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Ensuring the Production of Products

Sultonova Dildora Tokhirjon qizi, Muminov Omadjon Zukhriddin ugli, Khakimov Dilmurod Valijon ugli

Assistant, Andijan Machine –Building institute, engineer, LLC “Birinchi rezinotexnika zavodi”

ABSTRACT: This article deals with the purchase of raw materials, input control, storage, ensuring the compliance of semi-finished products and finished products with the requirements imposed on them at each stage of the technological process, monitoring and measurement in ensuring the production of products.

I. INTRODUCTION

Products (product): The output of the organization, which can be produced without any interaction between the organization and the consumer [1].

The international standard ISO 9001: 2015 sets the following requirements for the production management of products: 8.6 Production and provision of services [2]

At the appropriate stages, the organization should implement the planned measures to verify that the requirements for the product and service have been met. Evidence of compliance with the eligibility criteria should be recorded and maintained.

The transfer of products and services to the consumer should not be carried out until all planned compliance verification activities have been implemented with positive results, unless otherwise agreed by the relevant authorized bodies and, where possible, the consumer. The documented information must contain information about the person (s) who authorized the release of products or the provision of services for their transfer to the consumer.

II. GEO SCATTERED TYPE BIG DATA IN APPLICATION

The organization must register and store documented information about the production of products and services. The documented information includes:

- a) a certificate demonstrating compliance with the admission criteria;
- b) the responsible person (person) who gave permission for the production of products and services must receive supervision.

The IATF 16949:2016 standard sets additional requirements for ISO 9001:2015 in the group 8.6.1–8.6.6 in product production management [3].

When ensuring the production of products, it is necessary to carry out the procurement of raw materials and materials, input control, storage, ensure that semi-finished products and finished products meet the requirements for them at each stage of the technological process, carry out maintenance, energy and utility services, control and measurement.

Production assurance includes departments/ processes / management that are involved in processes, from raw materials and materials to finished products.

All raw materials, materials and technological tools are purchased from suppliers on the basis of contracts. Responsible employees of the procurement department select supplier companies based on the evaluation criteria, periodically evaluate them and include them in the list of "Approved Suppliers" table-1.

Table-1
List of companies “Approved Suppliers”

№	Approved date	Company name	Company address Phone number	Name of the product to be delivered	Full name of the managers

III. SYSTEM ANALYSIS

All purchased raw materials and materials pass the entrance control in the presence of responsible employees of the quality control department, responsible employees of the procurement and localization department. Certificates of compliance with the quality of raw materials and materials are kept by the responsible employees of the procurement department for at least one year.

During the period of unloading orders to the warehouse, the responsible purchasing officer checks the quantity of products, and the responsible quality control officer checks their compliance with the quality on the basis of the “input control” standard. Raw materials and materials that have passed the entrance control are marked with an expiration date mark by the responsible employee of the quality control department.

At the entrance control, raw materials and materials with an expiration date mark are issued for production. For raw materials and materials deemed unsuitable, measures will be taken in accordance with the standard "Management of nonconforming products" [7].

Clearly identify nonconforming materials to prevent the unintentional use of suspicious materials.

1. Traceability
- Give customer ability to identify suspect materials for containment or recall
2. Identification
- Management method to protect customer from defects
3. Segregation
- Prevent untended use of suspect/nonconforming material with containment
4. Containment
- Prevent to be passed on to the following process
5. Disposition
- Decision of reuse or disuse, and Implementation

Figure 2. Nonconforming materials / material identification objectives

Nonconforming products detected as a result of the entrance inspection are stored in a specially designated (isolated) place, isolated from the suitable product. Such places are determined by the head of the quality control department.

