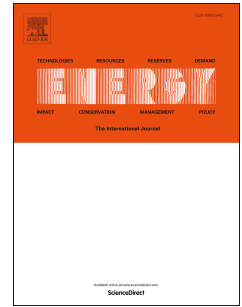


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Experimental investigations and simulations of the microturbine unit with permanent magnet generator

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Abstract

In dispersed power generation, low power devices are used for local combined generating of heat and electric power. There are developing concepts of micropower plants with electric generators driven by steam or gas microturbines. The paper presents the results of an experimental investigation of the microturbine set which consists of the turbine with partial admission, permanent magnet generator and three phase AC-to-DC rectifier. The microturbine was designed for steam of HFE7100 as a working medium. The dynamic behavior of the microturbine unit was experimentally examined. Microturbine unit was tested during changes of the parameters of the working medium or the electrical load. Experiments were performed with compressed nitrogen as a working medium. The dynamic model of microturbine unit was developed. The examples of the comparison between experiment results and simulations are shown and discussed in the paper.

Keywords:

micro power generation, microturbine, microturbine dynamics

1. Introduction

In the distributed power engineering, relatively low power devices are used for local production of electric power and heat [1]. At present, concepts of micro power plants are being developed in which electric power is generated

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