

Neovolt and Woikoski are making Finland a forerunner of green hydrogen

Neovolt Oy and Woikoski Oy are determined to make Finland a pioneer in the field of green hydrogen. The first joint project has now been successfully completed. This work allowed us to identify several ways of improving energy efficiency of the green hydrogen production using water electrolysis.

Neovolt has analyzed three hydrogen production lines of Woikoski in Kokkola. Based on the project results, Neovolt together with Woikoski identified measures to improve the current hydrogen production process efficiency and possibly extend the lifetime of the deployed water electrolyzers.

– An essential competitive factor for a hydrogen producer is the understanding of the usage of electrical energy in the production process. This means identification of the process losses and an optimization potential. The extensive measurements of the hydrogen production plant carried with Neovolt and deep analysis of the results have significantly increased our understanding of the production process and provided a solid basis for the investment preparation, comments **Mr. Olli Bergmann**, Woikoski Technical Director, on the project results.

– The project has been successfully completed. We achieved our objectives of providing Woikoski a more accurate picture of their hydrogen production process. Moreover, we improved Neovolt's expertise in the industrial-scale hydrogen production and its requirements. Based on the achieved results, we will continue cooperation in the future, says Neovolt CEO **Mr. Samuli Räisänen**.

The war in Ukraine creates further pressure for substituting fossil fuels

The demand forecasts for the growth of green hydrogen have been promising for years. Now, replacing fossil fuels is even more important because due to the war in Ukraine natural gas and oil prices are rising and the availability of them in long term is uncertain.

Finland is in key position to become a forerunner in development and production of green hydrogen technologies. There is advanced research and business in the field of green hydrogen and green hydrogen has been produced in Finland for decades. Hydrogen is expected to revolutionize the whole society and especially the energy sector.

Green hydrogen is emission free. It is produced with renewable electricity generated with, for example, wind or solar power. Therefore, green hydrogen production and usage do not cause carbon emissions. This process is overall called Power-to-X - technology where electricity is converted to another energy carrier. Green hydrogen is produced with water electrolysis, where water is split into oxygen and hydrogen. Green hydrogen can be directly used in replacing natural gas in various heavy industrial processes such as steel and fertilizer production. When green hydrogen is used as a fuel in fuel cells, it is converted back into electricity and the only emission is water.

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Neovolt Oy was founded in spring 2021 to develop and deliver modern power supply and control solutions for green hydrogen production. The mission of the company is to maximize the profitability of green hydrogen production. Neovolt offers customers a better understanding on hydrogen production process and its requirements on power supply systems. The company's business is based on unique academic research at LUT University. The founding team of Neovolt has an extensive experience from both academic research on water electrolysis and power electronics industry.

Voikoski Oy is Finnish gas specialist and a reliable expert with a 140-year history. Voikoski's highly refined, high-quality products, gas network solutions and expert services, as well as a comprehensive distribution network guarantee customers the best possible service. Voikoski has a long history as a producer and a user of hydrogen. One of the largest green hydrogen production units in Northern Europe, the Kokkola water electrolysis hydrogen plant, was completed in 2014. Since then, Voikoski has been using the green hydrogen production technology.