LITERATURE CITED


ACS TP INFORMATION SUBSYSTEMS FOR VISCOSSE FIBRE PLANTS

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ACS TP information subsystems form the lower structure level of control systems which have been developed using the media of computer technique, and are a mutually interconnected complex of functional, technical, and program solutions whose quality and stable functioning largely determine the final effectiveness of the ACS TP.

Thereupon, on one hand information subsystems (IP) fill the role of systems for preparing information and ensure its operability and reliability for solving control problems, and on the other hand they fill the independent role of a very important element of the man-machine control system, ensuring the preservation and ordering of information, and also its presentation to personnel for adoption of soundly-based decisions.

The indicated multipurpose function of the IP, in combination with requirements for reducing capital outlays, increasing operational reliability, and convenience in servicing, determines the basic system-technical solutions and functional characteristics of the IP.

The base for system-technical synthesis of the IP is accumulated experience in introduction and operation of pilot specimens of ACS TP for man-made fibre plants, and also the possibilities of contemporary computer technique, in conformity with which the IP of ACS TP are constructed in the form of a distributed program-technical complex based on radial or main-line structure of a controlling computer technique of the SM-2M type. In the complex there are local information collection and display stations using intellectual terminals of the CCOT-1 and OTWS-02 type and video-terminals of the VTA-2000 type, and also a central (coordinating) part of the system based on an SM-2M.

The composition of the information subsystem functions also takes into account the function indicated above and includes, besides traditional functions of information collection systems, functions caused by the specifics of the technological processes for manufacturing man-made fibres as objects of control (Fig. 1).

In the functional structure being examined there are both system functions which ensure performance of the role of a lower level of the ACS TP as a whole by the IP (introduction and primary treatment of information, organization and management of the information base), and also "user" functions which are oriented toward the realization of a real-time man-machine system (secondary treatment, technical-economic and statistical calculations, and presentation of results).

In connection with the distributed structure of the IP, realization of each function is not tied to a specific element of the complex of technical media, that is, functioning of the system is assumed on general computing resources and their distribution is carried

Let us briefly characterize each functional level.

1. The information introduction function includes automatic questioning from analog, positional, discrete and number-impulse sensors. Signals of the analog sensors pass into a controlling computing complex (CCC), either directly (standardized within the range 0-5 mA, ±10 V) or with normalizing transformers, or with local control systems of the "Ritminal" type. Signals from individual sensors of the state of equipment or from number-impulse sensors of flow rate pass without transformation directly from magnetic starter contacts and management and control scheme. Questioning is carried out cyclically with a frequency which is assigned at generation of the system. The informational power for automatic introduction is limited only by the reaction time requirement of the system and should be no more than 500 signals of analog and discrete introduction (with respect to each form) and not more than 100 signals of number-pulse introduce at a questioning period of about 0.5 min.

Manual introduction of information, which is also part of the collection function, ensures obtaining laboratory control data directly from the work sites of plant laboratory personnel, and also introduction of technological information about scheduled assignments and regulation limits. Introduction of information is effected via codograms of standardized structure of no more than 4-5 types. The introduction intensity is usually from 10 to 20 codograms per hour.

2. The primary treatment of information functions ensure objectivity and reliability of information, and include procedures of logical control of reliability and transformation of signals.