Accepted Manuscript

Title: Knowledge discovery of indoor environment patterns in mild climate countries based on data mining applied to in-situ measurements

Authors: Nuno M.M. Ramos, Ricardo M.S.F. Almeida, M. Lurdes Simõ es, Pedro F. Pereira

Please cite this article as: Ramos, Nuno MM., Almeida, Ricardo MSF., Simõ es, M Lurdes., & Pereira, Pedro F., Knowledge discovery of indoor environment patterns in mild climate countries based on data mining applied to in-situ measurements.*Sustainable Cities and Society* http://dx.doi.org/10.1016/j.scs.2017.01.007

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Knowledge discovery of indoor environment patterns in mild climate countries based on data mining applied to in-situ measurements

Nuno M. M. Ramos [(1)][*], Ricardo M. S. F. Almeida [(1),(2)], M. Lurdes Simões [(1)], Pedro F. Pereira [(1)]

[(1)] CONSTRUCT-LFC, Faculty of Engineering (FEUP), University of Porto, Porto, Portugal, Rua Dr. Roberto Frias s/n, 4200-465 Porto, Portugal.
[(2)] Polytechnic Institute of Viseu, School of Technology and Management, Department of Civil Engineering, Campus Politécnico de Repeses, 3504-510 Viseu, Portugal.

[*]Corresponding author:
E-mail: nuno.ramos@fe.up.pt, Tel: 00351 225081770, Fax: 00351 225081940

Highlights:

- Proposal of a data mining methodology for indoor environment measurements;

- Hygrothermal characterization of a mild climate non-rehabilitated social housing sample;

- Tailored application of principal components and cluster analysis to hygrothermal data;

- User behaviour as an important factor for clusterization.

ABSTRACT

Temperature and relative humidity values, from a sample of 24 flats with homogeneous architectural features and social strata, were continuously measured during the heating season and a typical summer period. The results proved the existence of discomfort during the heating season, revealing energy poverty patterns, but at the same time sensible differences that could