AUTOMATIC HEAT-ENERGY METERING SYSTEM

Description
The automatic heat-energy metering system (AHEMS) is designed for monitoring generation and consumption of heat-energy carriers in open and closed systems of water and steam heat supply.

AHEMS is constructed as a three-level system with due regard to modern requirements for open systems.

The upper level of the system is an automatic workplace consisting of a PC with specialized software, a printer, and a switch.

The middle level of the system consists of specialized secondary measuring converters (heat counters TAKON 10 and SPT-960) responsible for data acquisition, processing, accumulation, calculation, recording, and transmission upon request from the AHEMS upper level.

The low level consists of primary measuring converters (consumption, pressure, pressure difference, and temperature transducers) mounted on the equipment. The signals from these transducers are continuously fed into the upper level of AHEMS.

Technical specifications
- Automatic hourly acquisition of information and measured and calculated parameters of heat energy and its consumption; database managing.
- Output of current on-line information upon operator’s request every 5, 10, 15, or 20 minutes.
- Generation of reports (daily, monthly, and annually) and printing upon request.
- Warning about nonstandard events in the system.

Fragment of a video frame of the system at the Surgut state district power plant No. 1
**Technical appraisal and economic benefits**
The system performs real-time monitoring of the main criterion of efficiency for boiler-room operation: specific consumption of the heat-energy carrier. Full automatic control of all calculations is achieved by hourly, daily, monthly, and annual presentation of data on consumption of heat carriers, heat energy, and their parameters. They are represented as reports, tables, graphs, or symbolic diagrams of the process. Report forms are tailored to each customer's specific needs.

**Application area**
The system is used for commercial accounting of supplied and consumed heat energy and heat carriers at heat power plants, electric power plants, and boiler-rooms and can be used as one of the subsystems of the automatic process control system.

**Development stage**
The automatic heat-energy metering system has been implemented at the Surgut state district power plant No. 1.

**Patent situation**
Not available.

**Commercial offers**
Fabrication and turn-key delivery, joint production.

**Estimated cost**
The cost of one turn-key unit is 150,000 rubles.

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