

Annex Quality Guideline for Supplier

1. General

- a) This guideline sets out the minimum requirements for a Supplier quality management system but does not however restrict the Supplier's responsibility for ensuring the quality of its contractual products. This guideline is an integral part of each order.
- b) The quality guideline applies to all contractual products supplied by the Supplier. The Supplier undertakes to use all personnel, organisational, material and financial resources required to ensure the quality of the contractual products.
- c) For the duration of the collaboration, the Supplier should be certified to at least DIN ISO 9001 standard, as amended. The Supplier undertakes to manufacture and test the contractual products in accordance with the requirements of the Quality Management System of DIN ISO 9001 standard and to comply with any statutory requirements applicable to the contractual products. The Supplier shall include its sub-suppliers in the Supplier QM system or ensure the quality of pre-deliveries itself. If at the beginning of delivery the Supplier should not yet be certified according to DIN ISO 9001, the Supplier commits itself to permanently improve its Quality Management System and develop it towards DIN ISO 9001. The Supplier is committed to achieving a zero defects target and shall continuously improve the contractual products. The Supplier shall notify Truma of the expiry of a certification without planned re-certification in a timely manner and at least three months prior to the expiry date. The Supplier shall send new certificates to Truma unsolicited. The withdrawal of a certificate must be notified without delay.
- d) The Supplier shall check in advance to see if the quality requirements specified by Truma in its enquiry (drawings, specifications, data) can be met and shall confirm this by means of a detailed manufacturability declaration included with the quotation. The Supplier shall notify Truma without delay of any ambiguities, risks, defects and options for improvement.
- e) As part of its QM, the Supplier shall ensure the defect-free delivery of products and services, inter alia by means of an outgoing goods inspection (final inspection). The Supplier shall inform Truma without delay if it is foreseeable that quality problems will arise.

2. Quality assurance tools

- a) If Truma provides the Supplier with production and test resources, these resources must be incorporated by the Supplier into its QM system as if they were the Supplier's own resources.
- b) The Supplier shall implement the following measures in preparation for series production in order to ensure a timely delivery capability and readiness for series production.
 - Quality planning
 - Ensuring quality in the field of process (design and/or manufacturing process)
 - FMEA: The Supplier shall carry out an FMEA for the contractual products for risk assessment. This shall apply to all stages of product development and further development. The FMEA shall be updated continuously . Truma is entitled to inspect it on request.
 - If requested, proof of capability to be provided in accordance with items 5 and 11 below.
 - Outgoing goods inspections

3. Testing

- a) The Supplier shall conduct tests during the stage of development, and process-related and annual re-qualification tests. The Supplier is obliged to check on a yearly basis that its deliveries comply with Truma specifications (material, function, packaging etc.). On request, proof must be provided or inspection permitted. Any deviation to this must be agreed in writing. During the stage of development, the Supplier shall apply suitable preventative methods of quality planning such as conducting a manufacturing feasibility study, reliability tests, FMEA etc. Experience from other, similar projects shall be taken into account by the Supplier.
- b) The product quality shall be regularly monitored by the Supplier.
By means of systematic test planning and test resource planning the Supplier shall ensure
- that in the case of new and/or modified products, production processes etc. all characteristics essential for quality are collected
 - that the test procedures and test frequency are suitable
 - that the test resources are appropriately designed and available on time prior to the pilot batch.

4. Initial samples/other samples

- a) Initial samples are requested by the materials management department by means of an initial sample order at the Supplier, the aim being product approval/process acceptance by Truma.
Sampling shall be carried out only on the basis of approved drawings and applicable specifications.
The Quality Assurance department at Truma is responsible for the approval or rejection of the samples.
- b) The following objective evidence shall be provided:
- clearly labelled initial sample parts
 - positioned drawing
 - cover sheet
 - measurement report nominal/current, deviations must be indicated, all nominal data are to be reported
 - material test certificate (acceptance test certificate 3.1 as per EN10204)
 - test plan
 - separate proof, for example, for finishes, leak tests etc.
 - sampling of unfinished parts (cast and forged parts)
 - sampling of individual components (mechanical assemblies)
 - proof of preliminary process capability or machine capability is to be provided in accordance with the items 5 and 11 below, if requested.
 - RoHS/REACH confirmation.
- c) Initial samples are items that have been manufactured entirely using series equipment and under series production conditions and which, in a stable production process, will correspond to the subsequent series production in terms of dimensions, materials, material characteristics and functions. In the event of the initial samples not being approved, Truma may invoice the Supplier for any additional costs incurred.

