

4.1.12. THE PROBLEMS OF AUTOMATIC DATA PROCESSING AT THE SYSTEMS OF CONDITION MONITORING OF INDUSTRIAL EQUIPMENT

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The thesis is devoted to the development problems of the control and diagnosis system of the industrial equipment. Control and diagnosis systems of the stationary type can include the following architectural parts: the subsystem of data acquisition and saving, the subsystem of equipment monitoring and the subsystem of technical diagnosis.

Modern systems of this type ordinary use some different autonomous subsystems of the equipment monitoring running in the synchronous mode. The structure and the set of these subsystems depend upon the functional purposes of the control and diagnosis system' using. Each of these subsystems use their own set of physical methods for the detection of the equipment characteristics. It leads to the arising of the development problem of multi-parametrical monitoring and diagnosis methods.

Using of the simultaneous monitoring of the same technical object by the different physical methods leads to the possibility of the essential generalization of the monitoring and diagnosis problems and to the formulation of the interesting set of general scientific problems. One of the main problems of this set is the problem of the non-uniform information processing. Data acquiring by the acquisition and saving subsystem is a non-uniform one both at the problem of the detection of the current state of the monitoring object and at the problem of the prediction for the dynamics of object characteristics.

The approach to the processing of the monitoring data based on the methodology of Group Methods of Data Handling (GMDH) is proposed at this thesis. It makes possible to apply the methods of self-organization of the mathematical models to the problems of the diagnosis and control of complex technical systems. Particularly the using of GMDH ideology makes possible to develop the universal approach for the solution of the problems of short- and long-term prognosis making and for the problems of pattern recognition. These problems of general scientific type are arising inevitably at the estimation and prognosis making for the technical state of the industrial equipment and at the identification of defects of the exploited equipment