ABSTRACT

The master's dissertation contains pages, drawings, tables, applications, sources.

MATHEMATICAL MODEL, COMPUTER MODELING, KINETIC SCHEME, NITROGEN OXIDES, BOTTLE, FUEL, OIL, SOFTWARE, STARTAP PROJECT

Object of research - computer modeling of formation of nitrogen oxides at combustion of organic fuel.

The purpose of the study is to develop an improved application package and its testing in numerical studies to evaluate technical solutions for reducing harmful emissions in boilers.

Research methods - computer modeling, object-oriented programming, intelligent data analysis.

Theoretical and computational analysis of the kinetic schemes of chemical reactions of formation of nitrogen oxides used in the computational practice.

Development of physical and mathematical model of generation of nitrogen oxides at combustion of sawblade fuel in burners of boiler units, taking into account the chosen kinetic scheme.

Conducting a computational experiment that allows to evaluate the influence of technological methods of reducing the formation of nitrogen oxides, with the identification of the most promising solutions for a functioning boiler unit.

The results of this work may be useful at the stages of design and implementation at the TPP, as well as used by technology operators in the course of the production process.

The urgency of the work: the prediction of the formation of harmful substances in the combustion of fuel in boilers TPP remains one of the primary and large-scale tasks for heat power engineering, and this issue is of global importance for the protection of the planetary environment and, therefore, for the survival of mankind.

Relationship of work with scientific programs, plans, themes. Master's thesis Stadnik VA was carried out: within the framework of the agreement on scientific and technical cooperation between the KPI them. I. Sikorsky and the Institute of Technical Thermophysics of the National Academy of Sciences of Ukraine, in accordance with the tasks of the Initiative research work of the KHTP Department "Intelligent system for the development of eco-safe processes for the elimination of harmful emissions".

Approbation of the results of the dissertation. The main results of the work were reported at the VII International Conference of Students, Postgraduates and Young Scientists in Chemistry and Chemical Technology (Kyiv, 2018), VI International Scientific and Practical Conference "Computer Simulation in Chemistry and Technologies" (Kyiv, 2018).

Publications According to the materials of the master's dissertation, 1 article and 1 thesis of reports in the collections of conference materials were published.