- d) The Supplier is responsible for conducting, recording and for the validity of the initial sampling. Truma reserves the right to conduct counter checks.
- e) The Supplier may only start series production once Truma has issued series production approval in writing. Approval of the initial sample by Truma shall not release the Supplier from its responsibility for the quality of its products.
- f) If, according to the initial sample test report, the initial sample does not correspond to the specifications prescribed by Truma or if the report is incomplete, Truma shall have the right to set an adequate grace period for subsequent fulfilment and if the grace period expires without successful fulfilment, Truma may withdraw from the order and claim damages and expenses, provided the Supplier is responsible for the defect. The Annex Lump Sum Compensation shall apply accordingly.
- g) Initial sampling is always required
- if a new part is ordered
 - in the event of a technical change
 - if there is a change to the production process
 - if a new tool is required or a tool has to be replaced or modified
 - if there is a change of production facility
 - if there has been no series delivery within the previous 12 months. In this case, the Supplier shall include a cover sheet sampling, unsolicited.
- h) Other samples
All samples that are not ordered as part of initial sampling, such as handmade samples, validation parts, prototypes shall be clearly labelled and delivered separately together with a measurement report. The measurement report and delivery documents shall be clearly labelled, for example with “handmade sample”.

5. Capabilities

- a) Series production shall be carried out using machinery and equipment with verified capabilities. Suitable procedures (e.g. statistical process control SPC) shall be used for the ongoing monitoring, control and evaluation of the production processes with the aim of continuous improvement.

The Supplier undertakes to submit proof of process capability for characteristics prescribed in the specification (important and critical characteristics – see No. 11 below). Process reliability shall be ensured (e.g. 100% inspection) using suitable test scenarios until such capability is achieved.

The following capabilities are required:

- preliminary process capability $Ppk > 1.67$
- machine capability $Cmk > 1.67$
- long-term process capability $Cpk > 1.33$

- b) Test resources and gauge capabilities (compulsory for important and critical characteristics).

The Supplier shall ensure the quality of its products using suitable test resources.

Test resource and gauge capabilities shall be recorded and submitted to Truma, on request.

The following items shall be considered:

- proof of a system for test resources and test equipment for regular inspection which ensures that faulty equipment will be detected on time and will not be used again.
- marking
- defining test and calibration intervals
- recording the results
- proper handling, protection and storage

6. Quality planning

a) In order for the specified process and product quality to be achieved, Truma expects its Supplier to plan, record and ensure the traceability of all relevant activities regarding equipment, plant, technologies, methods, materials, personnel and transport.

b) Production and test planning

The following items shall be illustrated in the Supplier's system:

- production and test steps
- important functional, product and process characteristics
- test procedures, test methods and test resources
- product labelling, packaging and transport
- required documentation
- procurement of products and services from sub-suppliers
- purchase and procurement of production and manufacturing equipment.

They shall be included in the statistical process control in addition to the production-critical characteristics of the process.

The scope of testing shall be determined by the Supplier and shall be influenced by the degree of process capability achieved, the significance of a particular characteristic and the possible effects of a defect (see item Capabilities).

7. Quality management

a) An agreement regarding quality targets, actions and ppm shall not release the Supplier from its responsibility for defects in the delivery. This shall also apply to approvals and special approvals issued by Truma.

b) As part of its QM, the Supplier shall ensure the defect-free delivery of products and services, in particular by means of an outgoing goods inspection. The Supplier shall inform Truma without delay if it is foreseeable that quality problems will arise. The Supplier shall notify Truma without delay in the event of it detecting quality failures and inform Truma of the planned corrective actions.

c) If a sub-contractor or supplier of the Supplier is not in a position to meet its quality assurance duties, the Supplier undertakes to assume the duties relating to the purchased parts or services. The Supplier shall take responsibility for the services of third parties as if they were its own services.

d) If products require special storage conditions or if they can only be used for a limited period of time, the Supplier shall inform Truma of this and shall label the contractual product with the latest possible date of use. The Supplier shall provide Truma with a safety data sheet for materials to which special provisions apply by law regarding storage,

transport, packaging, handling and disposal. The Supplier shall provide an updated version without delay in the event of any change.

