



ANALYSIS OF RESULTS OF VARIOUS HEATING DEGREE-DAYS CALCULATION METHODS FOR REAL OUTDOOR TEMPERATURE DATA OF RIGA CITY

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ABSTRACT

Various heating degree-days calculation methods are used for energy analysis of buildings, based on the average outdoor temperature during the whole heating season, average monthly temperature, or average daily temperature. The regulations for calculation of energy use of buildings in Latvia provide for calculating heating degree-days based on the average outdoor temperature during the whole heating season. The heating energy consumption data of buildings are re-calculated according to the standard parameters of average outdoor temperature and average length of the heating season, to validate the energy consumption model and to analyze energy consumption of buildings in different heating seasons and after renovation improvements aimed at increasing energy efficiency. According to the Latvian legislation, the energy performance certificate of any audited building must include recommendations for renovation improvements to increase energy efficiency. To maximize the reliability of these recommendations, it is important to estimate the influence of outdoor temperature parameters on the accuracy of calculations of energy performance of buildings.

This study compares the results of three heating degree-days calculation methods for the Riga city, according to the Latvian Environment, Geology and Meteorology Centre, based on a) average outdoor temperature data for the whole heating season (from 13 heating seasons for period from 1997/1998 till 2009/2010); b) average monthly temperature (13 heating seasons for period from 1997/1998 till 2009/2010); c) average daily temperature (5 heating seasons for period from 2004/2005 till 2008/2009).

Keywords: degree-days, energy performance.