UDK 658.52.011:658.512.4

THE SYSTEM OF TECHNICAL AND ECONOMIC CRITERIA AS THE BASE OF CRITERIAL FEASIBILITY OF AUTOMATED SYNTETHSIS OF MECHANICALASSEMBLYROBOTIC TECHNOLOGIES

V. Kyrylovych

The content of solvability strategy of the automated synthesis (AS) robotic mechanical assembly technology (RMAT) in flexible manufacturing cells (FMC), which was proposed before and based on a system approach, is reduced to solving a ultimate set of taskswhich are named the conditions of functional, parametric and criteria feasibility (CFF, CPF and CCF).

Thus all criteria for CCF conventionally divided on local and global. Local criteria are more researched and widespread and also meaningfully reflect emphasis so-called manifestations RMAT (geometric, kinematic, dynamic, control, energy, trajectory, time (productivity), power, reliability, economic, accuracy and optimal).

For global criterion it is proposed to choose one from the developed system of technical and economic criteria (STEC).

The first criterion F1 – is a part of the technological cost of manufacturing of each product launch party (release) which is linked to the following information about industrial robot (IR) as book value, accumulated duration of operation, used power, salaries of different categories of employees, etc., that is to say caused by the use of a particular IR with the release of specific products.

The second criterion F2 allows for the planning period for which it is defined, and conditionally divided into two criteria:

– F2.1 – it’s a criterion of the determining for each batch run of products with first criterion F.1 considering additional economic component of accumulated resource exploitation IR and subsequent formation generalized criterion F2.1, reduced to an abstract conventional unit of product considering including amount for the plan (reporting) period;

- F2.2 – it’s an optimality criterion considering the total number of products in the each batches run, which is the sum of criteria relating to their economic component caused by the accumulated operating time resources of IR and the duration of the changeover cost equivalent duration of between two any batch run of products parties, followed by transfer generalized criterion for conditional unit of product based on their (products) of the total number of batches run for the planned period.

Generically one or another criterion are chosen by the developer and determined by the design conditions of FMC and synthesis of RMAT in the last one. Mentioned criteria are calculated in the following sequence F1→F2.1→F2.2. Accounting of their hierarchy, every next criterion in the following sequence intends calculation of the preliminary one.

Formalized statement of the problem for the implementation of CCF, and hence on the choice of global optimality criterion synthesized RMAT reduced to calculating the value of one of the smallest pre-selected by the user with the ultimate set of criteria each.

Calculation software and implemented RBM is a component of the A RMST that developed in Zhytomyr State Technological University.