
Aktuelle Technologien zur CO₂-freien Wasserstoffproduktion und zur vermehrten Nutzung von Wasserstoff - Überblick und Perspektiven auf globaler Ebene

Latest Trends in CO₂-free Hydrogen Production Technologies and the Rise of Hydrogen Use - Overview and prospects on a global scale

Prof. Dr. Emmanouil Kakaras, Mitsubishi Hitachi Power Systems Europe GmbH

Abstract

In order to meet the climate change and decarbonization goals of both the Paris agreement and the potential net zero goals of some developed nations, tools to address both the transmission and storage of energy are needed. Hydrogen and ammonia produced from renewable energy could be significant contributors as energy carriers, feedstock and fuel, enabling sectorial integration and making it an indispensable instrument to address these challenges. Even if today's production cost of renewable hydrogen is very high compare to competing fossil sources, the production cost is in a reasonable range making it useful as a consumable in the future.

This paper discusses the question how the gap between the economics of green hydrogen and other alternatives can be bridged. The focus shall not be solely on reducing the costs of green hydrogen production, but more on increasing the value of hydrogen produced. This includes processing it into low carbon synthetic fuels or chemicals with carbon dioxide from industrial applications. Also the production of "blue" hydrogen via steam reforming including carbon capture and storage can be an enabler for the installation of large scale infrastructure, production and consumption in a beginning hydrogen economy.