[1]THE EFFECT OF OPERATION AND DESIGN PARAMETERS ON THE PERFORMANCE OF PEMFC

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Summary

In this study, a three-dimensional PEM fuel cell model has been developed. It was analysed the effect of different channel width, membrane thickness, operation pressure and operation temperature on performance of PEM fuel cell. Current density was measured on the single cells of parallel flow fields that have 25 cm² active layers, using different values of these parameters. The cell width and the channel height remain constant. The results show that increasing operation pressure and operation temperature increases the current density and increasing channel width while the cell width remains constant decreases the current density. And also it was shown that fuel cell current density clearly increases as decreasing membrane thickness at the results.

Key words: PEM fuel cell, current density, performance parameters

EFEKTI RADNIH I KONSTRUKTIVNIH PARAMETARA NA PARFORMANSE PEM GORIVE ĆELIJE

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Rezime

Razvijeni prostorni model PEM gorive ćelije prikazan je u radu. Različite širine kanala, debljine membrane, radni pritisci i temperature su varirane i analiziran je njihov uticaj na performanse gorive PEM ćelije. Gustina struje je merena na jednoj ćeliji paralelnog polja protoka koji ima 25 cm² aktivnog sloja pri različitim konstruktivnim parametrima. Rezultati istraživanja pokazali su da porast radnog pritiska i radne temperature povećava porast gustine struje i povećanje širine kanala, dok je širina ćelije nepromenjena, dovodi do smanjenja gustine struje. Povećanje debljine membrane dovodi smanjenja gostine struje.

Ključne reči: PEMC goriva ćelija, gustina struje, parametri performansi

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