

## RENEWABLES: USE OF HYDROGEN ENERGY

**Mykola Hrebenyuk, student**

*Igor Sikorsky Kyiv Polytechnic Institute, Department of Renewable Energy Sources*

**Introduction.** Hydrogen will play a main role in achieving an affordable, clean and prosperous economy. Hydrogen allows for cost-efficient bulk transport and storage of r.b. energy and can decarbonise energy that uses through all the sectors. So, nowadays it is necessary of countries know how to deal with hydrogen.

**Objective.** To show how the process of using hydrogen energy and decarbonise sectors is running.

**Methods and results.** Europe and the nearby regions have good renewable resources and the industrial power to realise a green hydrogen system in a very quick way. Europe also demands considerable amounts of hydrogen to decarbonise main sectors [3].

The main use of hydrogen is a fuel in the transport sector or providing power using fuel cells. For instance, there are 95 hydrogen stations in Europe where fuel cells can be refueled in a few minutes for a diapason of 400–700 kilometers. Alternative option to use hydrogen as a fuel is to combine it with gas in the present gas main. German company “Avacon” is adding up to 20% hydrogen to natural gas. As a result, CO<sub>2</sub> emissions will be reduced because less hydrocarbon fuel will be burned [1].

“Power to Gas” is a name of multinational projects in which “Green H<sub>2</sub>” is creating. This H<sub>2</sub>, is formed with oxygen during the electrolysis of ordinary water. This process is technically quite simple, but very energy intensive. It is necessary to use for it the surplus generated energy from renewable sources, it turns out harmless to the climate and produced without CO<sub>2</sub> emissions.

The spread of “Power to Gas” technology in Europe underlies Europe's growing interest in hydrogen. Thus, at the end of June 2019, the British-Dutch concern “Shell” began the construction in Germany and the world's largest electrolysis plant on the territory of its refinery in Wesseling near Cologne. This project is implemented with the financial support of the European Union, which provided 10 million Euros.

Meanwhile, in the third largest British city, the energy company “Northern Gas Networks” is preparing a pilot project under the name “H<sub>2</sub>1”. The goal is to completely switch heating in the city from natural gas to H<sub>2</sub>. Offshore wind farms for its production by electrolysis already exist. And the corresponding boilers for water heating have been developed for three years by a branch of the German company Bosch Termotechnik. To British gas companies, this opens up the prospect of redesigning and thus maintaining the existing gas distribution system.

**Conclusions.** There is a great opportunity for the Europe Union to develop a “Green H<sub>2</sub>” economy, which will contribute to economic growth, jobs and to a sustainable, affordable and fair energy system. EU can secure its position as the world market leader for electrolyzers and green hydrogen production [2].

The hydrogen industries, is committed to developing a strong and world leading electrolyser industry and supply chain and commit to realising 2x40 GW electrolyser capacity by 2030 in Europe, North Africa and Ukraine. They need the European Union and its Member States to design, create and facilitate a hydrogen market infrastructure and economy [3].

#### References:

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