

عنوان مقاله:

Power to gas (PtG): a feasible energy storage system

محل انتشار:

دومین کنفرانس بین المللی انرژی اتمی (سال: 1398)

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خلاصه مقاله:

By increasing the share of renewable energy sources in the total power generation, the demand for storage technologies will raise in the near future. For instance, the worldwide production of wind energy enhanced from 17,400 MWh in 2000 up to 318,105 MWh in the year 2013. In the immediate future, a high percentage of electricity used into grids will come from renewable energy sources. The power generated from wind and photovoltaics is of fluctuating and intermittent nature and has to be balanced to guarantee grid stability. At the same time, long and short term energy storage systems are needed; furthermore, there are some challenges to transmit the surplus of renewable power from wind or solar fields to consumer. Power-to-Gas is a solution for renewable energy sources problems and seasonal energy saving difficulties which is based on conversion of surplus energy into first, hydrogen by water electrolysis and then synthetic natural gas (SNG) using methanation reactor. Natural gas is much more flexible than power itself. It is portable and storable in gas form and liquid form by producing LNG. It can be used as fuel for vehicles and other engines, residential utilization, industrial usage like petrochemical units as feed and other applications as fuel and in a reversible cycle process (fuel cell) it can be converted to electricity. In the current study, importance of power to gas technology in seasonal energy storage problems and its potential for further development is discussed.

کلمات کلیدی:

Power to gas, Methanation, Hydrogen, Energy

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