Adopted solutions provide the possibility of extradition to the distribution network of the sum-total power projected DES and DES №2 "Japanese"; the possibility of extradition to the distribution network system power either of the two stations at the second off; the possibility of withdrawal from the network at any of the two half-sets designed DES, with the possibility of issue to the network 50% of rated power plant.

His solution allows providing systematic technical activities service station equipment and as a result, improving maintenance.

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CONTROL, MONITORING AND DIAGNOSTICS SYSTEM OF THE TRANSFORMER EQUIPMENT OF "PERESVET" SUBSTATION

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There is an active growth of electricity consumption in all areas of power industry. The increase influence of this economic factor at the used difficult and expensive transformer equipment resulted in need of maximizing use of its resource.

The transformer equipment is a responsible element of any electric network. Its work is influenced as external influences (storm and switching an overstrain, increase of working tension, seismic influences, overloads, etc.), and by the internal defects of a design formed as a result of its operation (burning out of rounds owing to is long not disconnected KZ on the party of NN, a core overheat at emergence of a contour of KZ, a contamination of tubes of a cooler, violation of contacts, etc.).

For continuous control of a condition of the transformer equipment and finding of these or those defects the set of methods of diagnosing is used [2]. For example,

- The gasochromatic analysis of the gases (GHA) dissolved in oil.
- Measurement and localization of partial discharge.
- Thermovision control.

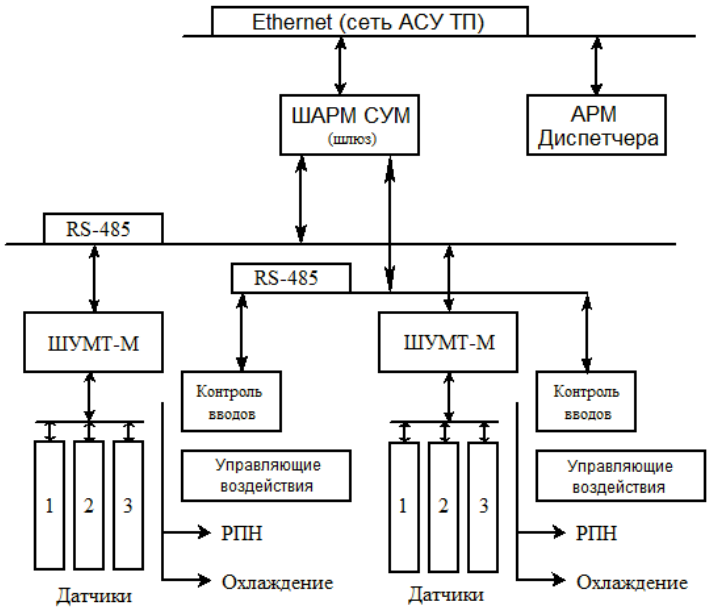
When passing work practice on substation of 500 kV of "Peresvet" we considered modern system of diagnostics of the transformer equipment – SUMTO (a control system, monitoring and diagnostics of the transformer equipment).

This system is intended for reduction of risks of possible failure of the expensive equipment, reduction of number of the service personnel and releases it from routine procedures of preventive control.

SUMTO is intended for the solution of the following tasks:

- Continuous measurement, registration and display of base parameters of transformers in normal preemergency and emergency operation;
- Forecasting of technical condition of transformers;
- Integration into industrial control system of a power plants.

The scheme of structure of SUMTO is submitted in *figure 1* [1].



Pic. 2. The scheme hierarchy of SCMDTE.

The first level includes all technological protection, measuring systems, sensors and other controlling devices with an analog or digital entrance.

The second level in SUMTO is realized in the form of a microprocessor case of management and monitoring of ShUMT-M. These cases are established directly at each tank of transformers, autotransformers and reactors.

The third level, the most top SUMTO hierarchical level, represents the automated workplace of the operator (automated workplace). The equipment of the SUMTO this level is placed in a case of the automated place CHARM of SUMY.

Control systems, monitoring and diagnostics of the transformer equipment are delivered in the form of the software package installed in industrial computers of a case CHARM of SUM [2].

The SUMTO analytical models represent the software product. This product is individually adjusted on the equipment of each substation taking into account number of the transformers captured by monitoring, existence of these or those sensors on windings and a tank of each device.

Models carry out preprocessing of indications of the installed sensors on the scale of real time and provide formation of a warning signal for operation personnel about emergence of an inadmissible combination (set) of service conditions [2].

Also in SUMTO algorithms of an assessment of a condition of the equipment are realized:

- Speeds of aging of vitkovy isolation;
- Admissible level of overloads of the transformer;
- Threshold temperature of probable formation of vials of water vapor at overloads;
- Overall performance of the cooling system;
- RPN residual resource;
- Overall performance of the cooling system;
- Temperatures of the possible beginning of process of condensation of moisture of oil on an isolation surface at fast cooling.

These built-in algorithms help to define more precisely a condition of the diagnosed transformer equipment in this or that timepoint.

Conclusion: The system of diagnosing and monitoring of SUMTO considered during work practice on PS "Peresvet" of 500 kV, in our opinion, allows to raise significantly an operational resource of all park of the transformer equipment used on this substation. It allows to reduce significantly economic costs of operation and repair.

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