



DOCTORAL RESEARCH TOPIC:

Investigation of the heat and mass transfer processes in the condensing economisers of the biofuel boiler plants

RESEARCH FIELD:

Energetics and Power Engineering (T 006)

BRIEF DESCRIPTION OF RESEARCH TOPIC:

Lithuania has been successful in developing the network of biofuel boilers, building new and rebuilding old boiler houses, and installing new devices (boilers, heat exchangers, filters, etc.). Some boiler houses are reconstructed/built using foreign equipment, and some prefer production made in Lithuania as it is cheaper than the foreign analogue. However, all this production is not well investigated, and it shows in practice during operation of the existing boiler houses. The difficulties experienced during operation of such boiler houses are mainly related to uncertainty of optimal operating modes of the installations. Comprehensive investigation is a solution to this problem, as its results could be the grounds for operational durability and efficiency of various types of installations. One of such installations is the condensation economiser used to improve effectiveness of boilers. Use of these heat exchangers means that there is less heat in the flue gas released into the environment via the chimney (flue gas cools down from 150 to 50 °C); however, it also means that the cost of the biofuel boiler installation is considerably higher. The production cost of a condensing economiser is determined by its size. In order to identify optimal dimensions of the installation and to maintain similar work efficiency of the heat exchanger at the same time, it is necessary to know the complex heat and mass transfer processes taking part in it. Therefore, it is planned to perform complex investigation of two-phase flows that encompasses experimental investigations of volumetric and surface condensation processes characteristic in condensing economisers.

SCIENTIFIC SUPERVISOR:

Dr. Robertas Poškas
Nuclear Engineering Laboratory

Lithuanian Energy Institute
Breslaujos 3, 44403 Kaunas
Lithuania

Robertas.Poskas@lei.lt

More information and the full list of offered PhD topics available at our website

<https://www.lei.lt/en/phd-studies/>