

Current Characteristic of Water Electrolysis to Produce Hydrogen, Alkaline, and Acid Water

Authors : Ekki Kurniawan, Yusuf Nur Jayanto, Erna Sugesti, Efri Suhartono, Agus Ganda Permana, Jaspar Hasudungan, Jangkung Raharjo, Rintis Manfaati

Abstract : The purpose of this research is to study the current characteristic of the electrolysis of mineral water to produce hydrogen, alkaline water, and acid water. Alkaline and hydrogen water are believed to have health benefits. Alkaline water containing hydrogen can be an anti-oxidant that captures free radicals, which will increase the immune system. In Indonesia, there are two existing types of alkaline water producing equipment, but the installation is complicated, and the price is relatively expensive. The electrolysis process is slow (6-8 hours) since they are locally made using 311 VDC full bridge rectifier power supply. This paper intends to discuss how to make hydrogen and alkaline water by a simple portable mineral water ionizer. This is an electrolysis device that is easy to carry and able to separate ions of mineral water into acidic and alkaline water. With an electric field, positive ions will be attracted to the cathode, while negative ions will be attracted to the anode. The circuit equivalent can be depicted as RLC transient circuit. The diode component ensures that the electrolytic current is direct current. Switch S divides the switching times t_1 , t_2 , and t_3 . In the first stage up to t_1 , the electrolytic current increases exponentially, as does the inductor charging current (L). The molecules in drinking water experience magnetic properties. The direction of the dipole ions, which are random in origin, will regularly flare with the direction of the electric field. In the second stage up to t_2 , the electrolytic current decreases exponentially, just like the charging current of a capacitor (C). In the 3rd stage, start t_3 until it tends to be constant, as is the case with the current flowing through the resistor (R).

Keywords : current electrolysis, mineral water, ions, alkaline and acid waters, inductor, capacitor, resistor

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