

MAFI Supplier Quality Handbook

The MAFi logo is positioned in the bottom right corner of the page. It consists of the letters 'MAFi' in a bold, white, sans-serif font. The letter 'i' is lowercase and features a small yellow square as a dot. The background of the entire page is a photograph of a calm lake at dusk or dawn, with a forested hill in the distance and a cloudy sky.

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Management system and compliance requirement

Management system

All suppliers must have a quality management system compliant to ISO 9001. All suppliers should also certify to ISO 14001. Suppliers are responsible to secure sub-suppliers have similar BMS system in place as well.

To produce CE-marked products, it is recommended that suppliers hold EN1090 certification. In the absence of such certification, the manufacturing process must strictly comply with the execution requirements defined in EN 1090-2.



Compliance

All suppliers shall be aware of and comply with all requirements specified in [MAFI's Supplier Code of Conduct](#).



Supplier Quality Assurance Plan

For new product or processes MAFI will require the process to be verified. Depending on circumstances different levels of verification will be required. This should be specified by MAFI during RFQ process.

Steps	Level 1	Level 2	Level 3	Level 4	Responsible
<i>Step 1</i> : Design FMEA	na	na	na	na	MAFI
<i>Step 2</i> : Design Producibility Review (DPR)	S	X	X	*	Supplier
<i>Step 3</i> : Process Flow & Process FMEA	S	S	S	*	Supplier
<i>Step 4</i> : Control plan	S	S	S	*	Supplier
<i>Step 5</i> : Preparation SPVR	S	S	X	*	Supplier
<i>Step 6</i> : Quality Plan for Sub-suppliers	S	X	X	*	Supplier
<i>Step 7</i> : Gauge Repeatability and Reproducibility	S	X	X	*	Supplier
<i>Step 8</i> : Capability Studies (Cmk)	S	S	X	*	Supplier
<i>Step 9</i> : Process Sample Approval (PSA)	S	S	S	*	MAFI & Supplier
<i>Step 10</i> : Serial Process Verification Run (SPVR)	S	S	X	*	Supplier

S = Submit to report to MAFI according to supplied template

X = No report required

na = Not applicable to supplier

* = Custom requirements defined nu MAFI

Step 1: Design FMEA

DFMEA defines key risks and characteristics that flow into DPR, PFMEA, Control Plan, SPVR preparation, and PSA. The DFMEA is always done by MAFI and will be share with the supplier.



Step 2 : Design Producibility Review (DPR)

The Design Producibility Review ensures the design can be reliably, efficiently manufactured and critical features are feasible for production and aligned with supplier capability.



Step 3.1 : Process flow

The Process Flow defines every step required to manufacture the part, from incoming material reception, inspections, manufacturing, outsourced steps to packaging. It gives a structured overview of the entire production. A complete Process Flow ensures all operations are understood, enabling consistent quality, stable production, and providing the foundation for PFMEA and the Control Plan.

Step 3.2 : Process FMEA

The PFMEA aims to identify and assess potential failures in the manufacturing process before serial production. PFMEA defines risks and controls that flow directly into the Process Flow and Control Plan.



Step 4 : Control Plan

The Control Plan defines how critical and important characteristics will be controlled during production. It links PFMEA risks to specific measurements, methods, and frequencies.



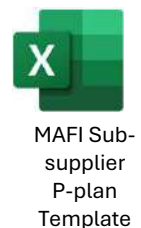
Step 5 : Preparation SPVR

Preparation for SPVR ensures that all documentation, controls, gauges, and process conditions are ready for the Serial Process Verification Run. The goal is to secure that the upcoming SPVR can be executed under stable, serial-representative conditions with correct monitoring and traceability in place.



Step 6 : Quality Plan for Sub-suppliers

The Quality Plan for Sub-suppliers ensures that all outsourced processes and purchased components used in the product meet MAFI quality, capability, and traceability requirements.



Step 7 : Gauge R&R

Gauge R&R verifies that measurement systems are repeatable and reproduceable. It ensures operators, methods, and instruments can reliably measure characteristics defined in the Control Plan.



