

## **0.1 Purpose**

By means of this quality assurance requirements (in the following referred to as "QAR"), the requirements of EN9100 are implemented.

If the supplier fails to meet one or several of these requirements, they shall inform the purchasing department of GGB Heilbronn GmbH (in the following referred to as "GGB") in written form about such circumstances to initiate the corresponding exclusions.

The supplier shall ensure a long-term availability of the raw materials of at least 6 months towards GGB. They shall inform GGB about any discontinuations within due time, at the latest 2 months in advance.

## **0.2 Business application area**

This QAR applies to aerospace suppliers of GGB and their subcontractors as well as the performances to be rendered by the supplier and subcontractors. Therefore, the supplier shall conclude a QAA whose contents correspond to the contents of this QAR with their subcontractors.

The QAR version applicable at the point in time of the respective order shall apply.

The quality assurance requirements (QAR) of GGB is an integral part of the awarded contracts and thus binding for all suppliers.

## **0.3 Terminology / abbreviations**

QM	Quality management
QAA	Quality assurance agreement
QAR	Quality assurance requirements
FAI	First sampling (first article inspection)
FMEA	Failure mode and effects analysis

## **1) Purchasing information for the product to be procured:**

The configuration of the product or service to be delivered by the supplier to GGB is described by means of

- Documents (drawings, datasets, material test certificates, etc.)
- Additional requirements indicated in the order
- Deviations from the documents indicated in the order
- General standards or regulations, e.g. EN, DIN, DVS, VDE, etc.

If, during processing, the supplier identifies any requirements which have not been indicated by GGB but which are necessary for the stipulated or intended use, if known, they shall inform GGB respectively.

## **2) Requirements in connection with the approval of product, procedures, processes and equipment**

The supplier checks the order documents received by GGB to ensure that they can securely implement the requirements and that all deliveries and performances rendered by them comply with the order-specific requirements. They shall plan and implement the production and rendering of services under controlled conditions.

Procedures, processes, production facilities, tools, programs and equipment shall be qualified and approved before their use and maintained and tested in specified intervals according to the procedure instructions and/or product descriptions.

The supplier shall implement and document a suitable work plan to be able to verify the necessary maintenance sequences and treatment processes. The planned production order is stipulated by a first sampling at the latest and, subsequently, must not be modified without the approval by GGB.

For the control of risk mitigation measures and for safeguarding potential error sources, the supplier shall apply suitable methods according to the state of the art (e.g. FMEA, 5-Why, Ishikawa, fault tree analysis, etc.).

The technical equipment and documentations necessary for process flows must be clarified before the order placement. The supplier shall implement corresponding backup solutions, emergency plans and capacity safeguarding. Durable consumer goods and consumables, such as water, compressed air and chemical products, shall be monitored and steered to the same extent to which they impact the product quality. Production and inspection operations shall be carried out in a verifiable manner, as planned or otherwise documented and approved.

The packaging shall ensure that the product cannot be damaged during delivery. If necessary, the product is to be protected against damage by environmental impacts. If storage period limitations are to be observed, this shall be pointed out and the date of production of the product shall be indicated.

### **3) Requirements to the qualification of staff**

Staff carrying out activities impacting the product quality must comprise of the suitable skills and experience in this respect. Suitable records with respect to trainings, skills and experience shall be kept.

The technical facilities shall be maintained and adjusted by expert staff.

Staff deployed for the specific processes shall be qualified verifiably.

Additionally, it must be ensured that the staff is aware of the contribution to the product and/or service compliance, the contribution to the product safety as well as the importance of ethical behaviour.

### **4) Requirements to the quality management system**

The supplier maintains a quality management system according to EN ISO 9100, as a minimum requirement however according to EN ISO 9001, which has been certified by an accredited certification institute. The certificate shall be provided to GGB unsolicited at the latest upon conclusion of the contract.

If these conditions are not met (e.g. due to a withdrawal of the certificate), the purchasing department of GGB shall be informed about this immediately.

### **5) Designation or accurate identification as well as the respective issue of specifications, drawings, process requirements, test specifications and other applicable technical data**

All documents and records shall be labelled and steered in accordance with their respective version and possible modifications.

For the implementation of the work, the respective current versions shall be present.

It is to be ensured that all documents are well legible and easily identifiable.

Records shall be stored in a place where they can be found again easily and be provided to GGB and the authorities for evaluation.

### **6) Requirements with respect to testing, inspection, examination and related instructions**

The supplier shall subject their deliveries and services to a factory inspection (incoming goods, production, process and final inspection) and rectify any detected defects. This is to be documented correspondingly and transferred upon request.

For drawing parts, GGB reserves the right to request a quality management plan if GGB's quality management deems this necessary.

The supplier shall carry out a suitable inspection planning (professionally and with respect to dates).

Implemented inspections shall be documented with the date by the inspector in a suitable location. Upon request, GGB shall be allowed to participate in such inspection.

The supplier shall use suitable testing and measurement equipment and systematically check the compliance with the admissible tolerances of the testing and measurement equipment (calibration).

If specific quality requirements by customers of GGB exist which are important for the ordered service of the supplier, these are indicated before the order and shall be taken into consideration by the supplier (e.g. material certificates or similar).

### **7) Requirements for initial sample parts**

The initial sample testing (FAI) is implemented according to EN 9102.

With the initial sample, it is to be verified that all technical design and specification requirements are correctly understood, allocated, verified and documented and that a reliable series production is implemented.

A FAI shall be carried out if this is requested in the order.

