Identification And Weather Sensitivity Of Physically Based Model Of Residential Air-Conditioners For Direct Load Control: A Case Study

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Summary

In most electricity systems, the residential sector is one of the main contributors to system peaks. Hot and humid summer seasons lead to a significant proportion of the supplied power being used on air-conditioning (AC). In this work, we address the identification problem of the parameters of an aggregated elemental physically based model representing a housing unit with an AC system. The identification is done to validate the model using a pilothouse equipped with an independent air-conditioner system. An online maximum likelihood based-identification algorithm is developed. The required hardware and system instrumentation are detailed. A sensitivity analysis study of the model for variations in humidity and solar radiation is also reported. The results indicate that the physically based model succeeded to capture the effects of the outdoor conditions. (c) 2005 Elsevier B.V. All rights reserved.

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