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EXPERT SYSTEMS AND SOLUTIONS

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Embedded based water purification system

Abstract

The phenomenon of violet glow, hissing noise and the production of ozone gas in the overhead transmission line known as corona is used in our project for the production of ozone gas. The gas produce out of the device can be used for the treatments of drinking water disinfections and air purification.

The device has a discharge tube in which high electric field is applied so as to breakdown the ozone present in the air. This phenomenon occurs at field strength of about 25 KV at normal room temperature. This unit employs a high voltage of 30 KV peak at a frequency of 15 KHZ to 20 KHZ. Such a high Voltage is developed by means of Line output transformer or Fly-Back Transformer driven by a embedded controller.

The amount of Ozone output can also be controlled indirectly by varying the D.C input voltage by using a atmel 8 bit microcontrollers. Ozonation is 3125 times more powerful than chlorination. The unit can treat 5 liters of impure water in about 2 minutes. The nascent oxygen makes ozone a very powerful disinfecting agent. Ozone destroys all bacteria by cell lyeing.

This project is also provided with simple embedded protection circuit, using 18F877 microcontroller which prevents the POWER COMPONENT from being damaged, by High voltage spikes and low voltage surges. The unit can be continuously operated for four to six without much heating of the power electronic devices.

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