



## HEAT ENERGY CONSUMPTION IN UNRENOVATED BUILDINGS AND IN BUILDINGS AFTER A PARTIAL RENOVATION

**Ē. Krūmiņš**

*Latvia University of Agriculture  
Department of Architecture and Building  
Lielā str. 2, LV-3001 Jelgava – Latvia  
Phone: +371 29338891  
Email: [eriks.krumins@inbox.lv](mailto:eriks.krumins@inbox.lv)*

**I. Dimdiņa, A. Lešinskis**

*Riga Technical University  
Institute of Heat, Gas and Water Technology  
Azenes str. 16/20, LV-1048 Riga – Latvia*

### ABSTRACT

The aim of the present study was to analyse heat energy consumption in public buildings. Our data contained information about more than 400 public buildings, including data of heat energy consumption depending on building's use, electric energy consumption and data about the quantity and quality of windows in these buildings in the year 2008. Data was to be analysed dividing all public buildings into twelve groups: schools, special status education schools, day-care centres, hospitals, libraries, cult buildings, recreation centres, local government buildings, museums, sport centres, academy of music, and shelters. The largest groups are schools and day-care centres /kindergartens/. These two groups we were to be analysed particularly.

Our analysis focused on heat energy consumption in buildings with new double-pane windows and frames from polyvinylchloride (PVC) with heat transmittance  $U \leq 1,8 \text{ W}/(\text{m}^2 \cdot \text{K})$  and in buildings with simple windows divided into two-panes with two separate wooden frames (heat transmittance  $U \geq 2,5 \text{ W}/(\text{m}^2 \cdot \text{K})$ ). We analysed data of indoor air quality (IAQ) in three day-care centre buildings from March 11 to 16, 2011.

Data analysis showed that partial renovation – change of windows, doors etc. with and without heat insulation of buildings - does not provide the heat energy consumption economy required by the Ministry of Economics by the year 2020, and in the majority of cases made consumption even bigger.

Keywords: heat, energy, day-care centres, renovation, public buildings.