

Accepted Manuscript

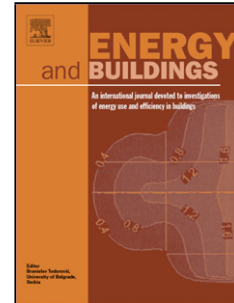
Title: Exergy analysis applied to performance of buildings in Europe.

Author: K Sartor

PII: S0378-7788(17)30377-8
DOI: <http://dx.doi.org/doi:10.1016/j.enbuild.2017.05.026>
Reference: ENB 7607

To appear in: *ENB*

Received date: 14-2-2017
Revised date: 5-5-2017
Accepted date: 12-5-2017



Please cite this article as: K Sartor<ce:text>P.Dewallef</ce:text>, Exergy analysis applied to performance of buildings in Europe., <![CDATA[Energy & Buildings]]> (2017), <http://dx.doi.org/10.1016/j.enbuild.2017.05.026>

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.

1 Exergy analysis applied to performance of buildings in 2 Europe.

3 K Sartor^a, P. Dewallef^a,

4 ^a*Aerospace and Mechanical Engineering Department - Laboratory of Thermodynamic and*
5 *Energetic, University of Liège, 17 Allée de la découverte, 4000 Liège, Belgium*

6 Abstract

7 Energy performance of buildings generally assesses the energy consumption
8 of buildings such as heating, domestic heat water, ventilation systems, etc.
9 However, this approach is based on the first law of thermodynamics and
10 considers only the quantity of energy used without considering its 'quality'
11 and leads to a lack of information about the energy conversion processes. This
12 is particularly true in the new low-energy buildings where sometimes high
13 temperatures sources are used to meet low-temperature needs. The exergy
14 analysis of a system, based on first and second thermodynamic laws, can be
15 used to overcome this. In this work, it is proposed to compare the energy and
16 the exergy consumption and the related CO_2 emissions of several kinds of
17 buildings to determine the best systems in terms of energy and exergy needs.
18 The energy demand calculations are performed using the official software
19 available in Belgium and some assumptions are implemented to consider
20 the exergy approach. As exergy calculations require a reference state, some
21 different climatic conditions are also investigated. Finally, some conclusions
22 are discussed to rank the sources of energy and their related exergy losses.

23 *Keywords:* exergy analysis, building performance, exergy, CO_2 reduction,
24 heat sources.

25 1. Introduction

26 About 40% of the Europe energy is dedicated to the buildings [1, 2] and
27 represents about 36% of the CO_2 emissions. Therefore European Union sets
28 up the Directive 2002/91/EC, reinforced in 2010 by Directive 2010/31/EU
29 to try to improve the performance of the buildings and to reduce the energy

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات