



Available online at www.sciencedirect.com

ScienceDirect

Energy Procedia 00 (2016) 000–000

Energy

Procedia

www.elsevier.com/locate/procedia

SBE16 Tallinn and Helsinki Conference; Build Green and Renovate Deep, 5-7 October 2016,
Tallinn and Helsinki

An Analytical Approach to the Ventilation Effectiveness of Mediterranean Buildings.

Case Study: Existing Residential Building, Portugal

Atefeh Salehi^{*a}, Isable Torres ^a, Ana Ramos ^b

a Civil Engineering Department, Faculty of Science and Technology, University of Coimbra, Portugal. Rua Silvío Lima, Universidade de Coimbra – Pólo II, 3030-790, Coimbra, Portugal.

b Civil Engineering Department, Superior School of Technology, Polytechnic Institute of Castelo Branco, Portugal. Av. Do Empresário, 6000-767, Castelo Branco, Portugal.

Abstract

Building airtightness assumes an important role in the energy saving and the indoor thermal comfort. Ventilation rates bring significant impacts on energy usage in the constructions and indoor contaminant concentrations and also setting them as the key parameters in building performance.

Ventilation rate have been measured in building for a long time, and there are some developed measurement methodologies related to it in the research domains. However, most of the investigations in recent years have been done usually in the cold climate conditions, while Mediterranean construction are not deeply investigated in the literature.

In this paper, the authors present the obtained results of an experimental research which is carried out on the Portuguese residential buildings. The investigation is done by fan pressurization methods, also known as “Blower Door Test (BDT)” as the measurement method as well as Design Builder (DB) as the simulation software. The airtightness measurement of the existing buildings and the influence of air leakage on energy consumption and indoor comfort in different Portuguese construction typologies are focused on the aim of the research.

The important parameters of the building such as whole-building air change rates, building infiltration rates, and ventilation effectiveness rate in the residential building are also considered in this research.

© 2016 The Authors. Published by Elsevier Ltd.

Peer-review under responsibility of the organizing committee of the SBE16 Tallinn and Helsinki Conference.

^{*} Corresponding author. Tel: +35-123-979-7205; fax: +35-123-940-6669
E-mail address: salehi.atefeh@student.dem.uc.pt