8. Keeping records, documentation

- a) The results of quality monitoring/testing (process parameters, product characteristics) and any actions defined and implemented regarding defects shall be systematically recorded in writing. The period of retention for these quality-related records is at least 15 years after product discontinuation, unless a longer period of time is required by law.
- b) At the request of Truma, the Supplier shall make available the delivery of test records during series production (e.g. acceptance test certificate 3.1 as per EN10204).
- c) If requested to do so, the Supplier shall allow Truma to inspect the proof documents and shall supply Truma with copies thereof without delay. The Supplier shall be responsible for the documentation.

9. Complaints processing/warranty

- a) The Supplier shall be notified without delay (notice of defect) if Truma detects faulty products. There shall then be agreement with the Supplier regarding the return/replacement delivery/reworking/sorting out or scrapping of the faulty parts.
- b) The Supplier shall send an 8 D Report (the use of the 8 D methodology is compulsory) to Truma in the case of quality failures notified by Truma, with at least the following information:
 - scope of contractual products affected
 - root cause of defect
 - corrective actions
 - when will the corrective actions be completed?
 - proof of effectiveness
- c) If a defect occurs in an item that has already been delivered, the Supplier undertakes to notify Truma, if requested, of the root cause of the defect and of suitable actions that will ensure the permanent elimination of the defect. Notification shall be made without delay and a first statement issued in any case within two calendar days from the time of the request from Truma.

The following time limits shall apply:

- two working days for containment actions (D3)
 - five working days to submit the 8 D report and initiate short-term corrective actions (D5)
 - ten working days for proof of effectiveness of the short-term corrective actions and notification and initiation of the specific, defined long-term actions (D6)
 - Proof of effectiveness and conclusion (D8) with new production.
- d) Faulty parts shall be returned at the expense of the Supplier.
Until such time as the corrective actions take effect, Truma may request special actions such as 100% inspection. Any additional costs incurred as a result of this shall be at the expense of the Supplier. On request, Truma shall be given access to all quality documents and records related to the product and the production process.

In the absence of a response from the Supplier within ten working days regarding the failure in quality, the notice of defect shall be deemed to be accepted.

Improvements (reworking) on the product are only permitted if this has been approved in advance and in writing by Quality Assurance at Truma.

If the Supplier detects defects which may involve deliveries that have already been brought to dispatch, Quality Assurance at Truma shall be notified without delay and informed of any corrective actions initiated.

- e) In the case of defects in delivered contractual products, Truma shall have the choice of requesting either reworking to eliminate the defect or a replacement delivery. If the Supplier is late in providing subsequent fulfilment, cannot be contacted or if there is imminent danger or other urgent reasons, e.g. to prevent greater damage, Truma may carry out the reworking itself or have it carried out by a third party, at the expense of the Supplier. All expenditure incurred in the elimination of the defect or for the replacement delivery including possible removal or installation costs shall be borne by the Supplier. This shall not affect any statutory claims on the part of Truma for defects.
- f) If defects occur with individual contractual products from one purchase order which justify the assumption that the other products delivered with the same purchase order or other deliveries are faulty, Truma may refuse to accept all other deliveries that are ordered and binding if the Supplier cannot prove that the other deliveries are free of defects. In this case, Truma also has the right to issue a notice of defect for the entire quantity already delivered even where the nature of the defect only becomes evident during processing or during another application of the delivered items.
- g) Where the Supplier is responsible for the defect, the Parties agree the lump sum compensation, as amended and included in the attached Annex Lump Sum Compensation, in order to simplify the calculation of compensation. The Supplier retains the right to prove that Truma has incurred no loss or only minor loss. Truma has the right to claim compensation in excess of the specified lump sum.
- h) In the case of field failures, it is important to take into account that not all parts from the field will be returned to Truma by the Sales Department. The Supplier shall receive only a random selection of defective parts from the field for analysis. In the case of field failures, this part represents a number of parts with the same defect profile. The diagnosis shall be carried out in consultation jointly or exclusively by Truma or by the Supplier. The recourse volume is calculated from multiplying the acceptance rate with the sum of the material defects costs incurred worldwide. The acceptance rate is calculated from the number of accepted complaints arising from the Supplier spot check in relation to the overall number of defects contained in the spot check. Truma shall invoice the Supplier for the costs incurred relating to all defective parts, in particular for installation and removal, parts handling, logistics, scrapping, travel costs etc. If part replacement is not necessary, the costs of eliminating the defect shall be invoiced to the Supplier. If the contractual products do not form part of the diagnosis or are not made available to the Supplier for technical analysis, they shall be scrapped by the Truma sales division. In the case of product changes, process changes or production relocation that were not notified to Truma by the Supplier, the acceptance rate shall be 100%.
- i) The period of limitation for claims for defects is 48 months, applicable from the point of risk transfer, unless a longer warranty period is provided for by law or in other regulations or agreements. In the case of a new delivery, the period of limitation begins at the time of risk transfer of the contractual products that have been delivered as a replacement.

