



Advisor: Dr. Carlos Antonio Pineda Arellano

Committee Members: Dr. Luis Manuel Valentín Coronado
(Secretary)

Dr. J. Gonzalo Carrillo Baeza
(Evaluator – CICY, Vocal)

Dr. Eduardo Venegas Reyes
(Evaluator – IMTA, Vocal)

Dr. Fernando Martell Chávez
(Substitute Evaluator)

Dr. Arturo Díaz Ponce
(Chairperson)

Thesis: "DISEÑO Y CONSTRUCCIÓN DE POTABILIZADOR INTEGRAL SOLAR DE AGUA PARA COMUNIDADES RURALES"

Summary:

In Mexico and the entire world, there is still a high percentage of people who do not have access to drinking water, so the population, due to the lack of hydraulic networks, consumes water directly from immediate water resources, especially in rural communities. On the other hand, some of the conventional technologies used for the disinfection of non-potable water include ozonation, chlorination, etc. These technologies require sophisticated equipment and specialized operators. In this context, in recent decades water treatment with photocatalytic processes has been thriving in the scientific field, achieving to inhibit bacteria, pesticides, etc. with the feature of using renewable energy. In this project, the design and construction of an autonomous water potabilizer that only uses solar energy as an energy source were developed. Relying on engineering areas such as mechanics, mechatronics, and optics as the main areas for its development. In this context, the autonomy was performed through the assembly of an automated control stage for the whole system powered by photovoltaic modules and operating; reverse osmosis, photocatalytic reactor, sensing devices, and surface water pumps, among others.