

**AUTOMATIC SOLAR-POWERED WATER FILTRATION SYSTEM WITH  
ULTRAVIOLET STERILIZATION FOR A COMMUNITY WELL IN ZONE 13,  
CALAPARAN, AREVALO, ILOILO CITY**

A Project Study Report

Presented to

The Faculty of the Electronics Engineering Department

Central Philippine University

Jaro, Iloilo City, Philippines

In Partial Fulfillment

of the Requirements for the Degree of  
Bachelor of Science in Electronics Engineering.

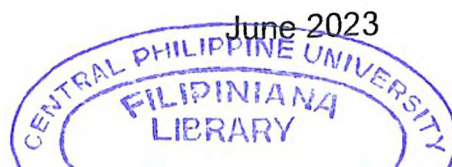
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**ABSTRACT**

To prevent food and water-borne diseases from happening, an Automatic Solar-Powered Water Filtration System was implemented as one of the best solutions. The study area is in a communal deep-well found in Zone 13, Brgy. Calaparan, Iloilo City. An initial water testing from a bacteriological test indicated positive results for both fecal coliform and presence of high Total Dissolved Solids. The system design of the water filtration system comprised of a four-stage Pre-filter, five-stage Reverse Osmosis system, and a 55W Ultraviolet Sterilizer to disinfect and sterilize the bacteria and viruses present in the water coming from the deep well. The system operates by attaching a submersible motor pump into the well automatically controlled by Arduino through ultrasonic sensor, connecting it to a storage tank, and then deliver it to the four-stage pre-filter system, followed by the reverse osmosis system, and lastly the Ultraviolet sterilizer, which will then connect to an output faucet available for human consumption. After implementation of the system, a final water analysis was conducted, the results showed that the water coming from the well, disinfected and sterilized by the system was found negative for fecal coliform and passed the bacteriological testing therefore, it is completely purified and safe for potable use without worry for electrical bills.