PROCEDURE FOR MANUFACTURING OF ELECTRICAL AND OPTICAL EQUIPMENT

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Table of contents

1. PURPOSE, SCOPE AND USERS .................................................................3
2. REFERENCE DOCUMENTS .........................................................................3
3. PRODUCT REALIZATION .........................................................................3
   3.1. PRODUCT REALIZATION PLANNING .....................................................3
       3.1.1. Making production plan .........................................................3
       3.1.2. Creating work order .............................................................4
   3.2. PRODUCTION PROVISION REALIZATION ..........................................4
       3.2.1. Internal purchase and receipt of raw materials .........................4
       3.2.2. Production of plastic semi-products ........................................5
       3.2.3. Production of electrical components ........................................5
       3.2.4. Production of optical components ...........................................5
       3.2.5. Assembly .............................................................................6
       3.2.6. Packaging and storage ...........................................................6
       3.2.7. Identification and traceability ..................................................6
       3.2.8. Validation of production and service provision ...........................6
       3.2.9. Customer property ...............................................................6
       3.2.10. Control of changes ...............................................................6
       3.2.11. Product release, delivery and activities after delivery ................6
   3.3. PRODUCT PRESERVATION .................................................................7
   3.4. RESOLVING NON-COMFORMITIES ..................................................7
   3.5. ENVIRONMENTAL OPERATIONAL CONTROLS ...................................7
4. MANAGING RECORDS KEPT ON THE BASIS OF THIS DOCUMENT .................8
5. APPENDICES ........................................................................................9
1. Purpose, scope and users

The purpose of this procedure is to describe the process of manufacturing of electrical and optical equipment according to demanded quantity and deadlines, in line with the request for product quality, according to customer request.

The procedure is applied in realization of the manufacturing process.

Users of this document are persons responsible for the process of manufacturing in [organization name].

2. Reference documents

- ISO 9001:2015 standard clauses 8.5; 8.6
- ISO 14001:2015 standard clause 8.1
- Procedure for Document and Record Control
- Procedure for Competence, Training and Awareness
- Procedure for Purchasing and Evaluation of Suppliers
- Procedure for Design and Development
- Warehousing Procedure
- Procedure for Management of Nonconformities and Corrective Actions
- Procedure for Equipment Maintenance and Measuring Equipment
- [Work instruction manuals]

3. Product realization

3.1. Product realization planning

3.1.1. Making production plan

According to demand of products and volume of production in previous period, [CEO] together with [job title] creates [Production Plan].

[Production Plan] defines the following:

- Availability of information that defines product characteristics
  In such production, let the given information about product characteristics from the following sources: [name the sources].

  For project-based production and individual production according to customer request, information about product characteristics is defined in document used

- Defining resources for production and service provision
[organization name]

[Job title] defines all resources needed for production, including human resources, equipment and raw materials. This is used as an input for the purchasing process as well as for defining need for training.

[Job title] creates the Quality Plan, which defines necessary activities of verification, monitoring, measuring, controlling and testing the product.

- Development of work instructions
  - [list the names of work instruction for each activity].

- Usage of adequate equipment
  - [Job title] is responsible to ensure that all equipment is in operational condition and, on [job title]'s request, within scope of operations of the Plan for Production Equipment Maintenance and records of calibration and repairs of measuring equipment.

  If requirements for equipment maintenance and working environment are specified by the responsible or legal organisation requirements. [Job title] is responsible for implementing such requirements.

- Conducting measuring and monitoring
  - [Job title] must ensure availability of monitoring and measuring resources and define the method of the monitoring process and product and methods of sampling and measuring and enter them into the Quality Plan.

3.1.2. Creating work order

For each individual batch, [job title] creates [Work Order] which defines all activities to be executed during production, respecting all technical and technological requirements defined in the Project Plan, and delivers it to [job title]. [Job title] defines which work instructions will be applied during product realization. Quality objectives, requests for product and criteria for accepting product are also included.

3.2. Production provision realization

Production is executed in controlled working conditions, which implies compliance with all technical and technological requirements defined in documents necessary for the production process. If necessary, meetings with experts, engineers, mechanics, other work instructions and raw materials are entered in Production Registry by [job title].

3.2.1. Internal purchase and receipt of raw materials
According to the Production Plan and Production Registry, [job title] makes internal purchase. After receiving purchase order, [job title] sends raw materials to production.

### 3.2.2. Production of plastic semi-product

[job title] receives the raw plastics in form of as granules, pellets, or powder. The raw plastic is then molded to different shapes (e.g., spheres, cubes, rods) using the plastic semi-product is model. [job title] transports it to assembly facility.

### 3.2.3. Production of electrical components

Based on Product Specification, [job title] controls production of copper parts and soldering of components. [job title] ensures the components are soldered correctly. [job title] sends the components to assembly facility.

