

Thesis Title	Development of a Multi-Purpose Solar Water Wall for Thailand
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Abstract

This thesis aim was to design a solar water wall (SWW) with the following three objectives: to produce domestic hot water, to reduce of heat transferred from outside into space and to induce natural ventilation. The SWW was made by a plastic cover, air gap, water tank and insulator. It was integrated into the south-west facing wall of an individual house in Bangkok. Test of performance of SWW were undertaken during summer 1998.

The result of the study showed that the hot water temperature was the highest one around 5:00-6:00 PM. and is more useful in the evening of each day. The hot water temperature was about 40-45 C. The SWW can reduce the overall heat transfer coefficient by about 70% whereas the rate of induced air ventilating was rather low about $0.001-0.018 \text{ kg.s}^{-1}$.

The comparison between experimental results with those issued from simulation validated the developed mathematical model. Thus, it can be used to simulate the behavior of solar water wall under different climatic conditions and different orientations.

Keywords : Domestic hot water / Insulation / Natural ventilation