

46. The technical level and efficiency of blister machines

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Introduction. There is no scientifically based methods for determine of the technological equipment effectiveness, prediction quality processes, the timing of planned preventive maintenance. We propose to evaluate and predict the effectiveness of the equipment based on a comparison of indices of quality of the final product.

Materials and methods. Research conducted by the example of machines for packaging of tablets or ampoules in blisters.

Expert analysis method for the assessment of process equipment and product quality is use. The experts are engineers and staff of pharmaceutical companies. The order of studies: determination of product quality, rating changes of these indicators over time, building petal diagrams by determining the state of product performance quality, and calculating areas of polygons, charting changes in the area over time, the definition of rational time of repair equipment.

Result and discussion. Indicators of product quality: quality cell formation in the film, the cut surface quality and precision harvested blisters, destruction of the product during cutting, precision height cliché precision dispensing adhesive, the ultimate form of blister.

If there is insufficient heat in the molding node, cells obtained insufficient size and tablets will not endure. If you overtime PVC molding plates - blister is too thin or burn. Irregularity cutting blister disrupts other operations. During soldering is possible overdose glue. There is a deformation and getting glue on the product. In the wrong position of a blister is the destruction of the product at cutting. Improperly selected height of cliché for labeling of blister is a problem as well. Forming units can burn blister or don't form a cliché. Prints will be irregular. Incorrect cooling after molding PVC stretch and is becoming as wavy. As a result is the deformation of the blister. The other operation is disrupted.

Experts estimate the condition of the product. This could be in real units of measurement (mm, N, s , etc.) or in points. Each figure translates into dimensionless, maximum quality score of each parameter is equal to unity , the minimum approach zero.

Sample diagrams for the initial, intermediate and final, critical period of the machine shown in fig. 1a. The dependence of the state machine (square polygons) on the duration of the operation is shown in figure 1b. When reaching the minimum rate of the equipment is necessary to conduct the maintenance. The quality of finished products is increased, but is remained below baseline. Turnaround cycle is reduced. Overhaul of all units of equipment or it replace is made at some critical minimum interval overhaul cycle.

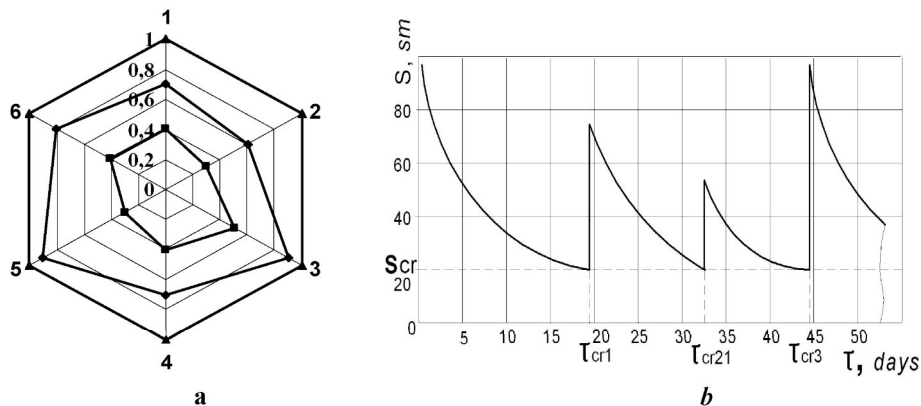


Fig. 1.

a – chart quality parameters (1-6) in time
b – the change of state indicator (square polygons) in time

Conclusion. The proposed evaluation method allows to predict the change of qualities products in time, rational to choice turnaround cycle of equipment, to reduce operating costs for service, to control of finished products.

References

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