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DESIGN OF MECHATRONIC INDUSTRIAL SYSTEMS

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Today, thanks to the wide application of the results of research on mechatronics in industry, it is possible to define industrial mechatronics as a special direction of development of this field of science. It is devoted to the analysis of problems of connection and organization of interaction of industrial electromechanical, electronic nodes, aggregates and information devices in the process of operation and direct movement of the mechatronic system in order to obtain a synergistic effect. It is necessary to define a mechatronic object that is synthesized thanks to the synergistic combination of precision mechanics nodes with electronic, electrotechnical and computer components, which ensure the design and production of qualitatively new modules, systems, machines with intelligent control of their functional states. A mechatronic object is a general concept that includes a mechatronic system, unit, module or node. A mechatronic module is a unified mechatronic object that has autonomous documentation and is intended, as a rule, to implement movements along one coordinate. At the same time, they mean the mechatronic movement module. Let's highlight a mechatronic node, which fundamentally differs from a mechatronic module in that it is not unified. Another concept is a mechatronic unit, it consists of several modules.

Research [1] offers a developed interpretation of the concept of mechatronics - as a branch of science devoted to the analysis of the executive states of mechatronic objects and the functional interaction of mechanical, energy and information processes between them and the external environment. At the same time, obtaining a synergistic effect or the synergy of this field of science was carefully reflected in the articles [2, 3]. In works [4, 5] the scientific, terminological representation of the interpretation of mechatronics at the industrial level is highlighted.

Thus, it is possible to distinguish a mechatronic system - which consists of several aggregates or an aggregate and a number of individual modules, that is, from objects of the same or different lower levels. A system is a set of components that are connected in some way: subject to a certain relationship, dependence or regularity; acting as a whole. A mechatronic system fully meets this definition as a collection of mechanical, electronic and control components that form a synergistic unity that acts as a whole.

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