Abstract

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STEAM and SOFC BASED REFORMING OPTIONS OF PEM FUEL CELLS FOR MARINE APPLICATIONS

The need for green energy sources without with low emissions in addition to improve the using efficiency of current fossil fuels in the marine field makes it important to replace improve current fossil-fuelled engines. The replacement process should work on narrowing the gap between the most scientific innovative clean energy technologies and the concepts of feasibility and cost-effective solutions. Early expectations of very low emissions and relatively high efficiencies have been met in marine power plants using fuel cell. In this study, steam and SOFC based reforming options of natural gas for PEM fuel cells are proposed as an attractive option to limit the environmental impact of the marine sector. The benefits of these two different reforming options can be assessed using computer predictions incorporating chemical flow sheeting software. It is found that a high overall efficiency approaching 60% may be achieved using SOFC based reforming systems which are significantly better than a reformed PEM system an SOFC only system.