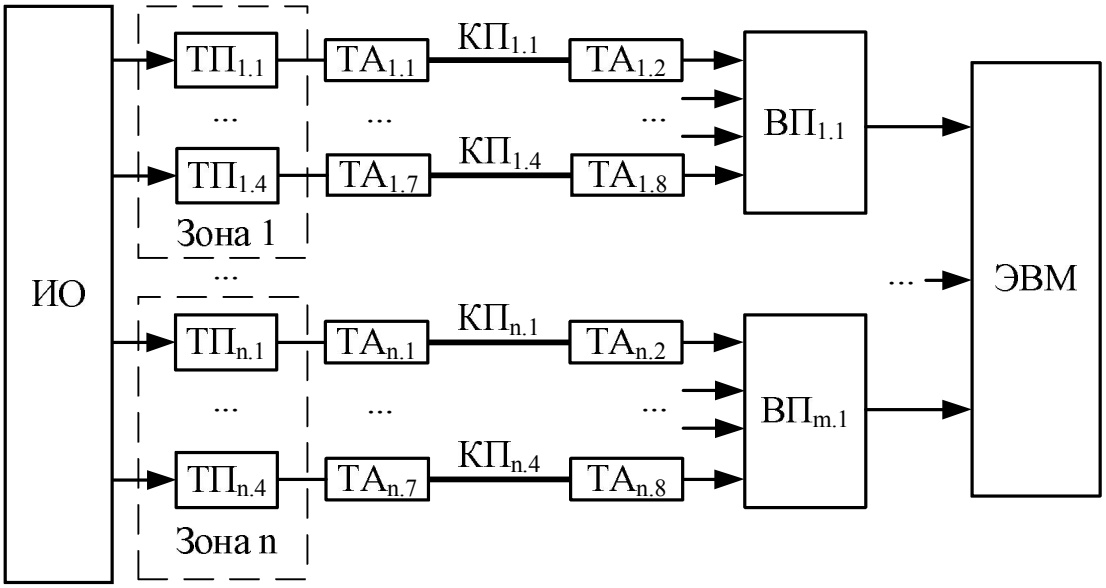

Рисунок 2 – Структурная схема ИИС экспериментальных исследований температурного профиля проходной печи

На рисунке 2 изображены: ИО – измеряемый объект; ТП – термопара; ТА – термопарный адаптер; КП – компенсационный провод; ВП – вторичный прибор; ЭВМ – промышленный компьютер.

Таким образом, результаты эксперимента позволяют получить исходные данные для определения составляющих температурного профиля толкательной термической печи на газе для прокалки форм для литья. Приведены схема установки датчиков прямого измерения температур, методы косвенного определения температур. Разработанная структурная схема ИИС контроля температурного профиля проходной печи, может быть использована для дальнейших исследований.

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UNIFICATION HARDWARE AND SOFTWARE ADCS

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Automated dispatch control systems (ADCS) in the energy sector are a management systems in real time by automating processes for the generation, transmission and distribution of electric energy. ADCS are physically at the top level of at least one host computer, which is usually called the leading station (LS) and the lower level - from multiple remote terminals (MRT).

MRT are autonomous units that interact directly with the managed process. They collect data from real-time (analog and digital) with sensors in the controlled power system; record the sequence of events, broadcast (and periodically, with the exception, and on-demand) data collected on the master station for processing and preservation; perform regulatory action in response to commands supplied from master station; perform the functions of local proportional-integral-differential control loops [1].

Master station performs the functions of supervisory control and data processing in real time and is part of the operational and information center, located on the upper level of the operational

process control of electric networks enterprise. Functions of the station is responsible for: obtaining data from MRT, physical processes and other sources; introduction to the functions of automatic control generation, and help air traffic controllers in the control and regulation of the energy, the creation of a model power system real-time (including the related but not under the control of power) for the functions higher level. Among the higher-level functions (which are also the naming of advanced real-time applications) are the functions responsible for the safety assessment and optimal regulation of the energy.

Currently, introduction of ADCS are limited, mainly by setting telemechanical autonomous systems of different manufacturers.

The sharp increase in demand for information support of all the services of power plants and substations, district electric systems (DES), enterprises of electric networks (EES), and grid has led to the need to replace the installed and implementation of new subsystems ADCS at all levels - from the level of automated control systems of transformer substations (ACSTS) to a level ADCS grid. ADCS subsystem perform similar control functions (Power supply, Automated checking and account of electric power systems (ACAEPS)) at all levels must fulfill the following requirements:

- functional completeness;
- flexibility of the structure;
- openness;
- continuity;
- information compatibility.

This approach to the selection of a single underlying software will:

- unify the ADCS level DES and EES;
- unify the automated control systems (ACS) level power plants and substations;
- to develop a libraries of software modules that extend the basic package;
- to reduce the unit costs of development and implementation of ADCS;
- to organize a centralized support the implementation and operation of the subsystems of ADCS.

Close interaction between the subsystems ADCS necessary for the effective operation of each of them. However, the features of basic tools and substantially different indices of reliability (including readiness), making inappropriate or impede the implementation of the entire complex ADCS based on a single hardware and software platform. An important task is to provide a bidirectional interface between the subsystems based middleware (gateways) running on standard network protocols at various levels, among which are the networking version of Windows protocols ODBC, DDE, COM (OLE) and other open protocols, such as, OPC.

The basic paradigm of modern architecture development computer OIS (operational and information systems) in the energy sector represents a transition to open distributed systems that involve the distribution of functions, including the master station, among the homogeneous computers connected through local area network (LAN). Sometimes the new architecture is applied redundancy, although its importance has declined since then as a spare backup is only a part of more complex and flexible fault-tolerant schemes. The new systems responsible for ensuring the necessary high-availability distributed among all the computers involved in carrying out the functions ADCS [1].

This change was caused by a combination of several factors: development of open systems, requirement to the creators of the systems of more high accordance to the standards (legally and factually), significant decline in prices of computer automated systems and increase their productivity, more reliable and affordable technology of computer networks, EES desire to increase the efficiency of electric utilities of ADCS and a number of other circumstances. Indirect result of this development was the increased complexity of the quantitative analysis of alternative development computer configuration of the OIS. Now under design and preparation of technical documentation of new systems need better technology assessment of the readiness and reliability of their work.

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