

EUCEET 2018

4th International Conference on
Civil Engineering Education

CHALLENGES FOR THE THIRD MILLENNIUM

The Impact of ERASMUS+ International Project for the Development of Science

I. Maltseva^{*}, K. Maltceva^{*}, V. Alekhin^{*}

^{*}Ural Federal University n.a. first President of Russia B.N.Yeltsin
Mira 19, Ekaterinburg 620002, Russia
i.n.maltceva@urfu.ru
referetsf@yandex.ru
ksenemaltseva@mail.ru

ABSTRACT

This case study was developed in framework of "Master Degree in Innovative Technologies in Energy Efficient Buildings for Russian and Armenian Universities and Stakeholders" project. European, Armenian and Russian universities, including Ural Federal University named after the first president of Russia B.N.Yeltsin, and also EUCEET are members of a consortium. Construction of energy-efficient buildings becomes a top priority for many countries. Yet certain obstacles in achieving internal environment comfort standards remain in regions with extreme continental climate. In addition to engineering and economic challenges, there exist design process issues since design data should closely correspond with resulting performance of the building. This paper focuses on accurate energy demand estimation during design stage. Two types of buildings designed for Ural-Siberian region of Russia and for Kazakhstan are examined: detached and medium-rise apartment buildings. Most influential factors are taken into consideration and general recommendations on improving energy efficiency using effective combination of structural and engineering solutions are given. Adaptation of design procedure in terms of extreme continental climate made by means of simplified but precise Passive House planning tool is demonstrated.

Irina MALTSEVA

Opalikhinskaya st. 19 – 194,
620034 Ekaterinburg, Russia

Tel: +7 922 209 43 16

E-mail: i.n.maltceva@urfu.ru

Kseniia MALTCEVA

Opalikhinskaya st. 19 – 194,
620034 Ekaterinburg, Russia

Tel: +7 922 134 49 34

E-mail: ksenemaltseva@mail.ru

Vladimir ALEKHIN

Sirenevyy bulvar 16-18,
620072 Ekaterinburg, Russia

Tel: +7 912 245 84 73

E-mail: referetsf@yandex.ru

REFERENCES

- [1] R. Perminov, I. Maltseva, N. Kaganovich, Y. Alexander. *Energy-efficient multi-comfort group of buildings in Svetlorechenskiy estate*, Applied Mechanics and Materials Vols. 725-726, 1389-1394. 2015
- [2] J. Hensen, R. Lamberts. *Building performance simulation for sustainable building design and operation*. London: Spon Press. 2011
- [3] I. Motawa, K. Carter. *Sustainable BIM-based evaluation of buildings*. Procedia - Social and Behavioral Sciences 74, 419-428. 2013