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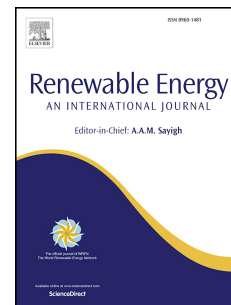
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POWER TO GAS AND H₂/NG BLEND IN SMART ENERGY NETWORKS CONCEPT

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Abstract

In the last decade energy security and supply has become one of the main priorities for governments around the world. Energy sources diversification, proper mix of energy generation capacities and large penetration of renewables are crucial to achieve a sustainable energy future. Smart Energy Networks (SENs) is a new concept that will allow the integration of various energy networks electricity, gas and heat into one network under common ICT to allow better management, efficient utilization and increased participation of distributed generation and renewables. In order to bridge the networks, appropriate technologies have to be applied that will allow the energy vectors to interface and share the load. One such technology is Power to Gas utilizing the excess electricity on the grid to generate hydrogen. Hydrogen then either injected in the gas pipeline/storage or used to synthesize a renewable natural gas through methanation.

The paper reviews recently published literature on this technology and summarizes the challenges related to generation, distribution and utilization of hydrogen and its blends.

Keywords: renewable energy, gas injection, pipelines, simulation, hydrogen/natural gas

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