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APPROACHES TO DESIGN OF AUTOMATED IT AND CONTROL SYSTEMS OF TRT ^{*)}

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For the thermonuclear facility Tokamak with Reactor Technologies (TRT), a complex of automated information and control systems is being designed. The complex is necessary to support its operating modes, group management of diagnostic and technological systems, ensure storage and data handling.

To ensure the integration of information and control systems, diagnostic and technological systems into a holistic set of systems for measuring physical parameters, monitoring and control of technological and physical processes at the design stage, it is important to introduce unified approaches to the design of technical and information objects, the use of collaborative design tools, and documentation management systems, modeling tools, etc. The difficult availability of high-performance data acquisition and processing instrumentation, it is required the centralized creation of a catalog of such solutions for use by plant system designers. These catalogs of these equipment will help reduce costs for supporting the design and development of individual systems, integration, operation and maintenance in future.

The infrastructure of building should take into account: an uninterruptible power supply system, a cable connection system, server rooms supporting the environmental conditions required for the equipment, a dedicated control room, and the subsequent possibility of integration of monitoring, warning, safety and access control systems.

Automated IT and control systems include: a central control system and a central control room, a system of interlocks and protections for diagnostic equipment, cybersecurity, and a high-performance data processing system. They provide modeling and preparation of diagnostic data for the plasma control system, local computer networks for data exchange, synchronization, and data storage.

The report contains approaches to the design of automated control systems for TRT based on the experience of implementing of development processes at the world's leading and russian tokamak-type fusion research facilities.

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