



DOCTORAL RESEARCH TOPIC:

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Investigation of influence of  
energy efficiency measures on  
energy demand in industry

RESEARCH FIELD:

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Energetics and Power Engineering (T 006)

BRIEF DESCRIPTION OF RESEARCH TOPIC:

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Sustainable and efficient use of energy resources and energy consumption is a priority for the EU's energy policy and is one of Lithuania's key long-term energy strategic goals. The results of energy audits of industrial enterprises show that the sector has a significant potential for reducing energy consumption through the application of various technological measures to improve energy efficiency. The multiplicity and diversity of industrial processes, the lack of information on energy consumption patterns at the process level and the limited choice of energy efficiency improvement measures often result in the desired energy efficiency improvement. There is a lack of detailed data on the final energy consumption of industrial processes and a lack of standardised energy indicators to identify and assess the energy efficiency of specific technological processes.

The main objective of the work is to develop a comprehensive methodology for the evaluation of the effectiveness of the selection of technological measures to reduce energy consumption and to assess the impact of energy efficiency measures on the energy demand of industrial processes.

To achieve this goal, the data on the technological processes used in industrial enterprises, their declared and actual energy consumption will be systematised, the methods of assessing the efficiency of electricity and heat consumption in technological processes will be analysed, and the analysis of technological modes of industrial processes and their impact on the energy consumption of the equipment will be performed. The impact of the digitalisation of technological processes on energy consumption will be assessed using real examples. It will also examine the impact of energy efficiency measures on the economic performance of industrial enterprises. In this way, the research envisaged in this thesis will allow the development of an integrated methodology to take stock of energy losses, to identify the most technologically and economically efficient combination of measures to reduce energy consumption, and to optimise the costs of technological processes in industrial enterprises.

SCIENTIFIC SUPERVISOR:

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