

STUDYING THE POSSIBILITY OF PROVIDING THE THERMAL REQUIREMENTS OF PASTEURIZATION BY PV/T SOLAR SYSTEM IN HUNGARY

Rajab Ghabour, Péter Korzenszky

¹Department of Agriculture and Food Machinery, Institute of Mechanics and Machinery, Faculty of Mechanical Engineering, Szent István University, Hungary

Ghabour.Rajab@hallgato.uni-szie.hu

Abstract

The food industry is one of the fastest growing in the world, especially in the developing countries. At the same time, all the countries of the world are facing challenges to the continuity of energy supply and the impact of traditional energies on the environment and human health. These countries have renewable energies that can serve as a main or auxiliary source of energy. Especially for small enterprises such as milk pasteurization farm.

The pasteurization process can be defined as the heat treatment necessary to kill or weaken pathogens within a human-consumed beverage such as milk, juice or water.

The use of renewable energy in our world today is common, given that it is available everywhere and in different forms, but within the industrial and production sector to a lesser degree depending on the many challenges and problems that bind these two together. The most prominent of these problems is first, the lack of a reference system for hybridizing industrial food needs which are fluctuating daily or annually with available renewable energy and second, calculating or measuring the Thermal utilization rate of renewable energy in the industry.

Using the PV panels can make the big part as a loss heat, so the solar energy combined panels PV/T can provide us both thermal and electrical need of an assumed plant.

In this paper, we will study the thermal utilization of PV/T solar energy system with pasteurizer device to ensure the thermal and electrical requirements of this system provided from a solar energy under the climate of Hungary.

Key words: solar energy, PV/T, food industry, pasteurization