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Energy Efficiency in a Municipal Building
Case Study: "Casa da Cultura de Coimbra"

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Abstract. The aim of this paper is to present the main results of an Energy Audit that has been conducted in a Portuguese municipal building during 2009 - The Municipal Cultural Centre of Coimbra.
The Municipal Cultural Centre of Coimbra is mainly dedicated to local public providing access to a library, cultural events, arts and entertainment. The building has 7 floors occupying a total area of 9800 square meters. In this building 80 employees work daily and the number of visitors per year are about 17 500. The building's timetable is from 9:00 AM to 19:30 PM, except Sunday and public holidays. On Saturday the building opens at 14:00 AM and closes at 19.30 PM.

The adopted methodology for analysis the energy flow in the building for energy saving and rational use of energy in municipal buildings can be applied to all municipal buildings.

The paper presents the main results carried out during the energy audit conduction and the identified energy efficient measures to reduce energy consumption (with positive impact on the energy bill and greenhouse gas emissions), while maintaining or improving human comfort, health and security. The evaluation of measure's impact is also presented.

From the results obtained, we can conclude that, in fact, Energy Audits, identifying potential measures to save energy and to "pay back" the short and medium term, with analysis as simple as checking the best tariff options and/or analysis of the powers engaged, which can result in significant annual cost to the energy, without any investment.

Lighting is another of the aspects that deserve a thorough investigation because in fact there are now on the market more efficient technologies that allow us to keep the same levels of illumination, but with significant reductions in consumption.

The implementation of the measures identified, will produce an annual reduction in consumption of about 68 000 kWh, which environmentally is to reduce annual carbon emissions of about 32 ton CO_2 eq. With the implementation of the measures presented will be an annual saving of around 8700 €.

Key words

Energy audit, Energy efficiency, Energy management, Municipal Buildings.