A SET OF PROGRAMS FOR AVALYZING TECHNICAL AND ECONOMIC EFFICIENCY OF NPP POWER UNITS

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The structure of individual components (blocks) of the automated computer program complex for analyzing technical and economic efficiency of operation and parameter diagnosing NPP power units with WWER is considered. When creating it we used the Microsoft Visual Studio 6 development environment and the algorithmic language FORTRAN 95 as integrated programming environment, which proved to be quite good as software tools when creating software packages for computing the parameters of technological processes in complex technical systems. This set of programs, which is controlled by the MAIN file, can be divided into two parts: conservative and operational, which is quite typical for automated decision-making support systems for operational personnel of power facilities as complex technical systems. The conservative part of the program complex, which provides the adequate description of the technological processes in the systems and equipment of the NPP power unit at different operation modes includes: a database operation block, which is used to store the information accumulating during the operation of the power units; a block for processing information about the values of the parameters and characteristics of technological processes in the power equipment received from the instrumentation of the power unit; a block for identifying the simulation model with the actual technical state oh the power unit equipment; a block of the modification of the structure and parameters of thermal power unit scheme (TS) that provides for connecting, disconnecting, switching, replacing, eliminating and including equipment into the TS, as well as entering and correcting the initial data necessary to compute the parameters of the technological processes in the power unit equipment. The operational part of the program complex, which provides the completion of parameters in the power unit systems and equipment, contains the following program block; a block of program for computing parameters, characteristics and indicators in the reactor plant equipment by means of the corresponding algorithms, including program for computing thermal and hydraulic parameters and characteristics of the heating agent in the primary loop equipment, in particular, in main circulation pumps, as well as working substance in steam generation; blocks of programs for computing the parameters, characteristics and indicators of the turbine installation by means of the corresponding algorithms, including a block of programs for computing the parameters, characteristics and indicators in the flow section of the main turbine and the turbo drive of the feed pump; blocks of programs for computing the parameters, characteristics and indicators in the systems of condensation and regenerative heating of the main condensate and feed water; a block of programs for computing the parameters, characteristics and indicators in the system for heating the network water (heating system); a block of programs for the parameter diagnostics of the main and auxiliary equipment in the power unit.