World Academy of Science, Engineering and Technology
International Journal of Energy and Environmental Engineering
Vol:11, No:07, 2017

Design and Study of a Hybrid Micro-CSP/Biomass Boiler System for Water and Space Heating in Traditional Hammam

Authors : Said Lamghari, Abdelkader Outzourhit, Hassan Hamdi, Mohamed Krarouch, Fatima Ait Nouh, Mickael Benhaim, Mehdi Khaldoun

Abstract : Traditional Hammams are big consumers of water and wood-energy. Any approach to reduce this consumption will contribute to the preservation of these two resources that are more and more stressed in Morocco. In the InnoTherm/InnoBiomass 2014 project HYBRIDBATH, funded by the Research Institute for Solar Energy and New Energy (IRESEN), we will use a hybrid system consisting of a micro-CSP system and a biomass boiler for water and space heating of a Hammam. This will overcome the problem of intermittency of solar energy, and will ensure continuous supply of hot water and heat. We propose to use local agricultural residues (olive pomace, shells of walnuts, almonds, Argan ...). Underfloor heating using either copper or PEX tubing will perform the space heating. This work focuses on the description of the system and the activities carried out so far: The installation of the system, the principle operation of the system and some preliminary test results.

Keywords : biomass boiler, hot water, hybrid systems, micro-CSP, parabolic sensor, solar energy, solar fraction, traditional hammam, underfloor heating
Conference Title : ICSEB 2017 : International Conference on Solar Energy and Buildings
Conference Location : London, United Kingdom
Conference Dates : July 24-25, 2017