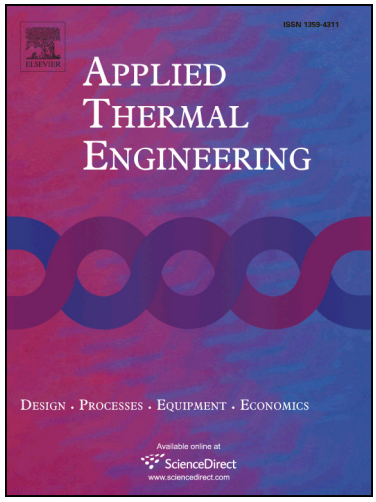

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PII: S1359-4311(16)31514-9
DOI: http://dx.doi.org/10.1016/j.applthermaleng.2016.08.156
Reference: ATE 8955

To appear in: *Applied Thermal Engineering*

Received Date: 6 April 2016
Revised Date: 23 July 2016
Accepted Date: 24 August 2016

Please cite this article as: J. Xamán, Y. Olazo-Gómez, G. Álvarez, I. Hernández-Pérez, J.O. Aguilar, J.F. Hinojosa, Thermal Evaluation of a Room coupled with a Double Glazing Window with/without a Solar Control Film for Mexico, *Applied Thermal Engineering* (2016), doi: http://dx.doi.org/10.1016/j.applthermaleng.2016.08.156

Thermal Evaluation of a Room coupled with a Double Glazing Window with/without a Solar Control Film for Mexico

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ABSTRACT

The thermal evaluation of a Room (R) coupled with a Double Glazing Window (DGW) with/without solar control film (SCF) under warm and cold climate conditions of an extreme weather of Mexico is presented. The right vertical wall of the room is partially adiabatic and contains the DGW. The DGW consists of two vertical semitransparent walls: glazing-1 facing the room, and glazing-2 facing the external environment. The SCF is attached to glazing-1 for cold climate condition, or attached to glazing-2 for warm climate condition. During one day, hourly simulations of the R-DGW were done using an in-house code based on the finite volume method. Three cases were defined to analyze the R-DGW system: Case C1 corresponds to the R-DGW without SCF; Case C2 and C3 correspond to the R-DGW with SCF for warm and cold climate conditions, respectively. For warm climate condition the use of a SCF is highly recommended, since the Case C2 was able to reduce ≈ 62% of the energy gains with respect to Case C1. When