

залишкова нестационарність повинна знаходитись в межах від 6% до 8%. За результатами проведених комплексних досліджень ВКТ розроблена методика нормування метрологічних характеристик вимірювального каналу тиску.

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THE STRUCTURE OF INTELLIGENT SYSTEM MACHINES FOR WORK IN DANGEROUS AREAS

Today a more complicated structure of the system of intellectualization of machines for work in unsafe areas is being developed. The main subsystems of this structure are: the subsystem of high-speed computer devices; the subsystem of

information high-precision sensors; the subsystem of mathematical models of optimizing the parameters environment and working modes of machines. Each of these subsystems is characterized by a set of hardware and software with its requirements for operation and maintenance.

The structure of intelligent system consists of three levels (Fig.1). The lower level of input/output includes sensors, actuators.

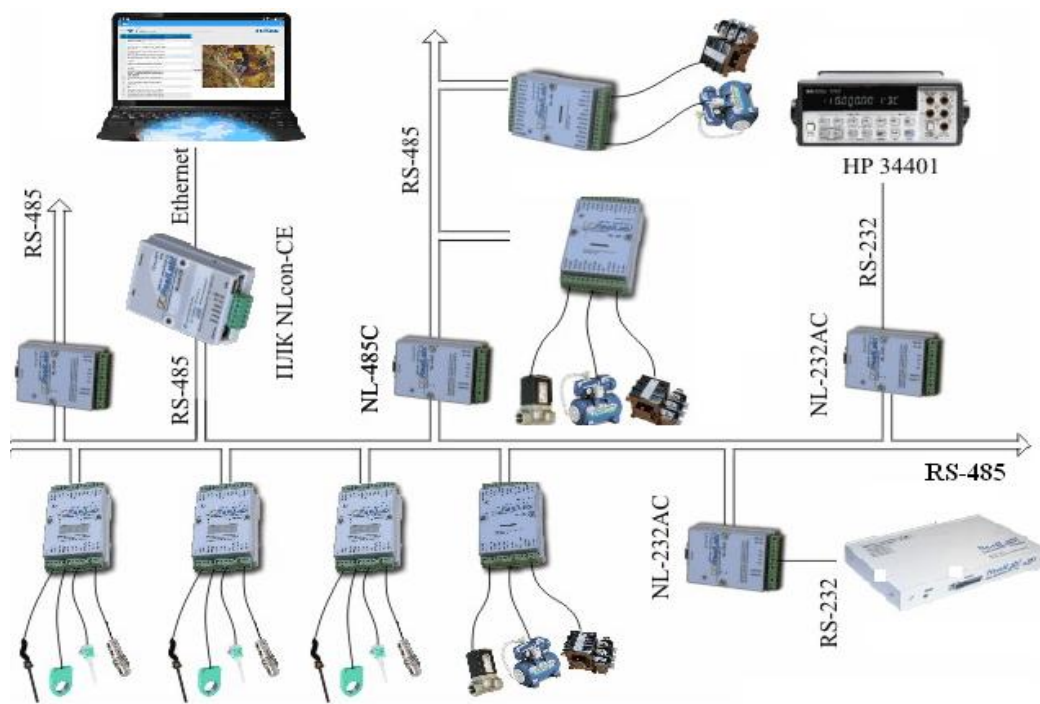


Fig.1. The structure of Intelligence System

The intermediate level consists of controllers. Their task is to process the obtained data, to give the control action, to transfer data to the upper level. At the top level there are the database servers and operator stations, whose task is to give the operator a man-machine interface and to carry out the exchange with the server and programmable logic controllers. The structure of intelligent system machines for work in unsafe areas is presented in Fig. 2.

