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## INNOVATIVE TECHNOLOGY ASSESSMENT OF AGRICULTURAL TRACTORS CONSTRUCTION MANUFACTURABILITY WITH TECHNICAL SERVICE

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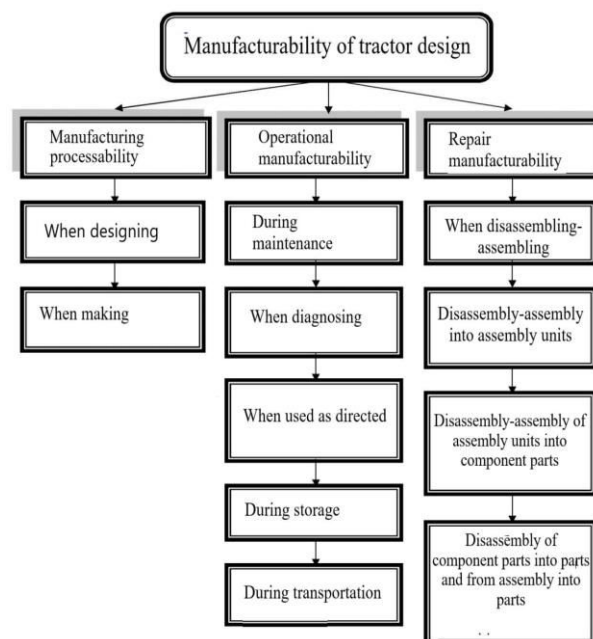
**Abstract.** More and more attention is paid to the economic side of the problem of increasing the tractors' operational and repair manufacturability level in all tractor construction structures of domestic production of the Republic of Uzbekistan. It is advisable to increase the tractors' operational and repair manufacturability level by determining the main directions, taking into account the technical objects adaptability to technical service operations and their diagnosis.

**Keywords:** tractors' operational manufacturability, design suitability for technical and diagnostic service.

**Introduction.** As it is well known, the agricultural tractors and other energy means design adaptability is understood understands its properties totality that ensure the manufacture, repair and technical service of these above-mentioned machines using the most effective technology in comparison with similar designs under the same conditions for their manufacture, operation and the same quality indicators. Improving the tractors manufacturability reduces operating costs, the performing cost of agricultural work, and significantly improves the economic performance of the final product.

**Conducted research.** Long-term studies carried out show that a comprehensive assessment of domestic agricultural tractors design during technical service and diagnostics is carried out according to production, operational and repair manufacturability (Fig. 1). [1]. The industrial tractors and other energy resources manufacturability for agricultural purposes is manifested in the funds and time reduction for the design and technological preparation of the manufacturer, operational in

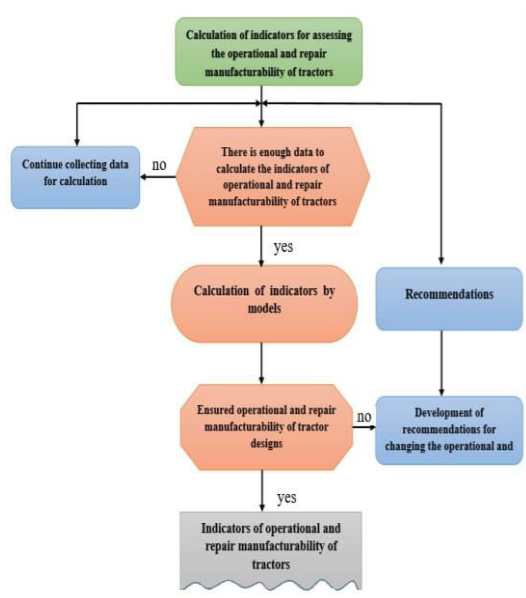
the manufacturing and installation process, in the funds and time reduction for preparation for the machines use for order, technological and technical service, current repairs and utilization, repair manufacturability - for all repair types, except for the current one.



**Fig.1.**

**Algorithm for a comprehensive assessment of the manufacturability of the design of tractors in the technical service diagnostics.**

Numerous studies carried out show that the ensuring and maintaining the operational and repair manufacturability of the tractors and other energy resources design problems can only be solved taking into account three stages interaction (design, operation and repair) and their existence [1,2]. Therefore, the scheme for ensuring and maintaining manufacturability and the criterion for its assessment using mathematical modeling were developed according to the tractors and other energy resources existence stages (Fig. 2).



**Fig.2. Algorithm for determining the significance of factors for a comprehensive assessment of the manufacturability of the design of tractors.**

The algorithm indicated in the diagram evaluates two types - qualitative and quantitative (see Fig. 2). The first characterizes the structure manufacturability in general based on the performer experience, and the second - using indicators reflecting its compliance degree with the requirements imposed on it.

The quantitative assessment purpose of the developed tractor design manufacturability is to ensure tractors' effective development for manufacturability while reducing costs, funds

and time for its development, production, operation and repair.

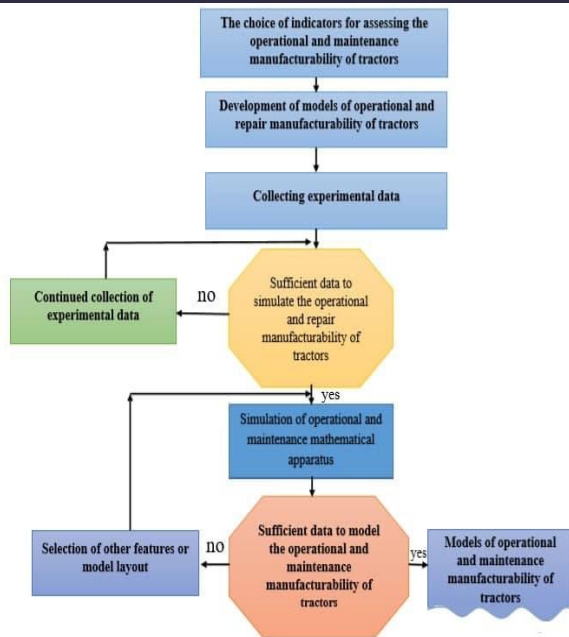
The operational and repair manufacturability of the tractors and other energy facilities design can be assessed by particular, complex and basic indicators.

**Research results.** When determining complex indicators, it is necessary to first establish the comparative significance of particular indicators, since some of them can have not only different numerical values, but also different significance (for example, by concordance method).

In the operation and tractors and other energy resources repair process, the design options and testing comparison for the design manufacturability should be carried out according to basic indicators.

To determine the basic indicators, it is required to use mathematical models obtained on the basis of statistical data on the previously created tractors and other energy facilities designs that have common design and technological characteristics with those designed, analogues or typical representatives [2,3]. We propose to develop mathematical models based on basic indicators according to the scheme shown in Fig. 3.

A number of mathematical models blocks for ensuring and maintaining the operational and repair tractors and other energy facilities design manufacturability, obtained on the basis of this scheme, are given in the works [3,4].



**Fig.3. The proposed block diagram for the development of mathematical models to assess the manufacturability of the design of tractors.**

The systematic approach recommended by us allows us to create mathematical models based on basic operational and repair indicators manufacturability, to use them to quantitatively assess structure manufacturability. This makes it possible to reduce the amount of material resources and time consumption to a minimum, which is considerable importance for the designer, test engineer, scientist and operator.

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