EFFICIENCY OF A COMPOUND PARABOLIC CONCENTRATOR KITCHEN IN IZTAPALAPA, MEXICO CITY.

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Abstract: A concentrated solar-powered parabolic concentrator stove is built, a thermal analysis is carried out, the temperature profiles are obtained at daytime and its thermal performance to demonstrate its mitigating capacity and the benefits that are obtained from being implemented at the city level, such as at the national level. Taking into account the high concentrations of pollutants that exist in the air in a city as populated as Mexico City (8.918 million inhabitants) and the health problems that are there, it is necessary to attack the problem. A very good strategy to breathe a cleaner air in cooking food that uses solar energy. An effective surface kitchen of 0.791 m² is built, with Stainless Steel Absorber, surface of Polished Steel, covered with clear glass and as insulating polyurethane foam. (see image 1).

By placing it in the sun with food on August 18 in Mexico City, with a level of insolation of the order of 18 MJ / m², a thermal profile can be seen, see figure 2, which leads to a thermal efficiency of the order of 17.88%. Assuming that the solar cooker is used in a day at least 3 hours in the home, the heat used is 1.96 MJ, which represents the energy displaced by fossil fuels, which represents savings in one day. Taking into account its useful life of 15 years, the energy saving could reach 10.71 GJ unitarily. The scope and impact that this solar technology could have is the reduction of 1.43 MtCO2 nationwide.

Keywords: Thermal, Solar, Thermal profile, mitigating capacity, thermal efficiency.