Sweden in this way. The large terminal tank is 35 metres high, 20,000 m³ in volume, and has been in operation for 2 years.

As a result of the engineering and execution of the LNG terminal project, the Swedish company offers various shipowner bunker solutions, such as LNG truck, local storage facility, dedicated bunker barge and directly from the LNG terminal.

The demand for environmentally friendly fuel continues to increase and LNG is one of them. LNG mixed with air has been used since the beginning of the year in Stockholm city gas network which is expected to result in a reduction of carbon emissions by 50,000 tonnes per year. Nynas Raffinaderi has replaced the naphtha with natural gas in the production. This will also provide a reduction in carbon emissions by 20,000 tonnes per year.

CEO of AGA AB, Jan Bäckvall goes on to say that: "AGA's investment in LNG is the largest investment in gas power in Sweden in a quarter of a century. We are confident that our terminal in Nynäshamn will make a big difference for Swedish industry and the environment."



Source: AGA Nynäshamn LNG.





Source: Fjord Line.



Fjord Line launches the world's first and largest cruise ferry powered solely by LNG

Based on a decision to go all in on LNG, the Danish ship owners company, Fjord Line is setting new standards and developing new technologies in the field of cruise ferry sailing. Fjord Line's two new ferries powered by LNG measure 170 meters equaling a total of 557,77 feet. The ferries will be sailing a route between the cities of Hirtshals in Denmark and Stavanger/Bergen in Norway and Hirtshals & Langesund also in Norway with the first ferry, MS Stavangerfjord, setting out on its maiden voyage on the 29th of May 2013. The second ship, MS Bergensfjord, is planned for autumn 2013.

With the designing and building of two new cruise ferries of this size, sailing between Denmark and Norway, Fjord Line describes it as starting a new era in the history of the company. Focusing firstly on meeting the upcoming and strict new IMO standards for allowed ship emissions in North Europe, the company also wishes to send a clear signal showing how the company acknowledges the importance of creating a more environmentally friendly shipping in the future.

MS Stavangerfjords maiden voyage in the end of May 2013 proves the culmination of years of research and development to ensure, not only a better environment, but also the best possible product for the customer.

Ships that coincide with principles of ecological shipping are built in the port; some of the ships have already gone down the history of LNG shipping.

"It has been both a long and challenging process designing and building an LNG-powered ferry of this size but we are happy and proud to be in front, while at the same time creating a new and better future for the environment of shipping. Also we are touching on new ground when it comes to the business of cruise ferries sailing and this part will be mostly exiting working with in the future" says technical director at Fjord Line, Morten Larsen.

Powering solely on LNG, Fjord Line hereby provides the greenest seaway between Norway and the rest of Europe for the passengers travelling the route. Rolls Royce Single LNG Engines provide both efficient fueling and also quality of comfort for the 1500 passengers and 600 cars sailing on the route between Denmark and Norway. Along with the many passengers sailing on the MS Stavangerfjord and the MS Bergensfjord, about 400 workers will ensure that the cruise experience meets the expectations of the customers.

"In a time of financial crisis and unemployment, Fjord Line's investment in the two new LNG powered ferries secures 400 new jobs located on board and ashore. We are proud of making such a big contribution to the local community in a time of crisis. Along with many other European countries, Denmark is aiming at creating new jobs and the 7000 applications received by Fjord Line's proves that jobs are heavily needed in the region. Together with the whole crew, we therefor look forward on welcoming you on board the new ferries in spring and autumn of 2013" says technical director, Morten Larsen.



Becker Marine Systems

Becker Marine Systems acts as a global provider of high-performance rudders and manoeuvring solutions for all types of ships. With its cutting-edge technologies for the maritime industry the company has earned and enjoys outstanding reputation among the manufacturers and operators of luxury yachts, super tankers, mega container ships, passenger ferries and large cruise vessels.

Today, with its head office located in Hamburg, North Germany, Becker Marine Systems runs offices located worldwide – China, Singapore, Korea and Norway.

Development of new technological solutions has induced the company to start the project “LNG HYBRID Barge”. This project initiated in 2012 has been developed in close cooperation with AIDA Cruises as one of the leading cruise companies in the field of environmental technology. The project has been supported by other partners representing maritime or energy / gas supplying industry as well as consulting and regulative institutions from Germany. As a result of the implementation of this project, Becker Marine Systems has introduced the LNG Hybrid Barge as an environmentally friendly and low emission solution for supplying power to cruise ships laying in ports. When lying in ports ships usually generate the energy needed for on-board operations by using ship’s diesel engines, thus increasing environment pollution due to conventional ship fuels. With this innovative technological solution of Becker Marine Systems, the energy for ships in ports is produced using LNG fuel and by means of 5 gas generators sets producing combined heat power. In this case, LNG is supplied in a modular form. Consequently, the energy produced is fed into the ships connected with the shore connections. Of paramount importance is this technological solution, since it brings several outstanding advantages with it. On the one hand, this concept significantly reduces emissions from the ship operations in ports, thus reducing negative environmental impact in the North and Baltic Sea ports. On the other hand, the barge system developed enables its year-round utilisation. Energy produced in the cruise-off season, where no cruise ships are laying in ports, can be fed into the municipal grid system, thus provided approx. 14.000 households with electric energy.

