Flat plate solar collectors for water heating in Kenyan rural and urban food processing plants

Okoth, M W
Date: 1987

Abstract

The manufacturing industry accounted for 26% and 24% of the wood fuel and petroleum products consumed in Kenya in 1980, respectively. There is a need to reduce the consumption of both wood fuel and petroleum products in Kenya. Since food processing is the most prominent activity of the Kenyan manufacturing sector, a reduction of wood fuel and petroleum products consumption in the food processing industry will have a significant impact on the total consumption of these energy resources. A large quantity of hot water is used in food processing plants at temperatures which can easily be attained by flat plate solar collectors. Some flat plate solar collectors were tested and their thermal performance determined in terms of the well known Hottel-Whillier-Bliss equation. The long-term thermal performance of the solar collectors at Kitale in western Kenya was estimated. It was found that a single-glazed collector with a black-chrome selective surface was the best performing flat plate collector for delivery temperatures of about 80De. It is concluded that flat plate solar collectors can now be used to provide at least part of the energy required for water heating in the Kenyan food processing industry.