

## Accepted Manuscript

Title: The Generation of Domestic Hot Water Load Profiles in Swiss Residential Buildings through Statistical Predictions

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PII: S0378-7788(17)30591-1  
DOI: <http://dx.doi.org/doi:10.1016/j.enbuild.2017.02.045>  
Reference: ENB 7406

To appear in: *ENB*

Received date: 27-4-2016  
Revised date: 5-2-2017  
Accepted date: 19-2-2017

Please cite this article as: Juan de Santiago, Osvaldo Rodriguez-Vialon, Benoit Sicre, The Generation of Domestic Hot Water Load Profiles in Swiss Residential Buildings through Statistical Predictions, Energy and Buildings <http://dx.doi.org/10.1016/j.enbuild.2017.02.045>

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# The Generation of Domestic Hot Water Load Profiles in Swiss Residential Buildings through Statistical Predictions

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## Abstract

A long-term field study recording domestic hot water (DHW) consumption in households was used to tune a load profile generator. The methodology used in this load profile generator is also applicable to electric loads in distribution grids. Accurate DHW load profiles are essential to estimate the performance of renewable energy systems. One day and long-term randomly generated DHW profiles are useful for simulation, sizing and optimization of components in solar hot water installations such as storage tank, heat exchanger, collector area and additional heater. This work is also relevant to create standards for product testing and certification.

DHW usage and draw off patterns are geographically dependent, so recent and local measurements are required to tune models and create accurate load profiles.

Measurements show that DHW consumption is very volatile. The daily average value varies from 20 to 40 Litres per person (60 °C outlet temperature). The profiles underlie some trends (predominantly consumption in the morning or in the evening or spread over the day). The DHW consumption in Switzerland follows similar patterns observed in other countries, such as no significant decrease in

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