Determination of thermal characteristics of standard and improved hollow concrete blocks using different measurement techniques - DTU Orbit (17/11/2017)

The lighter weight, improved thermal properties and better acoustic insulation of hollow-core concrete blocks are few of the characteristics that one encounters when comparing them to traditional Maltese globigerina limestone solid blocks. As a result, hollow concrete blocks have recently been in greater demand. However, their transmittance, or U-value, is still quite high and does not meet the minimum energy requirements for constructing new buildings. This paper is focused on the investigation of the thermal properties of a new building block, developed as part of a nationally-funded research project ThermHCB, with the aim of improving the U-value of such blocks without changing their compressive strength, physical dimensions or manufacturing process. Measurement techniques were applied to obtain comparative values of the thermal transmittance for standard and improved HCBs, using different EN and draft standards. Compressive testing was carried out concurrently in order to ensure that the minimum benchmark compressive strength was reached. The comparison between these results provides information on the reliability of the methodologies used to determine the thermal properties of building elements in-situ, without having to conduct such tests in a laboratory hot box setup.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Dynamical Systems, University of Malta, Galea Curmi Engineering Services Ltd.
Authors: Caruana, C. (Ekstern), Yousif, C. (Ekstern), Bacher, P. (Intern), Buhagiar, S. (Ekstern), Grima, C. (Ekstern)
Pages: 336-346
Publication date: 1 Sep 2017
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Building Engineering
Volume: 13
Ratings:
Scopus rating (2016): CiteScore 2 SJR 0.56 SNIP 1.055
Original language: English
Building envelope, Heat flow, Hollow-core concrete block, Infrared, Insitu, Malta
Source: Scopus
Source-ID: 85029520499
Publication: Research - peer-review › Journal article – Annual report year: 2017