The LNG Hybrid Barge developed by Becker Marine Systems will be operated the Schramm Group and is planned to be launched in spring 2014. Ships of the AIDA cruises will take advantage of this novel technological solution due to supplying them with the environmentally friendly produced energy by the LNG HYBRID barge in the Port of Hamburg.

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Website of the Project: <http://www.lng-hybrid.com>



Company data:

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Website: <http://www.becker-marine-systems.com>



Source: Becker Marine Systems, 2013.



becker marine systems

LNG simulations secure both a safer and better LNG-business



Source: FORCE Technology.



“State-of-the-art simulator systems, a highly qualified staff and 70 years of experience within innovative development and use of knowledge, make the ground basis for FORCE Technology being a highly recognized co-operation partner in projects involving LNG” says Cathrine Steenberg, Head of Department, Simulation, Training & Ports at FORCE Technology. The Danish company is working together with some of the world’s leading stakeholders in the area of maritime LNG, making sure that both the safety and business of LNG is on track.



Simulating, approaching and entering a LNG terminal in Ras Laffan for Qatargas, the first offshore Gravity Based Structure LNG terminal in the Adriatic Sea and training ship handling of large LNG carriers operated by SHELL is mentioning only a number of the maritime based LNG training-services provided by FORCE Technology. As the company is not only involved with the training and simulating of LNG ports and carriers, but is in fact developing the simulator system itself, we provide more flexibility in the training and, in the end, a better service and quality product for the customer.

With safety being the main topic when it comes to LNG, Catherine Steenberg points out, that a training session at FORCE Technology can also be seen as “good for the business”. “Many of our clients are in the process of investing in LNG. As in any other business they find themselves calculating with quite a few unknown factors having an effect on their business case. Via our simulations they are able to figure out for example under which weather conditions it is safe to arrive in or depart from a port, how long time it takes to berth a carrier, the maximum size of carriers able to enter the terminal area, type, size and number of tugs required for safe operation and so on and so forth. This way the client saves both time and money in the process of planning and executing large scale LNG investments in a LNG carrier, a cruise ship, a port or terminal. Making sure that the client has as solid a business case as possible is one of the core subjects when working together with our clients.”

When it comes to the many safety regulations surrounding LNG, FORCE Technology’s high requirements for their instructors having both a solid educational and practical background, secures “a real life”-experience in the training session. “We are very aware of the fact that at FORCE Technology we also are working with people – people that can react in many different ways when being placed in a given situation. Together with the simulator instructors’ competences, the pedagogical approach is the most important non-technical factor in achieving a high degree of training transfer. At FORCE Technology we see that the degree of training transfer is proportional with the quality of the training including the quality of the instructors, the pedagogical tools and the quality of the simulator facilities. Our strength as a well-established training facility in the field of LNG and other maritime industries, is based on the fact that we are able, not only to deliver a good technical simulator but the whole package whether or not it is sailing on LNG or figuring out the best way to make a solid investment in a LNG carrier or terminal” says Cathrine Steenberg.



Source: SC Klaipėdos nafta.

MarTech LNG

MarTech LNG - Marine Competence, Technology and Knowledge Transfer for LNG (Liquid Natural Gas) in the South Baltic Sea Region.

The project aims at transferring tested and proven LNG knowledge and technology to implement into the South Baltic countries that are currently building LNG terminals.

The problematic nature of the project initiative is based on a current situation indicating that declared investments in Poland and Lithuania will not be a big benefit for the regional maritime industries because of the lack of technologies and relevant competences in respects of terminal construction and operation. This will instead be outsourced out of the countries of the SBR.

Supplying the local maritime industries with the LNG building and operation knowledge will allow them to benefit from the investments and support the development of new products and services that are demanded in the global market thus strengthening the Baltic maritime Sector.

Furthermore, the creation of a Baltic supply chain will establish cooperation between regional maritime industries and scientific institutions locally, nationally and internationally, and support the creation of cluster development, able to respond to international tenders in the future.

LNG appearance itself creates new business possibilities in transportation, port operations and energy sectors but it needs to be supported by scientific and technological knowledge to ensure a benefit for the local companies.

Project duration: January 2012 – December 2014 Project budget: 1,360,447.67 EUR Project partners:

- PP1: Lead partner: Klaipėda Science and Technology Park (LT)
- PP2: Klaipėda State Seaport Authority (LT)
- PP3: Klaipėda Shipping Research Centre (LT)
- PP4: Wismar University of Applied Sciences (DE)
- PP5: ATI erc gGmbH (DE)
- PP6: Maritime University of Szczecin (PL)
- PP7: Blekinge Institute of Technology (SE)
- PP8: Maritime Development Center of Europe (DK)

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Source: Fjord Line company.

MarTech LNG