



ZE PAK SA CAPITAL GROUP

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At present, ZE PAK SA's activities are mainly focused on the segment of conventional electricity generation through the combustion of lignite, but the Company is aware of the challenges that await the power industry in the near future. Changing legal and environmental conditions, rising CO2 emission allowance prices, tightening emission standards for other substances, are all requirements that conventional generators must meet, and this process is inevitable for ZE PAK as well.

The ZE PAK SA Capital Group is pleased and satisfied to see the initiative of its dominant shareholder Zygmunt Solorz in establishing the association "Czysta Polska Programme", which assumes evolutionary changes to existing business models.

The company has already significantly reduced its share of coal in PAK's energy mix. In 2019, CO2 emissions fell by more than 30% compared to the previous year. One reason for this was the cessation of operations by the Adamów power plant, but even in absolute terms, i.e. per unit of electricity generation, the Group's CO2 emissivity fell by nearly 8%.

As declared on 30 June 2020, two coal-fired units at the Pątnów power station, each with a capacity of 200 MW, were decommissioned. Units 3 and 6 were commissioned in 1968/69 and operated a total of 631,117.1 hours. The capacity of the Konin power station was also reduced by 93 MW as a result of the decommissioning of the coal-fired units.

The decommissioning of coal units at ZE PAK SA is not the first time this has happened. Over the last 30 months, a total of 1293 MW of coal-fired capacity has been decommissioned at ZE PAK SA, comprising 600 MW at the Adamów power plant, a total of 600 MW at the Pątnów power plant and 93 MW at the Konin power plant. The reduction in generation potential has translated over recent years into a reduction in both lignite energy production and emissions of CO2, SO2, Nox and dust.

The 493 MW of coal-fired capacity decommissioned on 30 June 2020 was responsible for 1,442,000 tonnes of emissions, CO2 in 2019, which means that ZE PAK SA Group's emissions should fall by this amount in the following years. Reducing both the carbon footprint and emissions of other substances is in line with the declarations made as the Company's response to the initiative of ZE PAK SA's main shareholder Mr Zygmunt Solorz called the 'Czysta Polska Programme'.

The Konin power plant, which has operated a 50 MW biomass unit since 2012, will soon be expanded with another biomass unit of similar capacity. Thus, the Konin power plant will become the first coal-fired power plant converted to biomass in the country. It should be mentioned that the city of Konin is already assured of a 100% renewable heat supply from the aforementioned biomass unit.

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In the past year, the Group also reported on a photovoltaic project to be located on land previously used for mining activities. A number of other ideas have been developed in the fields of renewable energy generation, energy storage or, for example, the production and use of hydrogen.

Some of these projects are already submitted to a special programme within the framework of EU support for regions heavily dependent on coal exploitation (the so-called 'Coal Platform'). The company has also joined the "Agreement for equitable energy transformation of Eastern Wielkopolska", whose signatories, i.e.: representatives of local authorities, non-governmental organisations and entrepreneurs, have expressed their willingness to cooperate in order to maximise the use of common potential in the process of transforming the region.

The implementation of these investments is fraught with risk, and the investment horizon in this type of project is strongly stretched over time. The shareholders of ZE PAK SA must therefore be prepared for a period when the Company faces challenges related to the coal segment on the one hand, and a period of capital-intensive, drawn-out investments on the other. Their effectiveness will largely depend on the shape of future regulatory conditions and the adaptation of new technological solutions.

Hydrogen production at ZE PAK Spółka Akcyjna is a new fuel source for passenger vehicles and buses.

9 April 2020. ZE PAK Spółka Akcyjna (ZE PAK S.A.) has signed a contract with Hydrogenics Europe N. V. concerning the purchase of a HyLYZER 1000-30 electrolyser for hydrogen production together with the necessary instrumentation, i.e. a 350 bar compressor station (2x750 m³) and a mobile storage filling station, as well as commissioning and maintenance services. The hydrogen will be produced through energy produced from biomass (RES) from water.

Hydrogenics Europe N. V. of Belgium is a world leader in the design and manufacture of solutions for industrial and commercial hydrogen production. Hydrogen will be produced by water electrolysis using PEM (proton exchange membrane) technology. The ongoing project will use PEM (Proton Exchange Membrane) technology, which means that the hydrogen produced will be created without harmful by-products.

The production of hydrogen using this technology is based on the fact that pure demineralised water is decomposed into hydrogen and oxygen by means of an electric current, which takes place on the surface of special membranes that enable the catalytic process of water decomposition. The hydrogen produced in the PEM with a pressure of approx. 30 bar is compressed to a pressure of approx. 350 bar (in the compression

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station) and pumped into mobile storage (via a filling station).

The mobile storages will make it possible to supply hydrogen to passenger vehicle and bus refuelling stations located in many parts of the country. The electrolysis process will use electricity generated from Konin Power Plant's biomass-fuelled generation units - RES units, including from a new biomass unit resulting from the conversion of a coal-fired boiler to a biomass-fuelled boiler.

In the first stage of the hydrogen plant, the electricity demand will be 2.5 MW, and after equipping the module with a second electrolyser, 5 MW, which will allow the production of 2 tonnes of hydrogen per day. One electrolyser will allow the operation of approximately 50 buses per day, each travelling approximately 250 km per day.

With the contract signed, ZE PAK SA will join the ranks of pioneers in hydrogen production by electrolysis, which already include Austrian, German, Japanese or Australian plants.

The above-described example of the activities of the ZE PAK SA Capital Group shows the model transformation of a company that originally operated on the basis of fossil fuels and, thanks to the strategy adopted, transformed to a model incorporating the use of renewable energy sources and climate-neutral fuels.

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