

H2 Ready For Emission Free CHP

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Abstract

The EU green deal and fit for 55 require concrete plans for the transition from natural gas to carbon neutral or carbon free fuels. Now is the time to develop appliances and products that can switch from natural gas to hydrogen operation smoothly.

Fuel cells, gas engines, gas turbines and steam turbines are the main technologies used for combined heat and power production. While fuel cells are designed for hydrogen, gas engines and turbines can run on natural gas as well as on hydrogen, a conventional steam cycle is mainly used for biomass CHP. To avoid carbon lock-in investments, gas power plants should be ready for conversion to renewable fuels such as hydrogen or any other renewable gas when becoming available.

This paper explains how many 1000 gas engine CHP plants in Europe can be upgraded for handling 20%(vol) of hydrogen in the pipeline gas or can be converted to 100% hydrogen operation. A first 100% H2 engine demonstration with testing experience will be discussed and a development roadmap of H2 engines explained as a combined effort between industry and university R&D.



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