Step 8 : Capability Studies

Capability studies evaluate whether key process characteristics can consistently meet MAFI tolerances under real production conditions. They measure Cmk on defined features. The goal is to confirm process stability, identify variation sources, and decide if process or design adjustments are needed before SPVR.



MAFI
Capability
studies
Template

Step 9 : Process Sample Approval

PSA verifies that the first production samples meet all drawing, specification, and critical-feature requirements. It ensures material, dimensions, appearance, and function comply with MAFI standards.



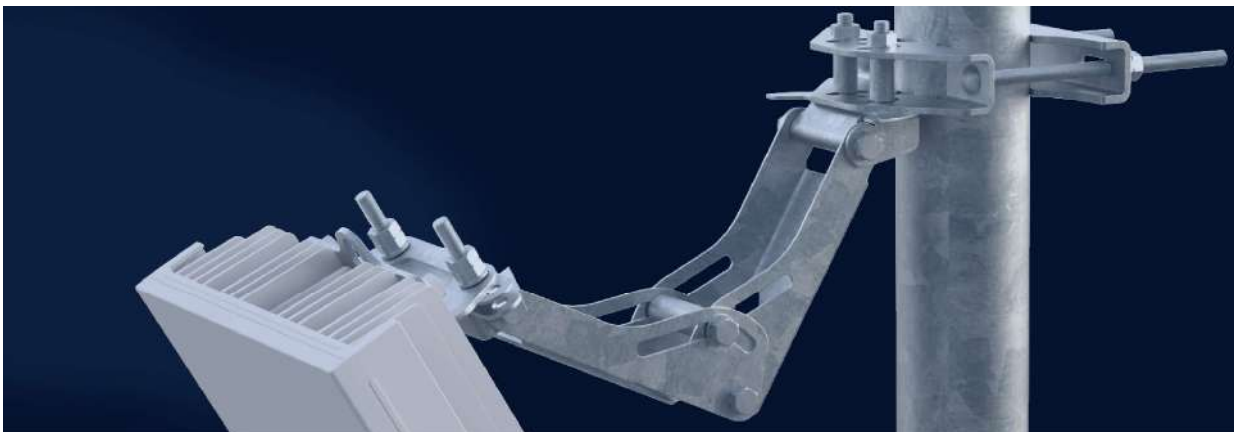
MAFI PSA
Template

Step 10 : Serial Process Verification Run (SPVR)

SPVR validates the complete serial production process under normal operating conditions. It checks stability, capability, measurement accuracy, material flow, and adherence to the Control Plan. SPVR ensures that all PFMEA and Control Plan controls work as intended and that variations are understood.



MAFI
SPVR
Template



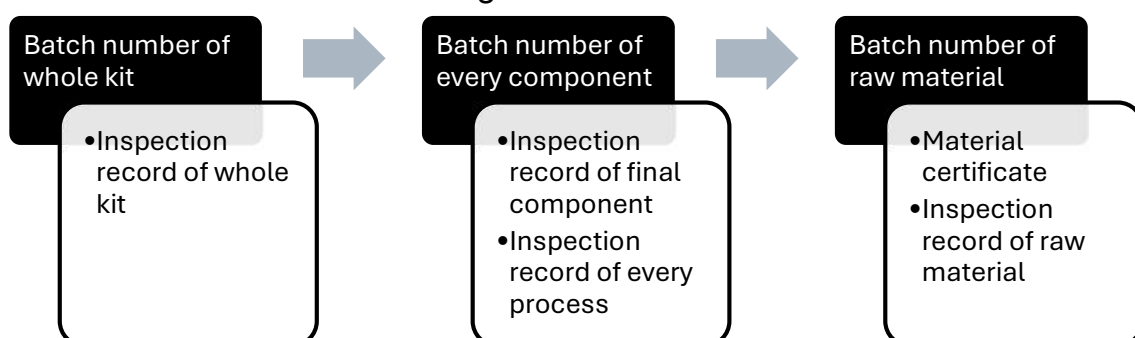
Production requirements and supporting processes

Technical Data Package (TDP)

When ordering more complex products such as complete kits with several sub-parts MAFI will send a TDP to the supplier. The TDP will include a Bill of Materials (BOM), specification of all sub-parts and the complete product and sometimes additional information needed to produce and ship the parts such as pre-assembly instructions and pallet loading sheets. If the information in the TDP is wrong or missing information the supplier should notify MAFI to get an updated version.

