The work of the metrological services of the ministries (departments) and the USSR State Committee of Standards (Gosstandart) organizations in analyzing the state of measurements in various spheres of our national economy became widespread in 1973-74. Analysis of the state of measurements and metrological provisions for the processing of oil products at the enterprises of the USSR Ministry of the Oil-Processing and Petrochemical Industry (MINNEFTEKHIPROM) was completed in 1974 under the scientific and methodological guidance of the All-Union Scientific-Research Institute of Metrology and Standardization (VNIIMS). Measures prepared as a result of this analysis for improving the metrological provisions for processing oil products were discussed at the session of the USSR Gosstandart with the participation of representatives of the Minneftehimprom and the Ministry of Instrument-Making (Minpribor) and were fully approved. The content and principal results of this work are discussed in the article published below.

STATE OF MEASUREMENTS AND MEASURES ADOPTED FOR IMPROVING METROLOGICAL PROVISIONS FOR THE PROCESSING OF OIL PRODUCTS

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The Communist Party of the Soviet Union Central Committee examined in November 1974 the "Work of the USSR Ministry of the Oil-Processing and Petrochemical Industry in raising the efficiency of production and capital investments." The CPSU CC noted that, in conformity with the resolution of the CPSU 24th Congress and subsequent resolutions of the CPSU CC plenary session, the Ministry developed and implemented a compound program for enlarging and reconstructing the existing enterprises and large industrial units of the industry.

As a result of the successful implementation of this program during the Ninth Five-Year Plan, the production capacity of the oil-processing enterprises has increased considerably and our national economy received over and above the five-year plan petrochemical products almost to the value of 1000 million rubles.

At the same time the CPSU CC noted that the Ministry does not as yet fully utilize the possibilities for a further raising of production efficiency. Greater attention should be paid to raising the quality of the marketed products.

The solution of this problem depends to a considerable extent on the state of metrological servicing provided for the processing of oil products and aimed at guaranteeing the required precision in testing the parameters of marketable products, raw materials, semimanufactures, their strict registration, and the required testing of production process parameters.

A sharp increase in the quantity of processed oil products and a rise in their quality are of prime importance for national economy. The solution of these problems depends to a considerable extent on the state of the oil products' metrological servicing which should guarantee the required precision in testing parameters of marketable products, raw materials, semimanufactures, as well as ensure their registration and the testing of production process parameters.


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Analysis of the state of measurements and metrological provisions for the processing of oil products at the enterprises of the Minneftekhimprom conducted according to a joint plan of work by the experts of the Ministry and the Gosstandart under the scientific and methodological guidance of the VNIIMS was completed in 1974. Investigations covered 80% of all the oil-processing and petrochemical enterprises, at which more than 1.5 million measuring instruments and means of automation are used.

The basic oil-processing and petrochemical production methods and plants were selected for analysis, including:

- the degree to which the basic and auxiliary oil-processing and petrochemical plants are equipped with up-to-date measuring methods and means whose precision in testing the basic parameters of processes, raw materials, and marketable products meets the requirements of state standards, specifications, and technological regulations;
- the effect of metrological provisions for technological processes on the quality and the conditions of registering the quantity of raw materials and marketable oil products, and on the adherence to safety precautions at the plants;
- provision of the required measuring means and methods for the automatic systems adopted in the industry for controlling technological processes;
- condition of the normalizing and technical documents for marketable products including state standards for oil products and their testing methods, specifications, internal workshop test analysis techniques, and the correct representation in these documents of the requirements for the oil products' basic parameters, as well as the provision of the necessary methods and means for their implementation;
- application at the plant of the standards comprised in the State System for Ensuring Uniform measurements (GSI), and the activity of the departmental metrological services;
- state of metrological servicing by the Gosstandart local agencies of the measuring equipment in circulation at the plants of the Main Administration of the Oil Industry's Chemical Processing (Glavneftekhimpererapotka);
- equipping the state and departmental metrological services with the necessary reference measuring means, testing equipment, premises and the required normalizing and technical documents for the testing means and methods;
- complaints of enterprises regarding the production quality, design, and metrological characteristics of the measuring equipment used at the plants of the industry.

Investigations have shown that the automatic systems for controlling and regulating continuous production processes at the oil processing enterprises provide stable parameters for basic operating conditions. This is attained by a wide application in the industry of the State System of Industrial Instruments and Means of Automation (GSP) and the "Start" automatic system.

The industry is being rapidly provided with pH meters for testing the composition of technological media and the quality of effluent water, with refractometers, salinometers, chromatographs, and automatic instruments for testing the lower detonation limit of air media at the operating technological installations.

Several large enterprises of the industry are provided with centralized metrological services which supervise the measuring equipment's condition and application, and the development of metrological provisions for the enterprise as a whole.

All this made it possible to provide an adequately high basic-production automation level which attains 95%, and to market 150 types of oil products with the state Sign of Quality.

However, the present development of the industry related to rising individual capacities of technological aggregates, the establishment of combined assemblies, the continuously rising requirements with respect to the quality of marketed oil products, the application of automatic systems for controlling technological processes and automatic control systems of enterprises raise new requirements for ensuring in the course of production continuous automatic testing of the basic quality parameters of raw materials, semimanufactures, and finished oil products.

It is necessary to have a direct automatic control of such parameters as the content of water and salts in oil and oil products, fractional composition, vapor tension, viscosity, color, freezing and flash points, and other parameters of the oil products' properties. However, such a control is at present impeded owing to the short supply of industrial automatic measuring equipment.