10. Escalation procedure

The Quality Department may request the following escalation levels from the Supplier:

- a) Level 1: In the event of an identical error pattern (repeat errors) occurring three times within 12 months, a different error pattern occurring three times or a frequency of errors with reference to deliveries made within three months, the following actions can be requested from the Supplier. 100% inspection and labelling of three subsequent deliveries and implementation of suitable short-term and permanent defect corrective actions by the Supplier. Level 1 shall be revoked once the corrective actions have been carried out and the suitability of the corrective actions is verified, otherwise escalation to Level 2.
- b) Corrective actions to eliminate defects are deemed to be suitable if within the period of the 100% inspection no further defects occur and the on-site corrective actions have been positively evaluated by the Truma Quality Department.
- c) Escalation to Level 2 shall be initiated if the suitability of the actions from Level 1 cannot be verified. The actions at Level 2 consist of 100% inspection and labelling of the three subsequent deliveries at the Supplier facility and a 100% goods inward inspection at Truma either by Truma or a third party appointed to do so at the expense of the Supplier and the introduction of suitable permanent corrective actions by the Supplier. Truma has the right to track and inspect the corrective actions at the Supplier facility and to conduct audits.
- d) Level 2 shall be revoked once the corrective actions have been carried out and the suitability of the corrective actions is verified, otherwise the Supplier will be debarred from new projects and there may be a change in supplier for the contractual products impacted by the defect, at the discretion of Truma.

11. Important and critical characteristics

- a) Important and critical characteristics for Truma are characteristics which have significant influence with regard to product safety as well as to legal provisions.
Truma in its specifications and annexes marks these characteristics as follows:
TSM – F Truma specific characteristic function
TSM – S Truma specific characteristic safety
TSM – Z Truma specific characteristic relevant for registration.
- b) Parts with critical characteristics shall be apparent across the entire process sequence and are to be marked as such in all documents. The Supplier shall verifiably alert all employees and contract workers to products with critical characteristics and shall adequately train them in dealing with such products.
- c) Parts with critical characteristics are subject to monitoring and documentation obligation (15 years), traceability shall also be ensured. Otherwise, the provisions of item 5 of the Quality Guideline shall apply accordingly.
- d) The Supplier shall carry out process planning for product and/or process characteristics that impact product quality.

- e) Regardless of defining further test characteristics for series monitoring, the Supplier shall carry out process capability tests for characteristics that impact function or reliability in particular or that have a significant quality-defining feature. The Supplier shall ensure the systematic monitoring of its production by means of suitable test methods in accordance with its test planning. Testing and documenting process parameters and product characteristics will result in a more stable and capable production process and ensure the quality of the contractual products. In the case of a disruption to the process and deviations in quality, the root causes shall be analysed, improvement actions introduced and their effectiveness determined.
- f) If process capability is not achieved, actions for process optimisation shall be introduced without delay and suitable test procedures applied so that quality targets can be met.

12. Electronic components/electronic assemblies

- a) The following provisions apply in addition to electronic components/assemblies with the aim of ensuring that electronic assemblies for Truma will be built in the specified quality and that any defects can be eliminated as quickly as possible. The provisions apply to all electronic components/electronic assemblies produced for Truma regardless of who designed them and where they were produced.
- b) The current version of **IPC-A-610** Class 2 (acceptance criteria for electronic assemblies) is to be taken into account for the evaluation of the qualitative design of individual electronic components/electronic assemblies.
- c) Technical devices, equipment and methods for the production and mounting of PCBs undergo constant technical change. The Supplier shall continuously focus on the technical possibilities available on the market and shall introduce these where applicable.
- d) The Supplier is obliged to provide for a process with suitable resources such that the quality required by Truma is 100% guaranteed. In particular, incorrect mounting and soldering errors shall be excluded, in line with specifications. The Supplier shall be responsible for deviations from the defined quality that occur due to an incomplete process validation. The test planning is to be made available to Truma in advance for information.
Truma shall be notified in advance if there are characteristics that cannot be ensured with the available procedures and methods.
- e) At the start of each new series production, the soldering profile shall be defined, measured and recorded in the production data for each assembly. The temperature shall be measured at a minimum of 2 parts of the PBC, at temperature-critical points or parts. This measurement shall be carried out repeatedly during series production.
- f) Yield: Records of the failure rate (yield) of ICT, AOI and function test are to be maintained and to be submitted to Truma regularly for information. The yield limits shall be agreed jointly. If the value determined is down, suitable actions for process optimisation shall be initiated without delay and Truma notified of this.
- g) ESD actions shall be implemented in all areas of the production of electronic assemblies. The regular inspection and maintenance of the ESD equipment shall be recorded.