Traceability

To allow identification and tracking of products out of specification, the supplier shall maintain control of lots or batches throughout the processes. By using the batch number of whole kit, each component's batch number can be traced. From the component batch number, the production process data and the corresponding raw material batch numbers can be further accessed. From incoming inspection through to final packaging, the inspection records of each process can be traced via the relevant batch numbers. For example, at the incoming inspection stage, the corresponding incoming inspection records can be accessed through the batch number.



Product/Process Change Notification (PCN)

When either supplier or sub-supplier initiates changes to the product or process MAFI shall be notified of the change before the change is implemented. Changes that require a PCN are all changes that affect any of the aspects below:

- **Form:** The visual and physical characteristics, including size, mass, weight, and material.
- **Fit:** How the part fits into the assembly, including physical mating, tolerance (even if still in specification).
- **Function:** The action or performance required for the part to fulfill its purpose in the system (e.g., a fastener's strength).
- **Process capability:** The ability of the process to consistently produce parts that meet requirements. (e.g., process parameters, equipment)
- **Process flow:** The sequence of manufacturing and inspection steps. (e.g., equipment, tooling, manufacturing location, sub-supplier, or inspection points)

When MAFI has approved the change MAFI will send a PCN with information about the change to the supplier. The supplier is then required to fill in some information in the PCN regarding implementation date etc. Depending on the extent of the change different measures of verifications will be taken. The viable verification methods are supplier audit, sample product or pictures verifying implemented change.

MAFI can also initiate a change request in the form of a PCN because of a customer complaint, noticed deviation, revision update etc.



Early warning

The supplier shall immediately notify MAFI in written format of any issue identified that might have an impact on deliveries, material quality, or capacity.

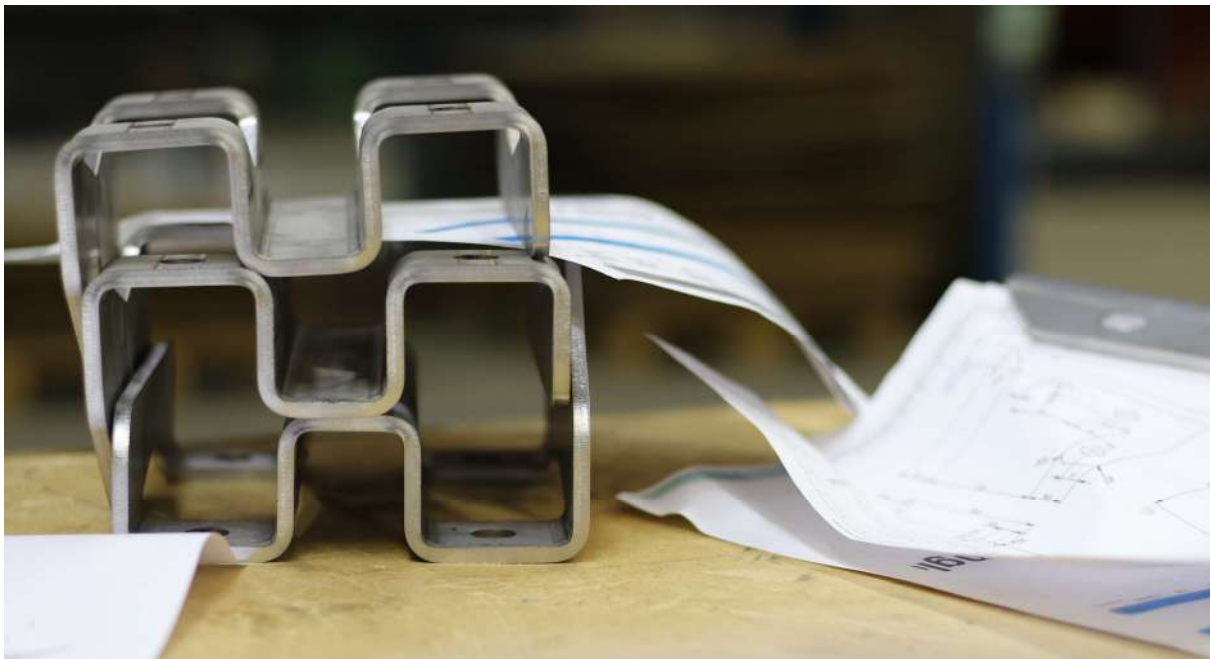
Quality problems on components detected after delivery that may cause production or field problems must also be reported to MAFI immediately.