### 3.2.4. Production of optical components

[job title] receives glass blanks and compares it to Product Specification, if the glass blanket meets the specifications, [job title] sends it to grinding. Convex or concave surface (inverse of the tool being used) with pitch or wax. Loose abrasive grinding is the process of grinding with loose abrasive particles in a liquid or dry state. [job title] removes the blocked parts and the spherical tool to keep the parts cool and wash away debris created during the grinding process.

After the lens is generated and fine ground, [job title] sends it to polishing that can be both manual or numerical control (Computer Numerical Control) machines.

Before centering begins, the polished surfaces are inspected by [job title]. [job title] checks the specifications such as centration, flatness, if the optic does not meet specifications, [job title] repeating in polishing. [job title] places the lens between two precision aligned chucks and it slides to the point where there is even edge thickness.

Once the optic is centered and edged, [job title] cleans and inspects it for the last time. Both sides of the glass blank are coated using a vacuum coating process. [job title] places the optics into holders which are loaded into the top of a vacuum coating chamber.

When the lenses are finished, [job title] sends them to assembly facility.
3.2.5. Assembly

[job title] receive plastic semi-products, electrical components and lenses and controls the assembly process. If there are any deviations, [job title] notifies process responsible and the product is handled according to the Procedure for Managing Nonconformities and Corrective Actions.

3.2.6. Packaging and storage

[job title] oversees the packaging process and in case of nonconformities apply Procedure for Managing Nonconformities and Corrective Actions. Once the product is finished [job title] sends it to warehouse for final products.

3.2.7. Identification and traceability

[job title] must identify the product through the entire production process and define methods of identification and enter them in the Record of Traceability.

3.2.8. Validation of production and service provision

[job title] ensures the continuous improvement of production processes and the product provision, as it is not possible to confirm by measurement that a product or service satisfies customer request.

Where appropriate, as part of validation, [job title] must determine:

- Criteria for review and approval of process
- Records needed to provide evidence of controlling parameter
- Records needed to provide evidence of controlling parameter

[job title] creates records needed to provide evidence that realization processes and resulting products meet predefined requirements. These records are data based on the Production Plan, which demonstrates the capabilities of the process to accomplish planned results.

3.2.9. Customer property

[job title] is responsible for identification, verification, and protection of customer or external property. If customer or external property is given for use or incorporated into a product, if customer or external property is lost, damaged, or in some other way unfit for use, [job title] notifies the property owner using Notification to Customer About Changes on His Property.

3.2.10. Control of changes

[job title] reviews and controls changes for production in order to ensure continuing conformity with the contract and current changes in the production process, Change Request Records.

3.2.11. Product release, delivery and activities after delivery

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[Job title] is responsible for determining, at appropriate stages, by which degree the product
requirements are met. If non-conformities are found, the Procedure for Managing Non-conformities and Corrective Actions
according to the Procedure for Managing Non-conformities and Corrective Actions.

[Job title] ensures that the release of products and services to the customer will not proceed until
authority and, as applicable, by the customer.

[Job title] defines the extent of post-delivery activities that are required, considering:

- Statutory and regulatory requirements
- The responsibility of the customer associated with the products and services
- The nature, way, and expected lifetime of the products and services
- Customer requirements
- Customer’s wishes
- Previous servicing activities
- Need for competence of employees and training needs
- Records about servicing activities

During servicing activities, [Job title] is obligated to initiate correction of non-conformance using the
Procedure for Corrective and Preventive Actions when necessary. Non-conformities are classified as non-conformities that are
initiated within the warranty period. It is treated as non-conformity and dealt with as such.

3.3. Product preservation

[Job title] is responsible for preservation of product during production and internal transport of
product or assembly parts.

During storage, [Job title] is responsible for preservation and providing storage conditions for product
and/or assembly parts before delivery to a customer according to Warehousing Procedure.

[Job title] is responsible for preservation of product during transport.

3.4. Resolving non-conformities

If a non-conformity of process or product occurs, the person who discovered the non-conformity
records the information. Then, the person is required to consult the Procedure for Managing Non-conformities and
Corrective Actions.

If the non-conformity can be resolved, the process is corrected. Otherwise, [Job title] from the
production process and acts according to the Procedure for Control of Non-Conforming Product and
Procedure for Corrective and Preventive Actions, but can’t change technological parameters.

3.5. Environmental operational controls

Procedure for Manufacturing of Electrical and Optical Equipment

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[organization name]

[job title] is responsible for continual monitoring and control of significant environmental aspects defined in the Process Aspect Chart for this process by applying the following guidelines:

- Guideline for Waste Management
- Guideline for Energy & Water Management
- Guideline for Oil Waste Management

### 4. Managing records kept on the basis of this document

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Procedure for Manufacturing of Electrical and Optical Equipment

ver. [version] from [date]

Page 8 of 9

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5. Appendices

- Appendix 1 – Product Specification
- Appendix 2 – Record of Product/Service Conformance
- Appendix 3 – Quality Plan
- Appendix 4 – Notification to a Customer about Changes on his Property
- Appendix 5 – Record of Traceability
- Appendix 6 – Production/Service Change Review Record
- Appendix 7 – Production Plan
- Appendix 8 – Production Registry