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ASSESSMENT OF PROCESS CAPABILITY BY APPLYING THE SPC (STATISTICAL PROCESS CONTROL) METHOD TO CRITICAL CONTROL POINTS

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Abstract
In this article, a SPC method is used to the critical areas of the product in order to ensure the quality of the used gas companies produced at the Uz Dong Won co. During the analysis, the reliability of measuring instruments, operator's qualifying and measuring process is found concluded.

Keyword: SPC (statistically Process Control), process, style, control, detail.

Introduction

Today, the automotive industry and the demand for the quality of cars are increasing. The high-quality production of each manufactured product mainly depends on the standard. Bringing the car to the state of the finished product is important for the quality production of every detail. The first practical application of the automotive industry is one of the effective methods used to prevent inconsistencies in technological processes, SPC (Statistical Process Control), which was developed in the 1960s by the American Automotive Industry Standardization Group (AIAG) and (ASQC) Quality Management. developed by the automotive division of the American Society. In 1990, the Supplier Certification and Quality Assessment Group of Chrysler, Ford and General Motors, in agreement with the AIAG, developed the SPC method as a guide and began to require suppliers to apply it. The manual has been updated several times since 1992 by the standardization group.

SPC METHOD

Clauses 9.1.1.2 and 9.1.1.3 of the International Standard for Automotive Quality Management System IATF 16949:2016 require:

- Appropriate statistical methods (SPC - control cards) for each process should be defined in the future product quality planning and management plan (APQP /SR);
- Key concepts - control of variability, stability (stagnation), process capability (Cpk, Rpk) and redundancies should be understood and applied throughout the organization. The main attention should be paid to understanding the elements of the statistical process control system;
- Work on the process management system (supplier, consumer, 5M, data efficiency, process and product);
- To study the impact of variability (ordinary and special causes) on process output;
- Elimination of variability under the influence of local (15% by participants in the process) and system (85% management);
- Managing the process and its reproducibility;
- Application of process improvement (PDCA) cycle;
- Control card and its application.

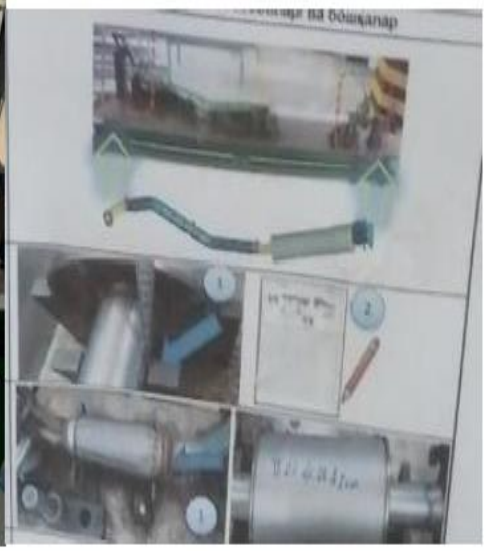
The advantage of using a control card as a tool for statistical control of processes is as follows:

