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MICROTURBINES IN CONGENERATION SYSTEMS FOR RURAL APPLIANCES

ABSTRACT *The paper presents the considerations on usage of cogeneration Micro-Power Plants (MPP) in Distributed Power Systems. The proposed MPP is intended for rural appliances and can operate using local renewable energy resources as well as traditional fuels with the power range of single MPP from few kW up to 100 kW. While in monogeneration power plants the efficiency of primeval fuel energy usage is below 50%, the proposed cogeneration MPP efficiency can reach the level of 90%. Most of the energy is used for local heating and the rest is used for additional production of electrical energy. The high speed steam turbine using low-temperature evaporation working fluid and an permanent magnet voltage generator directly coupled with turbine are proposed. The topologies of the power-electronic converters suitable for application in MPPs of different power have been analyzed and discussed.*

Keywords: *micromachines, renewable energy, cogeneration, power converters.*