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Energy Saving in Public Transport Using Renewable Energy

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Abstract

Hydrogen produced by renewable sources represents an interesting way to reduce the energetic dependence on fossil fuels in the transportation sector. This paper shows a feasibility study for the production, storage and distribution of hydrogen in the western Sicilian context, using three different renewable sources: wind, biomass and sea wave. The objective of this study is the evaluation of the hydrogen demand, needed to replace all diesel supplied buses with electrical buses equipped with fuel cells. An economic analysis is presented with the evaluation of the avoidable greenhouse gas emissions. Four different scenarios correlate the hydrogen demand for urban transport to the renewable energy resources present in the territories and to the modern technologies available for the production of hydrogen. The study focuses on the possibility of tapping into the potential of renewable energies (wind, biomass and sea wave) for the production of hydrogen by electrolysis. The use of hydrogen would reduce significantly the emissions of particulate and greenhouse gases in the urban districts under analysis.

Keywords: hydrogen production, renewable energy, public transport, electric buses, fuel cells, electrolysis, w

Full text

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