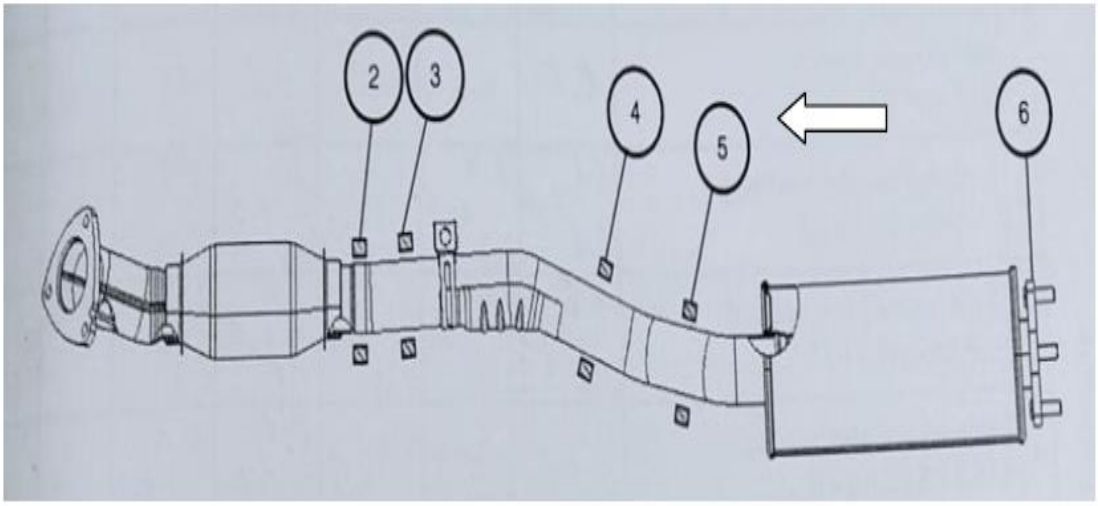
- A worker (operator) process can manage its current state;
- Helps the process to work stably, ensures quality and low cost;
- The defect is prevented;
- Increases quality;
- Reduces the cost of a single product;
- Increases production productivity;
- A common common language for analyzing the possibility of processes is created;
- The causes of variability are divided into usual and special, they are directed to take local or systematic measures. [1]

In order to ensure the quality of used gas exhaust systems produced in the joint enterprise of “Uz Dong Won Co” LCC, the SPC method is applied to the critical points of the product.

To determine the statistical calculation of process capabilities, the detail is placed on a special control table, in which the following should be paid attention to:

- Onson should go to the detailed control desk;
- Control table handles must be fixed to the detail;





- There must be no other objects on the control table.

