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Orlen Lietuva: new refinery installations crucial to improve efficiency

Mažeikiai refinery in Lithuania, owned by ORLEN Lietuva (a PKN ORLEN S.A. subsidiary), is the only plant of its kind operating in the Baltic States. Oil products are exported both to neighbouring countries and to international markets through oil terminals at the Baltic Sea. Due to the tough market conditions, logistical problems, and the Lithuanian climate policy, the plant needs modernization to enable it to generate more revenue. Without this, the refinery will be in an extremely difficult situation.

A good location, but complicated logistics and market conditions. Mažeikiai refinery (204,000 barrels per day) is one of the largest plants of its type among Central European countries. A positive factor is that the refinery is located close to the Baltic Sea, where crude oil is delivered via oil buoy (not terminal) in Butinge. In the past, crude oil was transported to the plant mainly by land via the Druzhba pipeline (northern line). In 2006, a takeover of the refinery by PKN ORLEN S.A. led to the suspension of supplies via this channel[1]. In these conditions, the supply logistics for crude oil are much more difficult.

The operation of the Mažeikiai refinery is impacted by many factors, four of which should be considered extremely important. Firstly – the plant is not one of the most modern refineries. The depth of crude oil processing is low, and a large proportion of the products produced is heavy fuel oil (High Sulphur Fuel Oil – HSFO), which is a low-margin product (sold below the cost of purchasing crude oil). As a result, in accordance with international standards, the Nelson complexity index (a measure of the complexity of the processing process) of this refinery is 7.4 points (the higher the index, the more technologically advanced the refinery is). For comparison, one of the most modern refineries in Central Europe, in Gdansk, belonging to Grupa LOTOS S.A., has a Nelson complexity index of 11.1 points. Secondly – the new regulations of the International Maritime Organization (IMO) which have been in force since 2020, introduced restrictions on the level of sulphur in marine fuels (from 3.5% to 0.5%). In these conditions, the refinery in Mažeikiai, which was a large producer of this fuel type (mainly HSFO with 3.5% sulphur), had to look for other markets for its products. In the past, the product was exported to Saudi Arabia (used to generate electricity) under a long-term contract with Saudi Aramco. Thirdly – in the Baltic states, a slight decrease in fuel demand has been recorded for years (mainly due to increasing the efficiency of internal combustion engines, changing the car fleet, increasing sales of cars with electric engines, etc.), which forces refineries to target their products at other Central European countries or by sea to international markets. In addition, the decline in oil product sales has been influenced by the recent COVID-19 pandemic and transport restrictions. Due to unfavourable conditions, in the first half of 2021, crude oil processing at the plant was 15% lower than in 2020. The situation for refineries is, therefore, extremely difficult. Fourth – there are logistical difficulties related to oil product exports. Over the years, the company's financial condition was influenced by the export of fuels by rail. In 2008, Lithuanian Railways (Lietuvos geležinkeliai) dismantled the 19-kilometer section of the line from the Mažeikiai refinery to Renge in Latvia (the company received a fine of EUR 28 million) and applied unequal transport charges (more favourable transport charges were given to Belarus refineries). Only since the compromise between Orlen Lietuva and Lithuanian railways on transport charges, concluded in 2018, has the company's situation improved. At that time, the company received discounts on the carriage of goods via Lithuanian railways, preferential tax allowances for electricity, and consent to participate in reserve electricity auctions in Lithuania. The acquisition of the railway terminal in Mockava on the Lithuanian-Polish border by Orlen Lietuva in June 2021 also served to improve logistics issues.

[1] The Russian company Transneft (an operator of oil pipelines in Russia) stopped providing crude to Mažeikiai citing damage in the section of the Druzhba pipeline.

The terminal will be used to transport oil products produced in the refinery for the Polish and Ukrainian markets.

Without new investments, no room for improvements. In the face of a difficult situation, PKN ORLEN S.A. decided to start the modernization process of the Mažeikiai refinery. In these circumstances, the lack of investment would have had a negative impact on the market position of the plant and prevented it from competing with other refineries in Central Europe. Importantly, the new installations are to ultimately increase the share of high-margin products in the production structure from the current, lowest level (from 72% to 84%) among all refineries of PKN ORLEN S.A. in Poland, Czechia, and Lithuania. The process of building new installations is expected to be completed by the end of 2024. So far, the company has not made a public statement regarding what technology it will use, or which company will provide a license, although the investment is expected to cost a total of EUR 641 million. Essentially, the political and financial support provided by the Lithuanian government will be crucial in this process (the financial support of the Lithuanian government is to amount to approx. 8.5%). The company has been seeking support from investment for a long time. Already in July 2021, the Lithuanian Minister of Energy, Dainius Kreivys, supported the project to modernize the Mažeikiai plant, and the parties agreed to cooperate also in coordinating the necessary legislative, technical, and logistic changes (no details were given on what exactly this support would consist of).

Orlen Lietuva's investment in new refining installations is part of a broader plan related to the development of innovation, competitiveness, and the stability of the company in the Lithuanian market. The ORLEN2030 strategy assumes the transformation of the business model and expansion of the areas of activity. This applies to both the use of advanced technologies and the implementation of a sustainable energy policy, especially through wind energy. Orlen Lietuva is to continue to foster the development of the Lithuanian economy and be more socially responsible. The modernization of the plant, as well as the related reconstruction of bridges and roads, are to be entrusted to Lithuanian companies.

Conclusions. Mažeikiai refinery is in a difficult market position, and logistical issues continue to play a key role. The improvement of export conditions was possible by resolving the dispute with the Lithuanian railways, including the reconstruction of the railway line to Renge as well as the recent takeover of the railway terminal in Mockava (ensuring oil product exports both by sea and land). Therefore, the refinery is currently facing mainly technological challenges.

The low share of high-margin products in the production structure, and thus higher share of low-margin products (mainly HSFO) in extremely complicated market conditions, means that only the modernization of the plant will ensure its continued operation and reduce sensitivity to changes taking place in the market. PKN ORLEN S.A.'s decision to invest in the Mažeikiai refinery proves its willingness to keep the plant in the company's assets and the long-term strategy of operating in this market (investments will not be completed until the end of 2024). The investment will serve not only the business goals of PKN ORLEN S.A. but also Polish-Lithuanian energy cooperation. The Lithuanian government is counting on the further operation of the plant; therefore, it will financially support the new investment project.

Refinery modernization is also necessary due to the need for reducing CO_2 emissions. The elimination of marine fuels with a high sulphur content (mainly HSFO) from the market put the plant in a difficult business position. In these conditions, both the investment in modern installations and the reduction of the sale of high-emission fuels are an indispensable element of PKN ORLEN S.A.'s goal to achieve carbon neutrality in 2050.