Deviation Approval (DA)

If the supplier notices that something is out of specification, the supplier should not send any parts to MAFI without a Deviation Approval (DA). In that case the supplier should notify MAFI of the issue and ask for a DA. DAs should always have a limited extent. For example, the DA could be valid until a specified date or for a specific quantity. The DA should be attached to all deliveries from the supplier to MAFI with parts affected by the DA.

Examples of deviations that can be approved are:

- Measurements that do not affect the function being out of spec
- Use up of old revision of sub-parts



Problem Solving Reporting

In the case of deviations found by the MAFI or our customer MAFI will request the supplier to solve the problem using the 8D methodology or PDCA for less serious non-conformances. Upon occurrence of the issue, the supplier is required to conduct a thorough root cause analysis and establish practical corrective actions after careful evaluation.

MAFI expects feedback during the 8D process:

Response time	8D steps	Action
24 hours	D1 – D2	<ul style="list-style-type: none">• Acknowledge 8D request
48 hours	D3	<ul style="list-style-type: none">• Containment implemented
10 days	D4 – D5	<ul style="list-style-type: none">• Root cause defined for both occurrence and non-detection.• Corrective actions implemented
20 days	D6 – D7	<ul style="list-style-type: none">• Effectiveness validated

Supplier Inspection Report

After completing each production run per the ordered quantity, the supplier is required to complete a Supplier Inspection Report, which covers the inspection checkpoints for the complete product assembly, for each sheet metal part, and for each fastener, along with the material reports for each component. Please upload the report to the designated network location or send it to the designated email address specified by MAFI, before the goods are received by MAFI or MAFI's customer. Please contact the relevant SQE to obtain this information.



Other

Performance of Fasteners

Fastener performance must comply with the property classes and standards specified in the Bill of Materials (BOM). For bolts, studs, and nuts, the tensile strength requirements must be maintained even after assembly.

For example, a property class 8.8 bolt must not only meet the 800 Mpa tensile strength standard as an individual component but must also achieve the 800 Mpa requirement when engaged with its mating nut.

Appearance

Cosmetic appearance shall comply with the requirements specified in the following documents.

GL-QM-003 - Standard of Hot-dip Galvanizing – Structural Parts

GL-QM-004 - Standard of Hot-dip Galvanizing – Fasteners



GL-QM-003
Structural
Parts



GL-QM-004
Fasteners

Packaging

Packaging shall comply with the requirements specified in the following documents.

GL-QM-002 – Packaging Standard



GL-QM-002
Packaging
Standard

Definitions and acronyms

Abbreviation	Description
BMS	Business management system
RFQ	Request for quotation
DFMEA	Design failure modes and effects analysis
DPR	Design Producibility Review
SPVR	Serial Process Verification Run
PSA	Process Sample Approval
TDP	Technical Data Package
PFMEA	Process Failure Modes and Effects Analysis
CP	Control Plan
Cmk	Machine Capability Index
Cp / Cpk	Process Capability Index
Pp / Ppk	Long-term Process Performance Index
Gauge R&R	Gauge Repeatability and Reproducibility
BOM	Bill of Materials
STEP file	Standard for the Exchange of Product Data (3D CAD format)
PCN	Product/Process Change Notification
DA	Deviation Approval
8D	Eight Disciplines Problem Solving
D1–D8	8D process steps

Revision Table



Revision	Revision Description	Editor	Approver
2026	First revision	Martin Ansgar	Andreas Gidlund