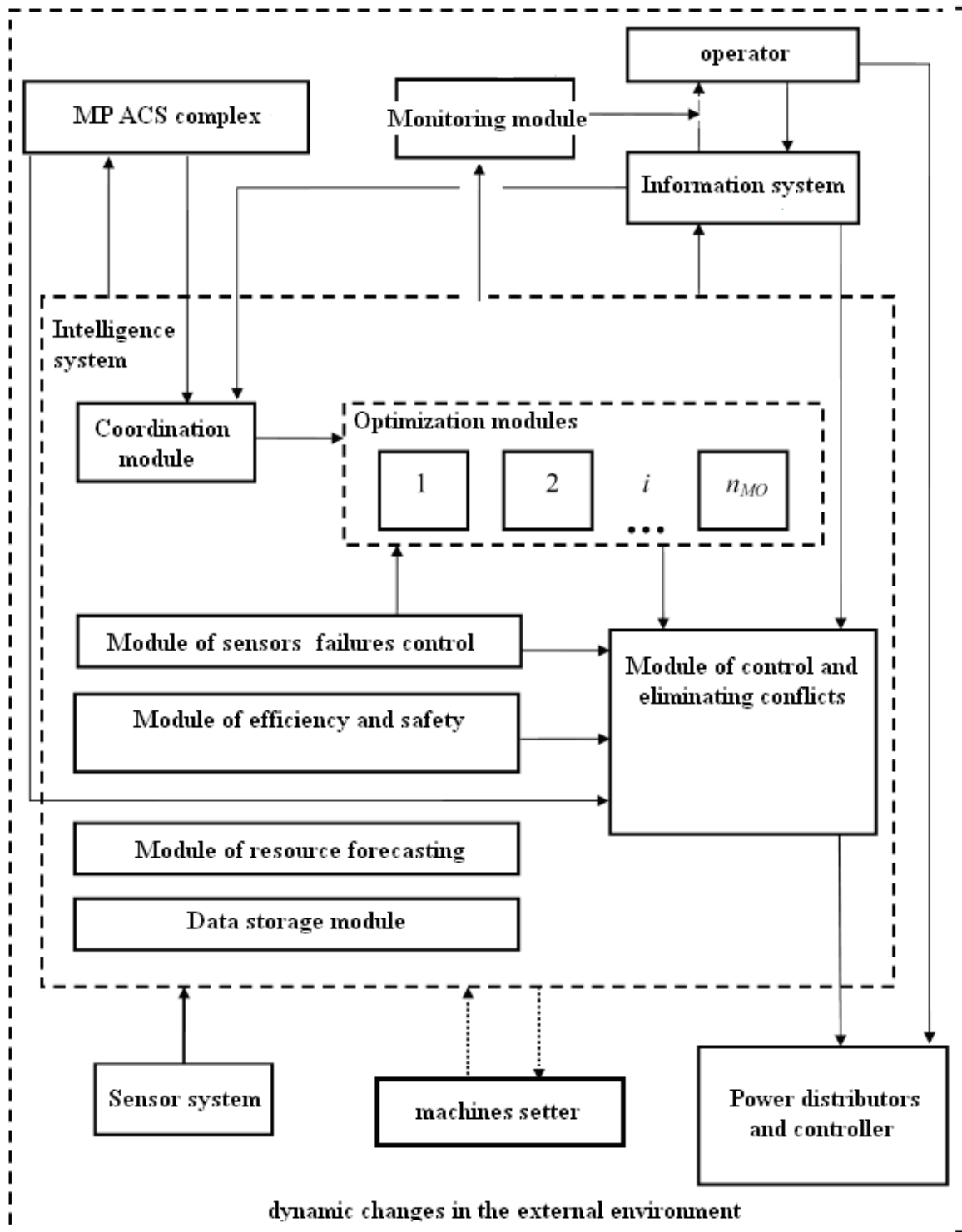


Fig.2. Block diagram of modules intelligent system

Fig. 2 shows a block diagram of intelligent system of machines for work in unsafe areas. The system includes the following modules: the coordination module – it generates the vector of weightage of the criteria of work processes optimization; optimization modules, which are for assesment of effectiveness of

workflow control; the module of sensors failures control – for direct and indirect assessment of working condition of sensors integrated into the machine design elements; the module of efficiency and safety assessment – for fixing the failures of construction machines elements and turning off the machine in hazardous and emergency modes; the module of resource forecasting – to assess the residual life of structural elements of the machine to anticipate their scheduled replacement. The current tasks of managing complex dangerous objects are accompanied by analysis of many factors. The decisions on the workflow are taken in terms of the dynamic changes in the external environment. Managing such dangerous objects requires adequate and relevant responses to conflict situations arising during the operation.

The experience in development of theoretical foundations and practical implementation of intelligent systems machines indicates their great promise for the use in dangerous situation.

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