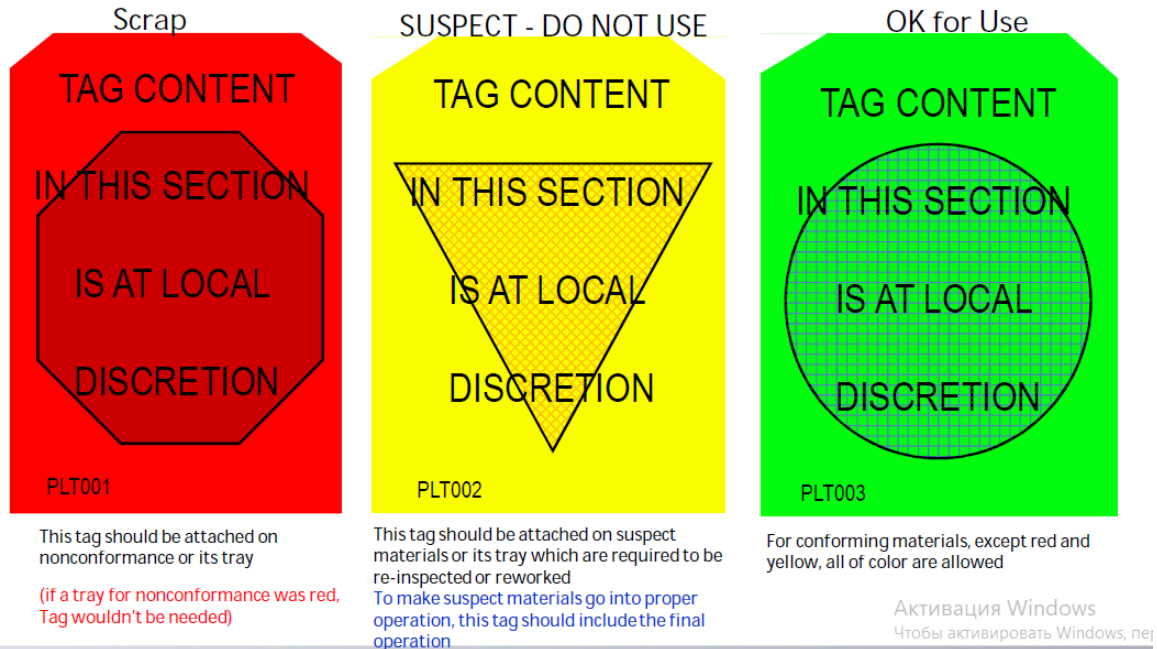


Figure 3. Product identification management

Due to production needs, in some cases, raw materials and materials can be transferred to production without input control, in such cases, input control is carried out on a competitive basis under the control of quality control personnel at the stages of production processes.

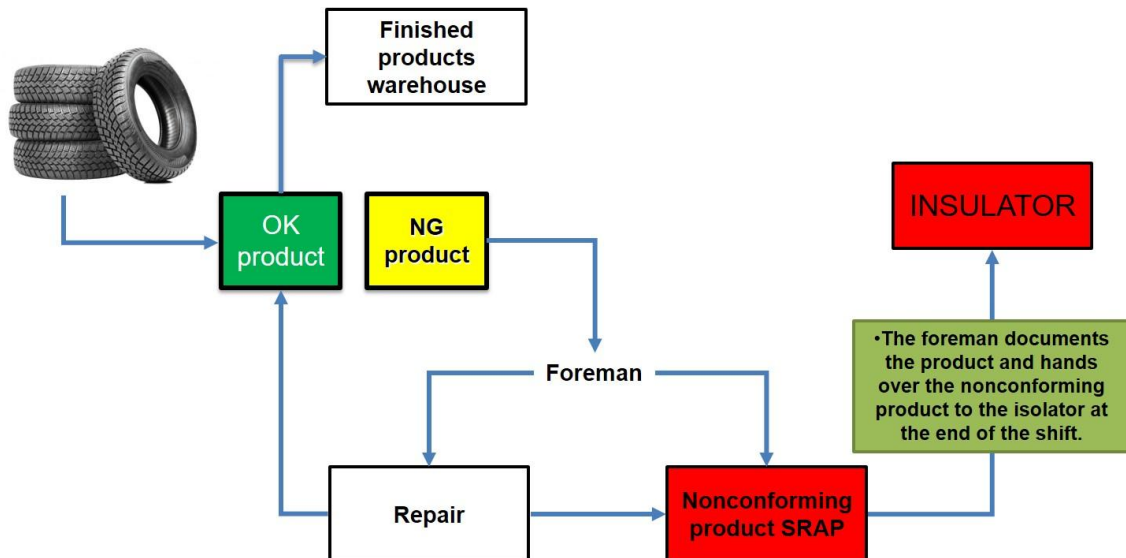


Figure 4. Sorting of finished products

Technological machines and equipment, as well as spare parts and materials purchased for their repair or prevention (prevention) of breakdowns, are subject, if necessary, to acceptance (unloading) or introductory control before use. In these cases, access control is carried out by the personnel responsible for maintenance or power supply and utilities.

