УДК 621.9

STATISTICAL ANALYSIS OF THE LEVEL OF WELDING WORKS QUALITY IN THE TOWER CRANES MANUFACTURE

П.Ю. ДУВАЛОВ
Научный руководитель Н.Ю. БЕРБАСОВА, канд. техн. наук, доц.
Консультант Г.И. СВИДИНСКАЯ
ГУ ВПО «БЕЛОРУССКО-РОССИЙСКИЙ УНИВЕРСИТЕТ»

The regulation of technological processes of welding is not possible without a statistical analysis. The application of the statistical methods of quality control is aimed at improving the monitoring system and its organization. Their effective implementation is an urgent problem at many industrial enterprises of the Republic of Belarus.

The paper demonstrates the possibility of using the statistical methods to control the quality level of the tower crane production process. The data for the statistical analysis were obtained from those being used in the production of ultrasonic and capillary methods of quality control.

The study used such tools as cluster analysis, desirability function, cognitive graphics, and integrated contamination parameter. For easier presentation of the nature of the process investigated, visualization and partition into groups of similar objects have been performed with the help of cluster analysis. The following classification of the data has been carried out and the objects that do not fit into any of the clusters have been identified. Using the desirability function the levels of the predictor variables that provide the most desired response of the dependent variables have been determined. To determine the manufacturability of the welding process the crane integral indicator of the pollution of the weld has been adapted to the conditions of production. Methods of cognitive graphics have been used to construct graphs of the desirability function and the integral index of visual pollution.

The introduction of the statistical methods of quality control aimed at improving the monitoring system and its organization. It makes it possible to use the most of the existing production facilities, to identify and clusterize the factors influencing the appearance of inconsistency and to provide a statistical control of the welding process.