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ANALYTICAL METHOD OF MODIFICATION OF CONSTRUCTIVE PROTOTYPE OF BASIC ASSORTMENT OF SHOULDER PRODUCTS

Purpose. *Improving the efficiency of cyclic elaboration of modification of a structural prototype by modular design methods.*

Keywords: *modification, constructive prototype, unification, modular design, industrial series.*

Objectives. The concept of modular design requires an assessment of the design situation to maintain the competitiveness of a particular assortment. Desynchronization of the production of the same things in time and space disturbs the balance of demand, especially in the groups of the basic range.

Operational planning of stages of design and technological preparation of production from search design to working documentation is coordinated by a route "assortment row - assortment series - industrial series" [1]. Logistics of modular design stages involves parameterization of block-modular elements of the structural prototype.

Methodology. Analytical methods of situational modeling of the game space of the basic range models. Methods of generating structural elements of the basic design of the jacket. Methods of combinatorial synthesis of composite elements of model structures.

Research results. The mathematical model of the system of design changes of the state of the structural prototype (SP) is described by a set of relations and sets that define the function {F}, a set of design situations {St} and the original data {D}:

$$MMG_{SP} = (F^n : \{P_{rh}\} \to P_{rh} \cdot S_t = \{S_{tn}\}; D_n^n = \{D_{nn}\}). \qquad (1)$$

The algorithm of synchronization of the interaction of blocks in the processes of changing the state of a typical representative is based on three design modules:

- module of coordination of functional properties of assortment;
- module for minimizing the platform of composite brands;
- positioning module of modernized units.

Function F1 provides coordination of typical divisions of the mannequin surface scan in a typical jacket design, function F2 reproduces the basic design of the jacket, function F3 reproduces the route of modification of the design of the industrial series.

Given the typical articulations, the design modules describe the design situations St1 - St3: St1 - five-seam construction of the state; St2 - basic structure, built according to the method of Michael Voronin [2]; St3 - the use of unified parts and assemblies in the model structures of the industrial series [3].

The positioning module of functional-decorative units on the principle of uniformity is provided by three blocks of initial data: Dn1 - nomenclature of constructive modules of the prototype; Dn2 - parametric database for matrix transformation of parametric design modules (MPD); Dn3 is a matrix of parametric design modules.

Modifications of MPD in the cyclic elaboration of basic design (F2) provide the following functions: F21 - local change of contours of the main parts of basic design; F22 - design of functional and decorative elements of the fastener, slots, pockets; F23 - distribution of the slope of the notch to change the design of the contour of the part; F24 - registration of divisions of detail for the formation of additional contours.

Conclusion. The logistics of synchronization of the interaction of design modules of parameterization of block-modular elements in design preparation of production of the basic range is offered. Means of modernization of contours of details, in particular relations of geometrical similarity, constructive unification, methodical support of modification of constructively-unified series of brands are defined.

Reference

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