



DOCTORAL RESEARCH TOPIC:

Validation of zero CO₂ buildings (digital, thermodynamic) models

RESEARCH FIELD:

Energetics and Power Engineering (T 006)

BRIEF DESCRIPTION OF RESEARCH TOPIC:

Primary energy consumption in buildings accounts for about half of all energy produced in the European Union. Nearly Zero Energy Buildings (NZEBs) are defined in EU regulations as energy-efficient, low-energy and renewable energy (RES) buildings.

In the case of ,zero energy buildings‘ and the energy they produce and consume, an important aspect is the proper definition and use of the so-called NEP ,plot boundary‘. A “site boundary” is a functional boundary of a building, which is usually considered the boundary of the site area (site ownership). In the Republic of Lithuania, energy efficient buildings are regulated by the construction technical regulation STR 2.01.02: 2016 “Design and certification of energy performance of buildings”. Class A ++ is considered the highest, it meets the definition of a „near-zero energy building“, and from 2021 onwards valid for all new buildings. The next step is a ,zero CO₂‘ building, with energy systems consuming CO₂ emissions equal to or less than those produced are.

The work may continue to explore in detail how climate change may affect the energy performance of buildings depending on the climatic conditions affecting the building. The results of this study can also help in finding the best concept for a sustainable building.

Aim of the work: To validate the thermodynamic models of a building with zero CO₂ emissions and to evaluate the dependence of primary energy needs and climatic conditions based on the actual costs of energy systems.

SCIENTIFIC SUPERVISOR:

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