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Supplier Quality Assurance Manual

Introduction

The Azelio Purchasing mission is to provide competitive advantages to our products by selecting, developing and managing suppliers.

We expect our suppliers to be committed to a ZERODEFECT APPROACH and to demonstrate this commitment through:

- Delivering fully conforming parts or products
- On time delivery
- Following approved processes and requirements
- Pro-active risk management.

This document is intended to serve as a reference to better understand our requirements and your role in the shared responsibility.

The document is organized in chapters related to our main processes.

Acknowledgement

The acknowledgement page should be signed at the parent company level. Unless requested by Azelio for major content change, it is not requested to sign the acknowledgement at each update.
Revisions of this document will be communicated by Azelio purchasing team and by being posted on www.azelio.com/suppliers. If not contested any changes will be considered accepted three weeks from date of communication to Supplier.

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Supplier Acknowledgement

We hereby confirm that we have received, and we understand the Supplier Quality Assurance Manual.

We understand that this manual defines the overall quality targets for the products that are purchased by Azelio.

We agree to strive to meet these customer requirements, in all our facilities working with Azelio products. Should any individual supplier agreement exist or be signed in the future, they take precedence over the general targets in the SQAM.

We understand that it is our responsibility to ensure that only the latest revision of this manual is used. Revisions of this document will be communicated by Azelio purchasing team and by being posted on **www.azelio.com/suppliers**. If not contested any changes will be considered accepted three weeks from date of communication to Supplier.

We understand that it is our responsibility to deploy the latest revision of this Manual in the current and future facilities working with Azelio products.

Supplier name and code	
Supplier Address	
Submitted by (Name)	
Function	
Telephone number	
Email address	
Date & Signature	

General Requirements

Azelio products are based on complex, state of the art technology, and may be used in demanding environments and extreme climates in locations not always easily accessible. Yet some of the most important customer interests include reliable uptime, reasonable service intervals and long lifetime. This drives our stringent quality requirements.

Results expectations

The table below defines the targets for our suppliers. Our desire is for all suppliers to strive to meet these numbers.

Green OK
Yellow Closer monitoring and maybe also a visit from SQE or buyer.
Red Result is outside of acceptable level. SQE will visit and action plan is needed to close non-conformity.

Measurement	GENERAL TARGET (Quarterly based)
Number of claims	Green = 1 Yellow = 2 Red > 2
Repeated claim per part	Green = 0 Yellow = 1 Red= > 2
Delivery Precision	Green = +0/-2 day Yellow = +2/ -4 days Red = >+3 /> -5 days
Continuous improvement	Se description below

Continuous improvement

Suppliers are expected to utilize the lessons learned from each incident to improve their processes or design, and if necessary, their underlying business systems. The goal is to eliminate the possibility of similar incidents.

The supplier shall use statistical data to continually refine their process and reduce variation.
Analysis quality incidents, PPM, scrap, downtime, and other readily available metrics should be grouped and ranked.

The supplier shall have improvement projects that target two or three of the largest problem areas. The supplier shall demonstrate a positive trend in reducing overall incidents and repeated incidents.

Management system expectations

Area	Required level
Quality system	Shall have, ISO 9001 certified by an accredited 3rd party
Environmental system	Should have, ISO 14001 certified by an accredited 3rd party
Supplier Evaluation Model (SEM)	Shall have, Score over 60% (action review after SEM review)

Requirements towards sub suppliers

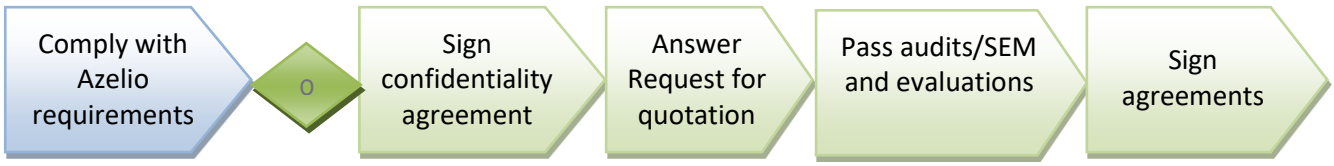
Azelio Purchasing reserves the right to together with the supplier assess and perform audits at the sub-suppliers.

Laboratory requirements

Laboratory and measurements reports shall include:

- The identity and location of the laboratory used.
- The reference to the test methods used.
- Any deviation of the test method shall be noted.
- Measurement results.
- All necessary materials and process traceability information on the tested components or samples.
- Tools must be calibrated.
- Lab accreditation preferably according to ISO17025 if applicable.

