



Editorial



2014: A Momentous Year for Klaipėda Region and the Energy Sector of Lithuania

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The year 2014 can be reasonably called the year of Klaipėda with two major Lithuanian energy projects – the liquefied natural gas (LNG) terminal and electricity interconnection with Sweden – being carried out over here. The first project is practically finished and put into operation, and the second project is midway through completion and will soon reach the finishing line. These two projects are important to Lithuania from several aspects. The first aspect is geopolitical as these projects strengthen the nation's political sovereignty. The second aspect is about ensuring almost complete energy independence from our capricious eastern neighbour and the third is about gaining free access to the world gas and European electricity markets, which will allow the reduction of energy prices and will have large economic benefit for our country. Not less important is the fourth – environmental aspect. When both projects are finished, it will be possible to significantly reduce greenhouse gas emissions and stop the use of highly polluting energy production technology.

The construction of the LNG terminal is practically completed. In the port of Klaipėda, in the water area near the Island of Kiaulės Nugara, a special pier, which is connected to the region's gas pipeline network, was built. A floating gas storage and regasification vessel *Independence* has moored at the terminal and supplied Klaipėda and the region the first tens of millions cubic metres of natural gas. Having the capacity of 170,000 m³, the vessel can receive 70,000 tonnes of LNG, which after regasification can make up almost 100 million m³ gas in a usual form with the density of 0.72 kg/m³. The projected capacity of the terminal, which will be achieved after the gas pipeline network development has been finished, will make up to 3–4 bn. m³ gas per year and will be able to almost fully satisfy our country's needs and, if necessary, supply gas to Latvia and Estonia.

The LNG project is closely related to the development of the gas pipeline network in western Lithuania. In 2013, the construction of 138 km in length and 400 mm in diameter gas pipeline Klaipėda–Jurbarkas with branches to Tauragė and a connection to Klaipėda LNG terminal was finished.

Currently, another important gas pipeline network development project has already been designed and has started to be developed: 110 km in length and 800 mm in diameter the main gas pipeline Klaipėda–Kuršėnai, which is being laid alongside a low capacity older branch that was built 45 years ago.

The environmental importance of the LNG terminal in Klaipėda will significantly increase as of 1 January 2015 because of a new restriction coming into force in the Baltic Sea Region concerning permissible sulphur content in marine fuel. When the content of sulphur allowed is reduced from 1% to 0.1% ship owners will have three choices: to use low sulphur fuel, install exhaust deSO_x systems (scrubbers) or switch engines to use liquefied natural gas. The first choice practically does not require any investment, but because of 30–40% more expensive low sulphur fuel, there will be a significant increase in ship's operational cost. Scrubber systems do pay off in the long term, although these systems do require significant investments. The third choice – to use liquefied gas – also requires significant investments, but because of considerably lower cost of LNG, it pays off in relatively short periods of time.

A ship capable of operating with LNG fuel additionally acquires another perspective and important advantage. On 1 January 2016, Tier III NO_x emission restriction for newly built ships will be introduced in the Baltic Sea Region. To meet it, for the first two cases the installation of SCR type reactor for gas cleaning from

nitrogen oxides is required. This measure requires significant investments and also increases ships' operational costs (continual consumption of additional operational materials: carbamide or ammonia). When engines are operating on natural gas, NO_x emission restriction is satisfied more easily. Furthermore, LNG combustion products do not contain any sulphur oxides, and greenhouse gas (CO₂) emission, compared to fuel oil, is reduced by 20–25%.

Apart from advantages of LNG, such as ship fuel perspectives, one of the factors which could prevent the installation in the Baltic Sea Region is LNG bunkering. Not a single South or East Baltic port provides such services now. Only in 2015 such a service will be available in Poland's Gdynia and *Świnoujście* ports. Another could be the port of Klaipėda, in which ships using LNG could be serviced by small bunkering tankers receiving gas from the LNG terminal in Klaipėda.

Another significant energy project associated with Klaipėda is the establishment of electrical connection between Lithuania and Sweden. With a capacity of 700 MW and voltage of 300 kV construction works of underground cable of more than 400 km underwater and 13 km in length (on Lithuania's side) are half way through completion and in 2015 should be finished. In December 2014, the first 2 (out of 4 planned) transformers of 200 tonnes in weight were unloaded for the construction of Klaipėda's substation. The implementation of this project will ensure not only stable and reliable supply of electrical energy for Lithuania, but will also serve to reduce the greenhouse gas and other harmful substances emissions from the local electricity producing companies, which still use highly polluting fuel.

When speaking about the production of clean energy, the advantages of Klaipėda and the entire western Lithuania region should be noted. In this region, there is the largest wind and geothermal energy potential and the most suitable shale gas reserves for extraction. Currently, Klaipėda has the only geothermal power plant in our country; there is also intensive development of wind power plants, powerful offshore wind farms are being designed.

From the nation's scientific development view, the development of the project of scientific research vessel of Klaipėda University is highly significant. The vessel cost more than LTL 33 million and was built in *Western Baltija Shipbuilding* in Klaipėda and, in November, in the presence of President of the Republic of Lithuania Dalia Grybauskaitė, was officially christened with the symbolic name *Mintis (Mind)*.

The vessel has installed the highest technical level scientific equipment on board, which will allow 12 scientists to work at once. The main specialisations of the four vessel's laboratories are oceanography, oceanology, marine biology and marine ecology research. *Mintis* is the first and the only such level marine research vessel in the eastern region of the Baltic Sea. This vessel will allow the community of Klaipėda University to further establish themselves in the international marine research sphere and to strengthen the direction of this science at the University.

The vessel was built in the project frame of Klaipėda University *Marine Valley*; *Mintis* will also be able to provide scientific services to marine businesses. Other Lithuania's and foreign scientists will be able to use its scientific equipment and laboratories while having open access status.