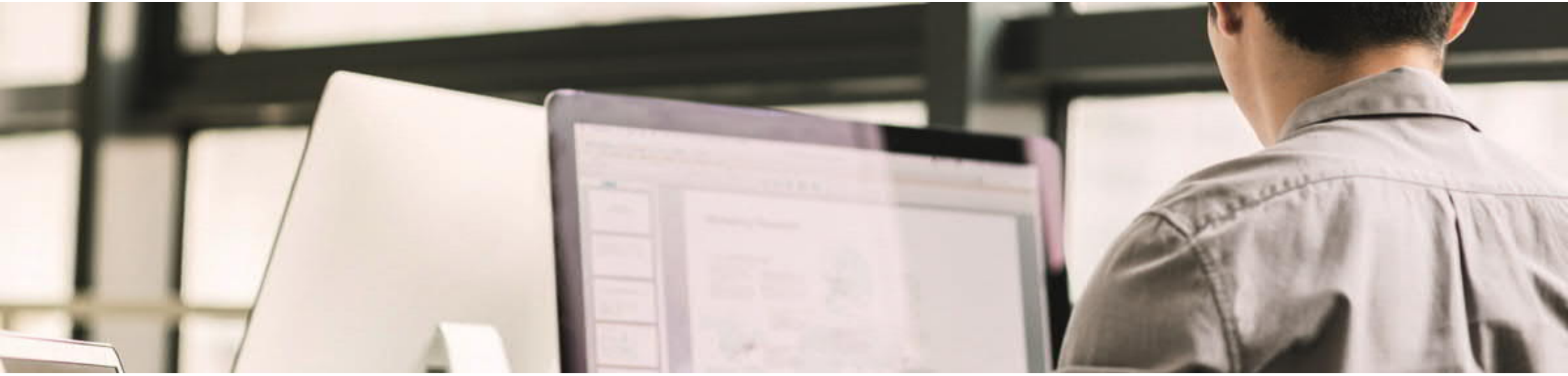
Attachment 1 of S296900-91

SCHAEFFLER



Elements of advance quality planning

Version A / 2023-01

Overview of the elements

SCHAEFFLER

1. Customer requirements
2. Change management
3. Communication and escalation matrix
4. Project schedule
5. Feasibility evaluation
6. Capacity confirmation
7. Safe Launch
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9. Technical review and action plan
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12. Supplier quality plan
13. Design analysis
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15. Process verification plan (PVP)
16. Concept for return and damaged part analysis and for Concern Management
17. Appearance / Craftmanship / Limiting sample catalogue
18. List of special characteristics
19. Measurement methods definition
20. Measurement alignment
21. Inspection and measuring equipment capability
22. Part history
23. Product audit supplier
24. Material declarations and conformity certificates
25. Equipment and tools
26. Process FMEA
27. Prototype control plan
28. Process flowchart & layout
29. Process planning assessment
30. Production and inspection of prototype parts
31. Preliminary process capability study
32. Mass production control plan
33. Process instructions
34. Logistics concept
35. Packaging concept
36. Traceability concept
37. Quality planning subcontractor
38. Process Launch Assessment
39. Capacity trial run
40. Sampling and product release

1 Customer requirements

SCHAEFFLER

Goal

- Avoidance of misunderstandings through clear specifications
- Implementation of a commercial and technical evaluation of the documents provided by Schaeffler for completeness, timeliness and feasibility
- Timely provision (Design Freeze) of all necessary drawings and specifications to meet the series first sample deadline / Start of Production (SOP)

Input

- Schaeffler requirements
- Norms requirements

Note:
- Key checkpoints:
- Completeness
- Interface analysis results and interdependencies in the system
- Risk analyses
- Patent Infringement, Exclusivity, Licenses
- Contradictions in the component-specific and general Schaeffler (technical / commercial), as well as legal / official requirements.
- Improper use
- If applicable, development scope