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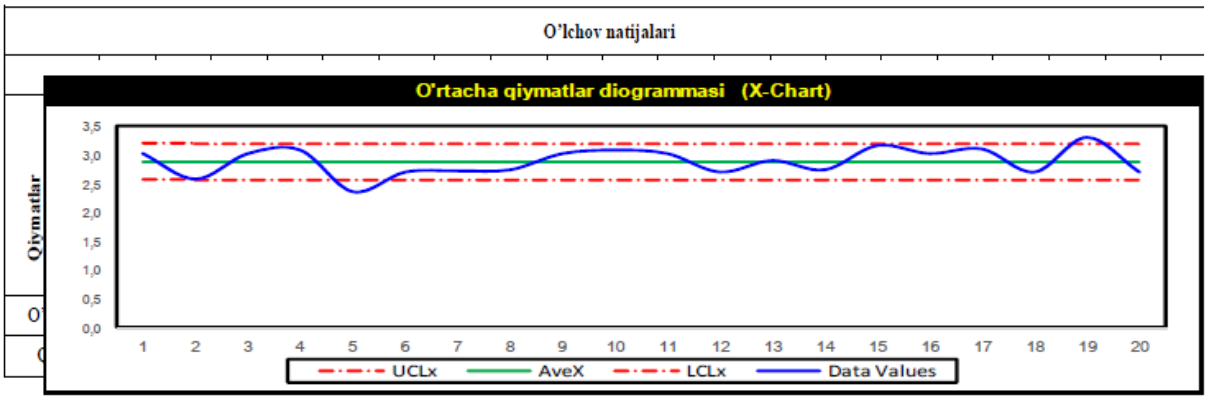
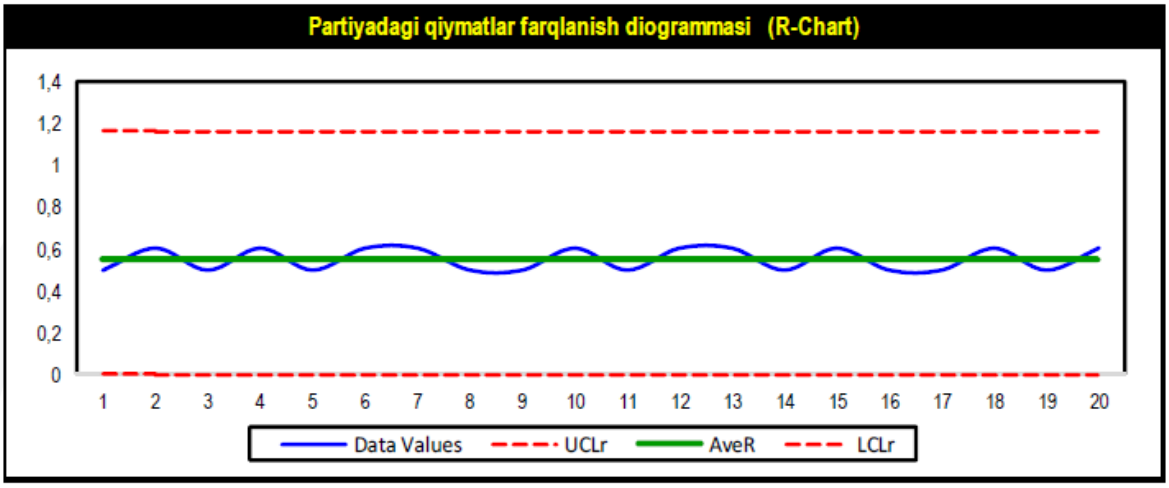
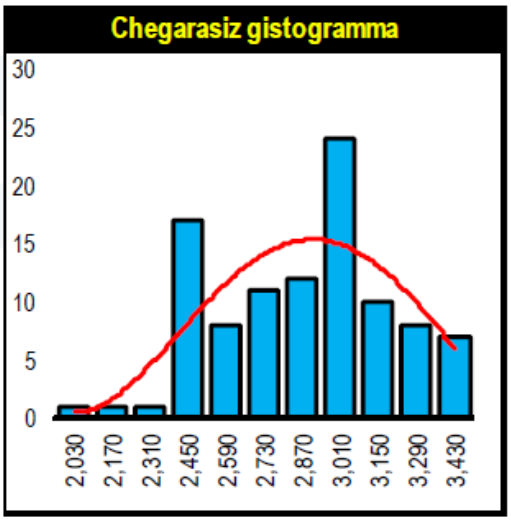
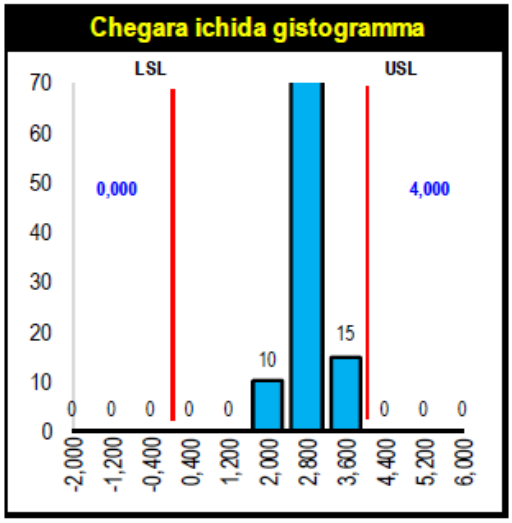
We measure the desired point of the detail attached to the control table using a calibrated ruler.[3] During the measurement, 10 pieces of detail are selected and









measured 3 times, and the measurement results are recorded.
The obtained measurement results are placed in the SPC (Statistical Process Control) program and the process capability is evaluated.[2]

