

## **Production of Green Hydrogen by The Renewable Feedstock Glycerin**

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### Abstract

The Linde Group has developed an innovative process for the sustainable production of hydrogen from the biogenic material raw glycerine. Glycerine is a by-product of biodiesel production and therefore it is available all year round, it is easy to handle, the costs are expected to remain in an economical attractive range and it is not in competition with food production.

After the phases laboratory tests, process calculations and economic evaluations a pilot plant was built at Linde's hydrogen production site in Leuna, Germany. The plant was started up in May 2009, followed by a 3 month experimental operation phase.

The plant which purifies, pyrolyses and reforms raw glycerine with new developed processes, produces a hydrogen-rich gas, which will be fed under a pressure of 28 bar into the existing Leuna hydrogen plant for the conventional CO-shift, PSA purification and - if required - for the liquefaction of the hydrogen. The capacity is designed to produce 50 Nm<sup>3</sup>/hr green hydrogen as a part of the existing SMR hydrogen output. The green liquefied hydrogen produced there will initially be used in German demonstration centers such as Berlin and Hamburg where hydrogen is being employed as a fuel for mobility.

A remarkable saving in CO<sub>2</sub> footprint compared to the conventional hydrogen production can be reached with this new pyroreforming technology. The preparation of a certification procedure with an external notified body is also part of the project.