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Information support for quality management processes of products from multi-component elastomer composites

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Abstract. This article discusses in detail the main issues of quality management of products made from multicomponent elastomeric composites based on information models. The main technological stages, technical procedures and production operations in a complex chemical-technological system for producing finished products from multi-component elastomeric composites are described (considered). A logical-information model of a production system is presented based on a verbal model for describing processes in tabular form. The main actions and functions of process performers that implement specific stages of production of semi-finished and finished products are presented. Based on the principles of the systems approach and the SADT methodology of structural analysis, a set of logical-information and functional models was built for the production system – descriptions of a complex chain of production processes for producing elastomeric composites. A generalized functional and technological scheme for the production of a finished product is proposed based on the IDEF0 functional modeling methodology. A functional decomposition of a generalized structural-functional model of production was carried out in order to detail the production stages, operations and actions of individual performers of process groups. All technological stages and operations for the production of the finished product – an elastomeric composite with a level of properties and performance characteristics that meet the required level of quality indicators – have been formalized. The proposed information support in the form of a complex of structural and functional production models can be used for further intensification of production processes, organization of a more flexible and adaptive, highly efficient process of operational management and production control by identifying the most sensitive control points. Identifying and using new control points will allow you to more effectively manage the quality characteristics of the finished product. The scientific research methodology is based on the analysis of scientific data, comparative analysis, data synthesis, and graphic interpretation. The result of the study is the creation of an information support model for managing the quality of products made from multi-component elastomeric composites. The work also identifies development prospects and reviews research in this area.

Keywords: information support, management processes, elastomeric composite, structural analysis, systems approach

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