A FAI for drawing parts / specification parts shall be carried out during initial production correspondingly. Any deviations in this respect shall be regulated in the order. In the event of severe modifications to procedures, tools or programmes and of an interruption of the delivery period of more than a year or of the relocation of the production facilities, a new FAI is required.

If requested, the FAI planning shall be coordinated with GGB. In such case, GGB shall be informed two weeks before the start of the FAI to allow them to participate.

FAI minimum requirements are:

- Inspection of the product against the drawing records (e.g. material certificate)
- Verification of specific processes (e.g. welding, soldering, gluing, heat treatment, surface treatment, etc.), for instance by destructive / non-destructive testing.
- Validation of devices / gauges and product-specific tools (e.g. special wrenches, contour cutter, adapter, etc.) and verification by means of inspection protocols.
- Validation of inspection and application software for the production process (CNC and measurement programs).

### **8) Requirements with respect to the supplier's reporting of defective products and precautions for the approval of erroneous parts of the supplier by GGB**

The supplier shall implement suitable precautions to directly or indirectly exclude a delivery of discarded or non-rectified and rejected performances to GGB.

However, if the delivery of deviating parts becomes necessary, this may only be realized with a deviation approval by GGB. This approval shall be attached to the respective delivery. The supplier is obliged to also deliver all rejected parts, which are to be labelled correspondingly and protected against mixture, to GGB.

The supplier shall take the corresponding precautions to prevent the delivery and the circulation as well as the use of counterfeited parts. Only original parts may be delivered to GGB.

### **9) Requirements for the notification of GGB with respect to modifications to the product and/or process definition as well as, if applicable, obtaining the approval from GGB**

Any modifications of the supplier to the product or process definitions are subject to the written approval by GGB. In particular, this applies to all modifications upon the implementation of an FAI.

Deviations from the records are subject to a written approval.

Generally, all modifications shall undergo a risk assessment, even if they are not notifiable according to the PPAP manual.

### **10) Access right of GGB, their customers and their aviation authorities to all facilities related to the order and the corresponding records**

The supplier shall grant GGB, their customers as well as the regulatory authorities, e.g. BWB, LBA, the right to inspect the effectiveness of the quality management system of the supplier (for instance through system, process, procedure or product audits) on site at all times and to participate in inspections of the performance objects.

If any defects and/or improvement potentials occur, the supplier undertakes to actively participate in the error rectification/optimization and to immediately provide all necessary documents for inspection upon request.

This requirement is to be passed on to any subcontractors.

**11) Requirements towards suppliers and/or service providers with respect to the forwarding of the respective requirements of the procurement documents, including key features to subcontractors upon request**

If the supplier intends to partially or completely relocate and/or have a subcontractor carry out the order, this is subject to the prior approval by GGB. Additionally, the supplier is obliged to forward all requirements of this QAR to the subcontractor if a subcontractor is commissioned.

In the selection of the subcontractors, the supplier shall use the subcontractors specified or approved by GGB.

The supplier shall install and implement suitable controls at their own premises or at the premises of the subcontractor to ensure that the requirements of this QAR are met and that the use of fortified parts is prevented.

The supplier shall evaluate the delivery performance of the subcontractor, including processes, products and services and the punctual delivery, in regular intervals.

Verification measures with respect to externally provided processes, products and services shall be implemented in concert with the determined risks. This shall include the inspection or periodic review, if applicable, if an increased risk of non-conformity is given, including the existence of fortified parts.

If verification activities are transferred to subcontractors, the supplier shall document the requirements and the scope of the transfer in written form and monitor this on a regular basis.

During the acceptance of the products by the supplier, the latter shall, if applicable, ensure the use of acknowledged statistical methods.

The supplier shall ensure that, for specific processes, their subcontractors only use the sources of procurement which have been approved by GGB.

**12) Requirements with respect to corrective measures of the supplier**

The supplier shall ensure that necessary corrective measures are communicated to GGB via a corresponding statement within a period of 14 calendar days. Such statement shall include the cause of the defect, analysis, corrective measures and implementation date.

**13) Requirements to secrecy**

The supplier shall only use the documents and knowledge which they obtain in connection with the present requirements and in the framework of the cooperation for the purposes of this requirements and shall keep them confidential with the same degree of diligence towards third parties which they would apply to corresponding own documents and knowledge, irrespective of the type of transfer.

This obligation shall not apply to any documents and knowledge which are commonly known or which have already become known to the supplier without obligation to maintain secrecy. If the supplier refers to one of these exceptions, they shall verify that towards GGB.

The supplier shall ensure that a corresponding non-disclosure agreement is concluded with their subcontractors. They shall verify that correspondingly upon request.

**14) Requirements to documentation**

For all delivered parts/services, traceability is required. This means that the product creation process, the use and/or the storage of a product must be traceable by means of suitable records and, if applicable, labelling of parts.  
All materials shall be verifiable and allocable at all times and unambiguously with the corresponding material testing certificates.  
The compliance of the product with the requirements must be verifiable at all times.

Generally, the documentation must be available for a period of 50 years upon delivery of the last part. This applies to the production order / job ticket, inspection reports, FAI, factory certifications of all materials, measurement logs, delivery notes. Before the destruction of the documents and records, the supplier shall inform GGB and obtain a corresponding approval.

**15) Insurance**

The supplier shall guarantee towards GGB that they comprise of a sufficient insurance policy. Such insurance policy shall cover any risks resulting from the present agreement. The supplier shall provide GGB with a verification of the insurance upon request.

**16) Miscellaneous**

This agreement shall be subject to the laws of the Federal Republic of Germany exclusively, under exclusion of any rules and regulations governing conflict of laws. The place of jurisdiction is Heilbronn.