SOURCING



The supplier has an active role to play in this process:

- In the audit performed by Azelio.
- In the demonstration of the achievement of future product quality results.
- In the implementation of action plans to reach the requested level.

The following chapter explains the main steps visible from the supplier, what inputs the supplier will receive and what evaluation will be requested.
For current suppliers prior to award of additional business, Azelio will check the supplier's overall quality performance. Depending on these results, Azelio may request a new SEM or ask for further evaluation audits.

Sign the Non-Disclosure Agreement (NDA)

Before engaging in detailed technical or commercial discussions the supplier must sign the NDA.
The supplier shall treat all data and/or knowledge in strict confidence and report any intentional or non-intentional breach of confidentiality to Azelio management or executive level personnel immediately.

RFQ – Request for quotation

The supplier is requested to answer every point of the RFQ and return the requested documents according to proposed timeline.

Supplier Feasibility Confirmation

For Parts at higher maturity level, the supplier may be requested to confirm the feasibility to manufacture and supply the Part. By return of that document the suppliers confirm to have received and understood all necessary information. If appliable, the supplier states comments and conditions for the feasibility.

Audit at supplier - SEM (Supplier Evaluation Model)

Azelio will conduct an audit at supplier to make an evaluation of the supplier's potential. Basis for audit SEM (Supplier Evaluation Model).
The SEM audit is based on the evaluation of 11 following criteria:

- Company Profile.
- Management.
- Environment.
- Quality.
- Logistics.
- After-market
- Competence.
- Product development.
- Finance.
- Productivity.
- Sourcing.

Final agreement

Once the supplier is chosen, all relevant agreements must be signed and returned to Azelio including:

- NDA
- Azelio General Purchase Agreement (GPC)
- This SQAM
- Supplier Declaration

These documents may be combined in a frame as Purchase Agreement (PA).

APQP:
ADVANCED PRODUCT QUALITY PLANNING

Azelio organizes all new product introductions into projects. Suppliers must have an effective project planning process capable of supporting these projects.

Suppliers are encouraged to develop and use a detailed APQP plan or similar for the installation and verification of a robust production process.

The following chapter describes how the APQP is synchronized with the Azelio Gated Process. As well as the Azelio specifics requirements.

Responsibilities in APQP

The SUPPLIER is responsible:

- To develop and execute an APQP Plan for successful product launch.
- To organize the cross-functional APQP team.

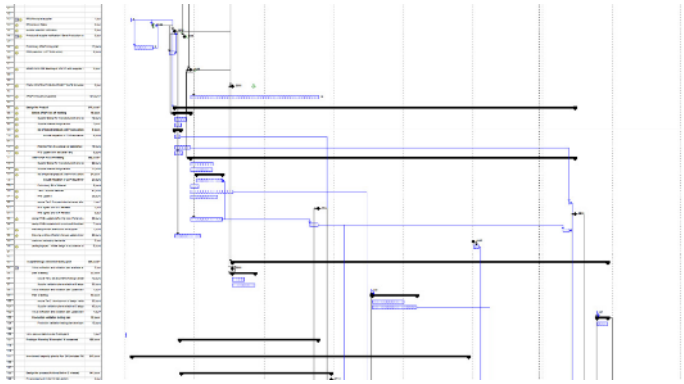
Azelio is responsible:

- To identify the Azelio project team members.
- To assign the SQE who shall coordinate the completion of APQP activities with the project team.

APQP - Planning

The first APQ Planning is expected from suppliers with the answer to the Request for Quotation for serial production.

The APQP Planning identifies the tasks to be completed, the expected timing and the assigned responsibility for completion. It identifies the critical path of the project
The objective of the planning process is to deliver the project on time, at cost and that the products delivered are at the highest level of quality.



Suppliers are requested to report the progress of their APQP plan regularly during the project development.

APQP Reviews are formal meetings where Azelio reviews supplier's APQP plan.
Azelio and supplier check that the project at component level is on track with respect to dead- lines and results.

This reporting is supported by the "APQP review" file that is created in cooperation with the SQE.

This file is owned by the supplier, updated by the supplier and shared with Azelio team during APQP reviews.

Azelio APQP specific requirements

For such characteristics, the following requirement applies:

	Critical Characteristics & Special Characteristics
If process under control, normally distributed	Cpk≥1,67 for Critical Characteristics Cpk≥1,33 for Special Characteristics (or Cpm≥1,1 for unilateral tolerances if applied) and Characteristic checked regularly (frequency in accordance with capabilities studies)
If process is not under control nor normally distributed. Or if statistical control is impractical e.g. Attribute data	100% control for Critical Characteristics Tailored Sampling for Special Characteristics Alternative: Poka Yoke (Effectiveness verified once per shift)

PPAP:
PRODUCTION PART APPROVAL PROCESS

The Production Part Approval Process (PPAP) AIAGs manual, demonstrates that a manufacturing process used to produce parts for Azelio is fully developed, thoroughly tested, and capable of serial production of parts conforming to the technical specifications.