Activities / Expectations

The supplier must know the basic requirements for the product/project, e.g.:
- Requirements from supplier manual ACQ4, from co-applicable documents of the end customers (e.g. Formel Q) and from co-applicable documents Schaeffler QAA (incl. which specification with which change status was accepted)
- Legal, regulatory and standard requirements (e.g. IATF, ISO 9001, etc.)
- Q specifications (e.g. for electronics production, electric motor test requirements, functional performance requirements)
- Installation situation and environmental conditions,
- Dimensions / Dimensions / Weight / Materials,
- Reliability (service life) and warranty objectives,
- Product safety assessment if necessary FuSi evaluation / ASIL level,
  - "Product Safety and Conformity Representative (PSCR) appointed, qualified and certified? Certificate available?
  - Is product safety-relevant information (e.g. "CC" characteristics, safety margin) communicated to the supplier and does the supplier ensure that it is passed on to its subcontractors?
- Requirements from CQI Process Assessments,
- Quality objectives for incoming parts (ppm evaluation, error levels and rejection rates),
- Capacity data and volume,
- milestones and review of program status,
- Prototype parts, pre-series and series samples.

Prior to entering into a delivery obligation with Schaeffler, a contract review ensures that:
- product requirements are adequately defined and documented (e.g drawings, specifications, specifications),
- deviating requirements are clarified before the offer is submitted or the contract is concluded (e.g. drawing deviations, drawing changes by Schaeffler, delivery dates, prices).

Output

- All relevant documents at the beginning of the project at the supplier
- All relevant documents and contracts at the beginning of the project accepted by the supplier
- Supplier knows the basic requirements in the project
- Basic requirements for technical review and manufacturability assessment created
- If necessary, escalation to purchasing

Document submission at Schaeffler
- List with the individual technical documents, incl. issue status
- Updated APQP Status Report

Documentation / Archiving at the supplier
- Specifications, drawings and specifications, supplier handbook
- List with the individual technical documents, incl. issue status
- Updated APQP Status Report

2 Change management

SCHAEFFLER

Goal

- Clearly regulated process between the supplier and Schaeffler as well as internally in the companies, in dealing with changes to the product or process
- Timely design freeze to PPAP/SOP

Input	Activities / Expectations	Output
• Schaeffler requirements • Change request supplier	• Change management for product and process changes has been agreed between the supplier and Schaeffler. • The supplier shall give Schaeffler the last possible date for changes to series drawings and specifications in order to ensure the initial series sampling on the planned date. • If the supplier is responsible for development, all drawings and specifications are agreed with Schaeffler at this time. • Specified "special features" must be considered accordingly in the context of product and process planning. Note: The aligned status of the drawings and specifications is the basis for the start of change management and is documented in the first official feasibility assessment.	• Product or process change within the specified economic and time frame • If necessary, escalation to purchasing

Document submission at Schaeffler	• Requirements, drawings and specifications • Updated APQP Status Report
Documentation / Archiving at the supplier	• Updated APQP Status Report

3 Communication and escalation matrix

SCHAEFFLER

Goal

- Contact person matrix of all project-relevant persons at the supplier and Schaeffler, incl. defined escalation path
- Ensured efficient communication between the parties
-

Input

- Project teams at supplier and Schaeffler
- Supplier resource planning
- Escalation matrices at supplier and Schaeffler
- Deputy regulations at supplier and Schaeffler
-

Activities / Expectations

- Defined responsibilities for each function, including deputy regulation and escalation level.
- The capacities planned by the supplier for the respective project are sufficient and can be proven.
- Communication matrix is sent to Schaeffler with the offer.
- In the event of any changes at the supplier or Schaeffler during the project, the communication matrix must be updated from the appropriate side and distributed to both parties.

Note:
Information can be transferred to the processing of the changes in batch production.
The experience from the completed project with the integration of existing data (e.g. field failures, feedback from customer service, project database, know-how carrier file) is to be ensured as input for new projects / developments.

