

## ANNOTATION

Master's dissertation on the topic "Estimation of the influence of heterogeneity of flow on the accuracy of volume and volume recording". The dissertation consists of an introduction, six sections, conclusions on work in general and applications. The total volume of the dissertation is 141 pages, 82 figures, 32 tables.

Accuracy of gas flow registration depends on many factors, it can be both the influence of the environment and the uniformity of the gas flow. Since in acoustic methods, the flow is associated with the average flow velocity, the problem of the uniformity of the flow of gas primarily affects accuracy. That is why the study of the effect of heterogeneity of the flow on the accuracy of volume and volume recording is now relevant.

The purpose of the dissertation is to study the influence of the heterogeneity of the gas flow on the accuracy of the registration of gas consumption. In order to achieve the objectives of the research the following problems were solved: the problems of measurement of gas consumption were analyzed, instruments and systems of measuring the flow on the basis of acoustic methods were analyzed, structural features of the application of ultrasonic flowmeters were analyzed, the influence of elements of the technological network of the gas stream on the stationary state of the turbulent flow (on heterogeneity) elements of the technological network of the flow of gas to the hydrodynamic coefficient, mathematical models of the studied processes serving for carrying out calculations, an estimation of the influence of flow heterogeneity on the accuracy of the measurement of the cost, the ways of achieving the highest accuracy of measurement are outlined.

The object of the study is the process of measuring the volume and volumetric flow of natural gas.

The subject of the study is measuring converters of natural gas consumption based on acoustic methods that have gained wide use in many industries.

The research methods underlying the work are based on the use of mathematical modeling of physical processes, basic laws of hydrodynamics, and methods of modern information technologies.

The scientific novelty of the results obtained is as follows. The theoretical and bench studies of the influence of the hydrodynamic parameters of the fluid medium and the elemental base of the converters on the metrological characteristics and the ways of minimization of the errors of measurement of gas flow rate are outlined.

The main scientific positions and results of the dissertation work were reported and discussed at two international conferences, among them: the XI All-Ukrainian Scientific and Practical Conference of Students and Post-graduate students "A View to the Future of Instrumentation", Kyiv, 2018, XVII International Scientific and Technical Conference "Instrumentation: the state and prospects ", Kyiv, 2018.

The main positions and results of dissertation work are presented in 3 publications of materials of international and all-Russian scientific and technical conferences.

The section "startup-project" presents the materials that characterize this study as a product. In the gas flow modeling section, the influence of flow heterogeneity on the accuracy of gas flow registration is investigated. In the section of experimental research the results of the half-level experiment are presented.

Key words: natural gas, flow, measurement, error, flow meter, ultrasonic, accounting.