Process

The supplier is responsible for the PPAP preparation:

- PPAP shall be planned by the supplier as a milestone in APQP
- Supplier must notify the PPAP submission date to its respective Azelio Buyer and SQE

The Azelio Buyer shall issue a PPAP sample order to the supplier to confirm the date when PPAP are required. (Except if there is another clear agreement).

- PPAP parts are produced with a requirement of minimum 30 pieces with Cpk studies, of which 5 parts shall have full documentation after order, unless otherwise specified by SQE.
- The PSW shall be signed by the authorized supplier representative before submission to Azelio.

Azelio SQE will review all PPAP packages and assign a status.

- Approved
- Rejected
- Interim Approval.

In the case where an interim approval is given, it must be accompanied by a deviation agreement approved by both the Product Development and SQE together with a plan to become fully approved.

Documentation requirements-Level of submission

The supplier shall submit to Azelio the minimum requirements marked with an X below. Additional requirements may be requested for submission by Azelio.

1. Design Records	X
2. Authorized Engineering Change (note) Documents	X
3. Engineering Approval	
4. DFMEA	
5. Process Flow Diagram	X
6. PFMEA	X
7. Control Plan	X
8. Measurement System Analysis Studies	
9. Dimensional Results	X
10. Records of Material / Performance Tests	X
11. Initial Process Studies	
12. Qualified Laboratory Documentation	
13. Appearance Approval Report	
14. Sample Production Parts	
15. Master Sample	
16. Checking Aids	
17. Customer-Specific Requirements	
18. Part Submission Warrant (PSW)	X

Suppliers shall only submit PPAP packages for released drawings.

Supplier must keep the complete PPAP package available for review upon request by Azelio

Note: The PPAP Submission documents marked with a X only defines what Azelio SQE expects submitted prior approval. All PPAP activities 1-18 must be handled regardless of the submission level. Some activities might not be applicable, mark these activity NA together with a motivation in the PPAP package (I.E. DFMEA is not applicable for a supplier who is not design responsible).

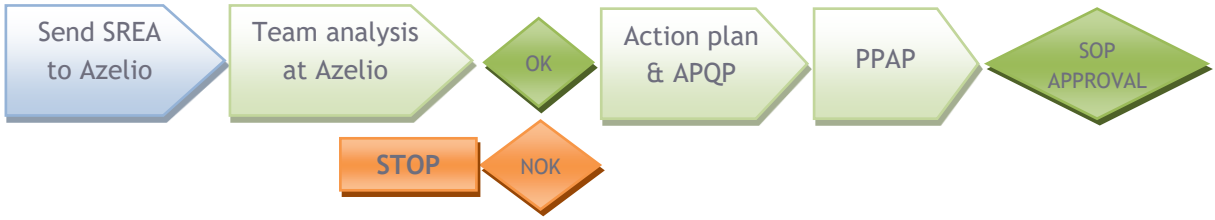
Exceptions from PPAP:
For bulk suppliers and/or distributors of standard parts, PPAP can be replaced with a certificate of conformity with each delivery. Note all other SQAM requirements remain.

PRODUCTION REQUIREMENTS

Pro activity & Lessons learned

Azelio promotes a culture of continuous improvement

Once parts are in serial production, we expect stability and conformity to what have been approved. Whenever uncertainties occur, quick reactivity to contain risks and protect the customer is obviously a must.



Supplier request engineering approval - SREA

According to Azelio General Purchasing Conditions, a supplier cannot implement a change on a product or process that impact conditions of the approved PPAP, without Azelio approval.
This applies, but is not limited to the following cases:

- Transferring of the production line: partly or totally; to a new or existing plant or building; in the same or other country.
- Change of a tier part of the process such as surface treatment, machining, paint shop, warehousing...
- New production layout.
- Packaging changes or repackaging operations.
- Sub supplier change that affect fit, form or function of the product.
- Renewal of current tooling.
- Change of raw material.
- Outsourcing permanently part of the production to a tier2.
- Request for product design changes such as dimensions, functions, appearance.

The supplier desiring or requiring a change shall submit a completed SREA form (Supplier request for engineering approval) to the Azelio buyer with a copy to the Supplier Quality Engineer as soon as the modification project is known, at least 12 weeks minimum prior to the SOP.
Suppliers may be required to submit additional information to support evaluation of the proposed change.