The head of the supply department and the head of the warehouse provide labeling, management, cleaning, packaging, storage, production and transportation support, as well as the protection of raw materials and materials while ensuring the storage and production of products [8]:

- periodically audits the storage level to ensure the suitability of raw materials and materials in the warehouse / container;
- inventory management uses FIFO (First In, First Out —), or FEFO (First Expire, First Out) systems in accordance with deadlines, to ensure optimal inventory turnover and rotation time in the warehouse;
- provides management of an expired product, such as a non-conforming product;
- fulfills the storage, packaging, loading and labeling requirements defined by the consumer.

High-quality raw materials and materials are supplied in accordance with the requirements for storage in the warehouse and enter production in accordance with FIFO.

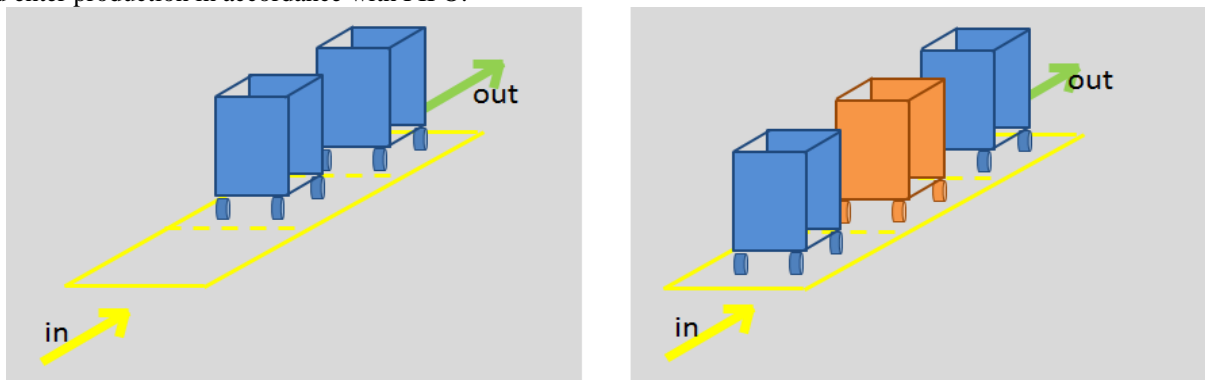


Figure 5. FIFO diagram

The technological department sets the requirements for technological processes and monitors their implementation (control plan, progress of technological processes, production of organization standards and working instructions). Management of production processes.

The production department manages the production processes based on the requirements and production schedules (Flow chart, Control Plan, organization standards and work instructions (SOS, JES, TIS)), analyzes risks and identifies opportunities, and provides labeling of all semi-finished products and finished products in sequence [5].

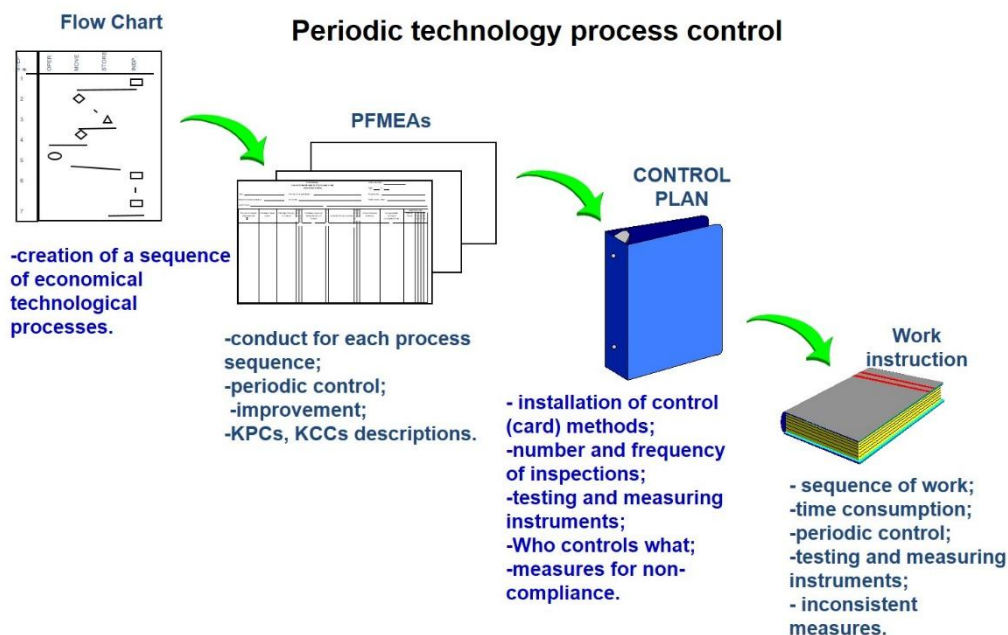


Figure 6. Process management process

Work instructions and visual workflow standards:

- a) are communicated to the responsible workers performing the work and are understandable;
- c) be able to read comfortably;
- s) presented in a language that is understandable to the staff responsible for the performance of the work;
- d) in accordance with this, safety rules that are convenient for use in the workplace (site), as well as safety rules for workers (operators), should be set out.

Verification of working settings:

- a) verification of working settings, where they are performed, for example, at the initial start of the work, when the material or shift tasks change, what new settings are required;
- c) storage of documented information for the staff, for the performer of work adjustments;
- c) use of statistical verification methods, if accepted;
- d) checking the first / last part, if accepted, storing the original and last released batch for comparison, where possible, storing the last released batch for comparison with the next batch;
- e) maintain product approval records, after verifying the process setup and the first / last part.

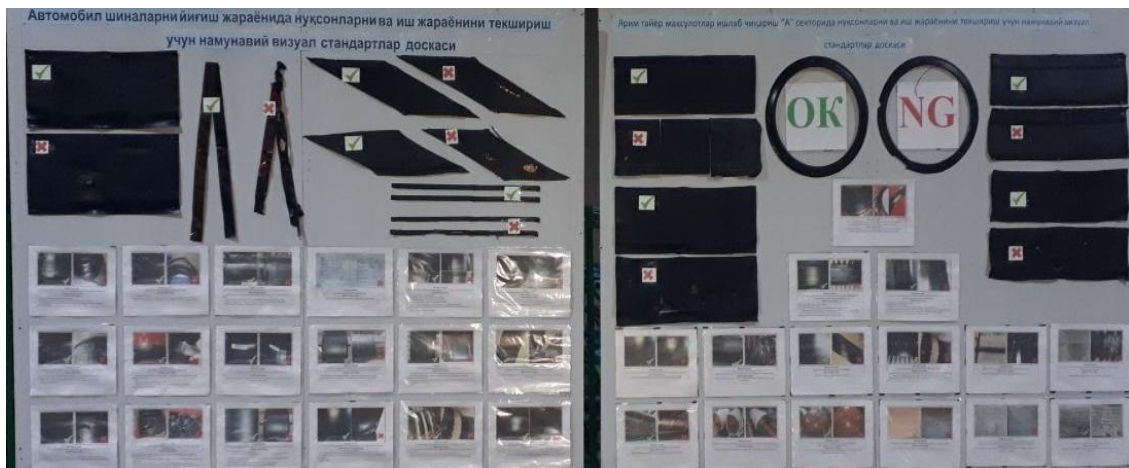


Figure 7. Visual inspection board

Verification after termination

It is necessary to identify and implement the necessary measures at the end of planned or unscheduled production to ensure that the products meet the demand.

Stages of production processes control of semi-finished products and finished products (at verification stations) should be carried out by the quality control department controller and the production worker.

If a nonconformity is detected in production, an employee of the quality control department fills out a protocol according to the organization's standard "Management of Nonconforming products" and takes appropriate measures.

Quality products that have passed the final inspection are filled in by an employee of the quality control department "label" and handed over to the finished product warehouse for storage, in case of detection of non-conforming products, measures are taken according to the organization's standard "Management of non-conforming products".

High-quality products that have passed the final control are stored and brought to the consumer in an agreed special packaging (container), which is organized by the head of the sales department and the head of the finished product warehouse. Storage of finished products and their delivery to the consumer is carried out on the basis of FIFO.

The finished product is tested on the basis of a control standard before being sent to the consumer. An employee of the quality control department selects products from each batch on a competitive basis and measures them with suitable



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measuring and testing tools, and records the results in the Control Statements.

Periodic product tests are carried out in accredited laboratories in accordance with the requirements of the "Control Standard".

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