

# Estimation of solar collector area for water heating in buildings of Malaysia

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**Abstract.** Solar thermal energy (STE) utilization for water heating at various sectorial levels became popular and still growing especially for buildings in the residential area. This paper aims to study and identify the solar collector area needed based on the user requirements in an efficient manner. A step by step mathematical approach is followed to estimate the area in Sq. m. Four different cases each having different hot water temperatures (45°, 50°C, 55°C, and 60°C) delivered by the solar water heating system (SWHS) for typical residential application at Kuala Lumpur City, Malaysia is analysed for the share of hot and cold water mix. As the hot water temperature levels increased the share of cold water mix is increased to satisfy the user requirement temperature, i.e. 40°C. It is also observed that as the share of hot water mix is reduced, the collector area can also be reduced. Following this methodology at the installation stage would help both the user and installers in the effective use of the solar resource.

**Keywords.** Solar Energy, solar collector area, solar water heater, hot water temperature.