The SREA form is available on request.

Treatment of non-conforming parts

It is in the interest of both Azelio and the supplier, to identify non-conforming parts as quickly as possible. Azelio and the supplier shall take all necessary action to protect the supply of conforming product to the plants.

If the circumstances require, the supplier may be asked to ship replacement parts and to have staff in place for sorting and replacement. Depending on the type of non-conformance and the material situation, parts will either be scrapped or returned to the supplier for rework or reworked on site. Additional costs associated with the handling and actions within Azelio, administrative as well as costs for adjusting, sorting, disassembly etc. may be charged back to the supplier.

When notified of a technical non-conformance, suppliers are requested to react in accordance with the following timeline:

- 24 Hours: Quick response: sorting at Azelio (3rd party company for the sorting allowed).
- 48 Hours: Containment actions fully implemented (selection, temporary action in supplier process) (D3 completed and sent to Azelio).
- 10 working days: Root cause analysis done for occurrence & non-detection, permanent corrective action defined and implemented (D4&5 sent to Azelio).
- 20 working days: Effectiveness of permanent corrective action checked and recurrence prevented (D6&7 sent to Azelio)
- If the resolving time lasts longer than 20 days, the supplier must reach an agreement with SQE.

Each time a non-conformance or a defect has been documented, the causes for the problem must be investigated and reported. The supplier must answer with an Azelio 8D format unless supplier's 8D format is approved by the SQE.

DEVIATION REQUESTED BY THE SUPPLIER

In the case where the supplier wishes to request a deviation to supply parts that do not fully comply with Azelio requirements, the supplier must inform Azelio and request approval.

The minimum information required in writing is:

- Date of request.
- Supplier name, code and contact information.
- Purchase order number
- Part number and part name.
- Azelio location or Azelio sub-contractor the component is shipped to.
- Description of deviation being requested (specifically, what Azelio requirement is not being met).
- Number of pieces being affected, or date deviation is to expire.

First in first out - FIFO

The suppliers must secure that no obsolete material is shipped to Azelio. The suppliers shall perform first in/first out (FIFO) inventory management practices.

Traceability

Guidance:
Traceability should be optimized to limit the size of product recalls and facilitate the expertise and analysis of root causes.

If not otherwise specified all suppliers shall have an effective lot or batch definition and traceability procedure in such a way that the delivered product can be traced back to:

- the finished part
- the subcomponents/blanks
- the raw material.
-

Supplier process audit

Process Audits will be performed by Azelio Supplier Quality.
The process Audit may be performed under the following circumstances:

- During APQP.
- After the PPAP approval when the supplier is beginning production ramp up.
- New process or process changes.
- New location.
- Poor Performance.
- After a major incident
- Other, as agreed
-

Record retention

Document type	Examples	Shall be maintained for
APQP and PPAP documentation	Technical specifications, drawings, process flow charts, control plans, FMEA, manufacturing instructions	The length of time that the part (or family of parts) is active for production, plus warranty time unless otherwise specified by Azelio
Quality performance records	Control charts, inspection and test results, product audits, functional testing	A minimum retention period of ten (10) years after product phase out or end of production.
Quality system records	Internal quality system audits, and management reviews	Three calendar years

Glossary of terms

APQP	Advanced Product Quality Planning (AIAG Reference Manual)
BOM	Bill of Materials
Cpk	Capabilities
DFMEA	Design Failure Mode & Effects Analysis
KPI	Key Performance Indicator
PFMEA	Process Failure Mode & Effects Analysis
PPAP	Production Part Approval Process
PPM	Parts Per Million
PSL	Potential Supplier List
PSW	Part Submission Warrant
RFQ	Request for Quotation
Shall	Mandatory requirement
Should	Recommendation
SPC	Statistical Process Control
SPR	Significant Production Run
SQAM	Supplier Quality Assurance Manual
SQE	Supplier Quality Engineer
SREA	Supplier request for engineering approval
DEVELOPMENT SUPPLIER	Supplier who collaborates with Azelio in development
NON DEVELOPMENT SUPPLIER	Supplier who produce a part according to a drawing given by Azelio
SUPPLIER	Azelio's tier 1 supplier

Change log

Revision	Page	Description of change
Rev.2	1 & 3	Updates to revision and validity
Rev.2	4	Removed “a customer focused way”
Rev.2	5	Clarification Management system expectations Change “must be calibrated”
Rev.2	9	Criteria for CC & SC aligned with ID3145
Rev.2	11	Revised PPAP submission requirements
Rev.2	11	Added Note “All PPAP activities”
Rev.2	11	Added “Exceptions from PPAP”
Rev.2	13	Added alternative “rework on site”