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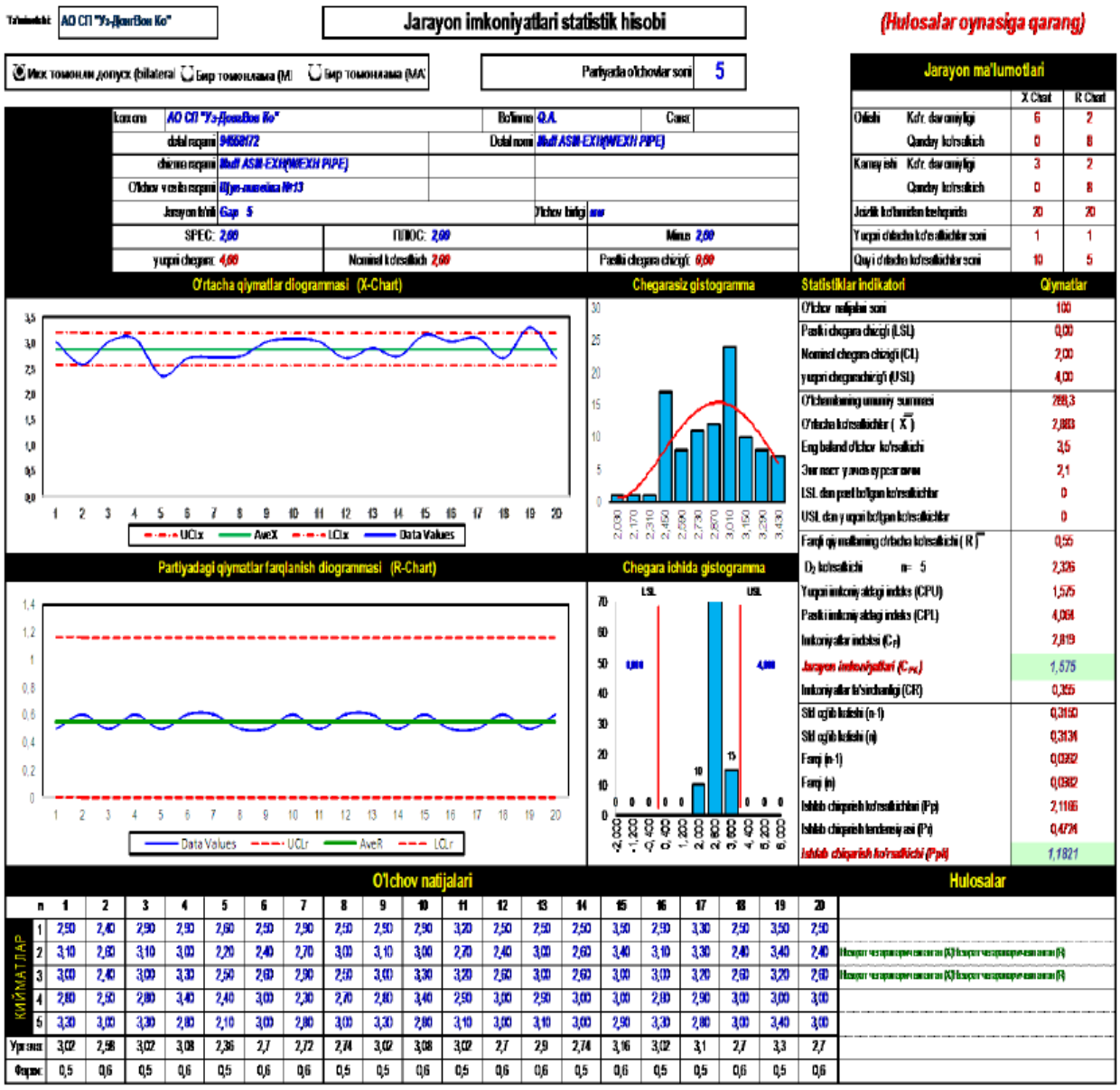

According to the evaluation criteria, the process capabilities are good.

Cpk≥1,67 process capabilities are excellent;
1,33≥Cpk≥1,67 process options are good;
1,33≤ Cpk process capabilities are unsatisfactory;
(defect 0,006 %) Cp >1,33 process options are good;
(defect 0,006 %-0,27%) 1<Cp <1,33 process capabilities are satisfactory;
(defect 0,27 % higher than) Cp <1 process capabilities are unsatisfactory.[4]

CONCLUSION

The results of this process mean that the use of the SPC method in the statistical management of product production processes allows for a high increase in product production efficiency and economic efficiency.

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