- h) The prior written permission of Truma is required if the Supplier purchases parts from brokers in exceptional circumstances (e.g. allocation). Ensuring the quality of these parts shall remain the responsibility of the Supplier.
These deliveries are to be marked separately.
- i) The Supplier shall supply packaging suitable for the assembly (e.g. ESD packaging).

13. Changes

- a) The Supplier undertakes to carry out any change to the current status of drawings and/or specifications, initial samples, material, sub-supplier, or any process changes, changes to test procedures or test equipment, or any tool replacements, changes to quality assurance actions and transfer/relocation of production equipment and in the case of delivery interruptions of more than 12 months, only with the prior written permission of Truma. The contractual products shall be deemed defective in the absence of this permission. In the event that Truma does not reject a change, the Supplier shall in each case conduct an initial sampling the scope of which shall be determined by Truma.

14. Marking

- a) The Supplier shall mark the product in line with the Truma Packaging Manual such that the marking remains visible during transport and storage. Any deviations shall only be permitted with the prior written permission of Truma.

15. Traceability

- a) The Supplier shall ensure traceability using suitable methods.
- b) In the event of a defect detected, traceability must be ensured such that the quantity of defective parts/products can be narrowed down to specific production and test batches, unless otherwise agreed. The Supplier shall ensure that its sub-suppliers can also ensure traceability to the same extent. The principle of first in first out shall be taken into account.

16. Special approval

- a) If the contractual products do not correspond to the agreed composition, the Supplier may submit an application for special approval. Special approvals will not be issued for critical parts or parts with critical characteristics. The Supplier shall also notify Truma of any deviations detected after delivery. Truma shall be notified of the type, scope and quantity of the deviation. If Truma issues a special approval, the special approval shall be included with the applicable delivery and the deliveries shall be labelled accordingly. A special approval may only apply to a specific production batch, a specific production quantity or a specific production period. All special approvals are conditional approvals. Truma reserves the right to invoice any costs incurred in connection with the special approval.

17. Supplier evaluation/audit

- a) Supplier evaluation

Truma shall conduct regular (monthly) supplier evaluations in accordance with the provisions of the Supplier Evaluation Manual and shall notify the Supplier of the results.

b) System, process and product audit

Truma and any third party authorised by Truma and the competent authorities have the right to conduct an audit of the Supplier, its sub-contractors and suppliers. The audit may be conducted as a system, process or product audit. After prior notification, the Supplier shall grant Truma access to its premises, testing areas, warehouses and ancillary areas and access to quality-related documentation and shall make available a suitably qualified employee. If in the opinion of Truma actions are required, the Supplier undertakes to prepare an action plan without delay, to implement it in a timely manner and to notify Truma of this. An audit conducted by Truma at a sub-contractor and/or supplier of the Supplier shall not release the Supplier from its responsibility for the sub-contractor and/or supplier.

Truma has the right at any time and after prior notification to inspect production and quality control and the quality records of the Supplier and, if available with the Supplier, of its supplier/sub-contractor.

For example, a system/process and/or product audit shall be conducted:

- for new suppliers
- after the introduction of major changes (e.g. production location, QM system)
- if the delivery quality has deteriorated
- for quality improvement
- if new or modified procedures are introduced

18. Environment

Truma expects its Supplier to give high priority to the topics environment, health and safety. The following requirements shall be taken into account:

- nomination of a contact person for environment and safety issues
- compliance with the relevant legislation, guidelines and regulations
- determination and notification of potential health, safety and environmental hazards
- improvements in relation to recycling options for the contractual products
- information about disposal options
- voluntary undertaking on the part of the Supplier regarding the reduction of the environmental impact of the supplied contractual products
- the promotion and development of environmentally friendly technologies
- a completed safety data sheet shall be made available with each first delivery of hazardous and auxiliary materials.

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