

Constant DC-DC converter with variable voltage and load resistive in Pico hydro turbine generator system

Abstract

This paper presents a design which improves DC-DC converter that can be used in Pico hydro generation system and deals with low flow water to generate green energy power. The green energy power generates from the transformation of potential power in flow rate water to electrical voltage. The proposed DC-DC converter is used to convert the potential voltage in a variable low water flow to produce electric power, done by applying a Single Boost converter and Constant lock circuit CLC that can raise the input voltage to another fixed DC output voltage which is called hybrid operation mode. Then, the converter output voltage is measured and compared with fixed voltage using MATLAB/Simulink and Proteus Software. The results of the proposed design showed the ability to produce a constant 24v with a variable both input voltage from (5–18) v and resistive load in a high-performance response.

Keyword: Pico turbine generator; Combination DC-DC converter; Constant lock circuit