ABSTRACT

Water electrolysis is the event of decomposition of water compounds (H2O) into oxygen (O2) and hydrogen gas (H2) using electric current through the water. Water electrolysis is widely used to produce alkaline drinking water. The constraints for this water producer are the high cost of making alkaline water and the absence of utilizing solar energy as its power supply. Considering the use of renewable energy that is increasingly developing at this time, therefore the researchers made a design of an inverter with 220VAC voltage with a frequency of 50 Hz using solar panels used for electrolysis of water.

Solar panels emit a small voltage while electrolysis of water requires a large voltage to react. There are two methods for increasing voltage, namely with DC Chopper and using a voltage folding inverter. Researchers use inverters for electrolysis of water because inverters can be used also as daily electricity needs.

As a result of designing this final project, this inverter is able to produce 220V output voltage with a frequency of 50Hz and is used for electrolysis of water. The results of the electrolysis process of water produce an acid solution which is useful for disinfectants and alkaline solutions can be alkaline water. From this experiment produced a pH of 2-4 and 8-9, power 1 - 2,8 MW with currents ranging from 11,51 - 19,23mA, 233VAC inverter output voltage and 100-150VDC rectifier output.

Keywords: Inverters, electrolysis of water, renewable energy, pH