Output

- Communication matrix agreed between the supplier and Schaeffler
- Defined responsibilities for each department involved at the supplier and Schaeffler
- Defined representatives for each position at the supplier and Schaeffler
- Defined escalation levels at the supplier and Schaeffler

Document submission at Schaeffler	• Updated APQP Status Report • Communication matrix incl. escalation matrix
Documentation / Archiving at the supplier	• Updated APQP Status Report • Communication matrix incl. escalation matrix

4 Project schedule

SCHAEFFLER

Goal

- Complete advance planning and documentation of the timing of individual work steps, activities and milestones of the supplier (including development services, industrialization activities, etc.) over the entire project and per configuration status / sample delivery

Input

- Project schedule Schaeffler customer (incl. milestones)
- Schaeffler project schedule (incl. milestones)
- Project schedule supplier (incl. milestones)

Activities / Expectations

- Project schedule and milestone setting of the supplier including Schaeffler project milestones.
- Analysis of the prototypes / sample stands planned and used in the project and their degrees of maturity (incl. intended use).
- Project schedule must cover at least the following points:
  - Nomination
  - Q-Gates
  - Quantity Agreement
  - Sample approval
  - Design Freeze
  - Design review incl. consideration of product safety-relevant issues

Note:
Influence and interactions from other projects / scope of supply are analyzed, communicated and evaluated (e.g. identical or carry-over parts).

Output

- Aligned project schedule that complies with Schaeffler milestones

Document submission at Schaeffler	• Updated APQP Status Report • Project schedule
Documentation / Archiving at the supplier	• Updated APQP Status Report • Project schedule on Schaeffler request

5 Feasibility evaluation

SCHAEFFLER

Goal

- Assessment of the feasibility of a production (series) with regard to intended design or a planned development project (for development suppliers)
- Evaluation of economic and process-capable manufacturability

Input

- Feasibility assessment of the supplier received as part of the contract review or for the individual delivery phases (M2, M3, M4)

Activities / Expectations

- The supplier's project team must be convinced that the product is suitable for the intended area of application and can be manufactured, tested, packaged and delivered to Schaeffler on time in sufficient quantities, at a competitive price and in the required quality.
- Contributing experience and suggestions from the supplier.
- Initial sending of the feasibility assessment with the quotation.
- Update of the feasibility assessment for each sample delivery.
- During the initial sampling, the feasibility assessment must be supplied in accordance with the submission level
- If the supplier places orders at subcontractors, the requirements under this section must be met.

Note:

A cross-divisional team of the supplier must evaluate the feasibility of the intended scope of supply as part of the contract review, including a risk analysis (tool as well as production concept), confirm and document.
Feasibility has either been derived from previous projects or, in the case of new developments, verified by means of simulation.

Output

- Internally known and communicated statement about the feasibility assessment of the supplier
- Accepted feasibility assessment from the supplier
- Assessed risk
- If necessary modified drawings or specifications
- If necessary, escalation via purchasing

Document submission at Schaeffler

- Updated APQP Status Report
- Drawings and technical specifications
- Feasibility assessment, e.g. according to appendix 6

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Feasibility assessment, e.g. according to appendix 6

6 Capacity confirmation

SCHAEFFLER

Goal

- Evaluated capacity request by the supplier
- Secured capacities for Schaeffler and its customers
-

Input

- Schaeffler Requirements
- Total demand quantities
- Ramp-up curve
- Peak numbers
- Flexible additional requirements to be provided
- OEE of the supplier
- Scrap rate in the individual production steps
- Possibly, rework

Activities / Expectations

- Coverage of the quantities requested by Schaeffler in accordance with the relevant planning specifications (e.g. shifts per week, working days per year)
- Consideration of the peak year and contractually agreed additional capacities to be kept free (flexibility)
- Initial sending of the capacity confirmation with the offer
- Update of the capacity confirmation in the event of changes in quantity by Schaeffler or in the event of relevant changes at the supplier

Note:
With the sampling, the production capacities defined by the supplier (plant capacity, personnel availability / qualification) are confirmed in terms of planning.

Output

- Accepted capacity confirmation from the supplier
- If necessary, escalation via purchasing
- Emergency concept, if applicable

Document submission at Schaeffler	• Updated APQP Status Report • Capacity confirmation according to attachment 7
Documentation / Archiving at the supplier	• Updated APQP Status Report • Capacity confirmation according to attachment 7

7 Safe Launch

SCHAEFFLER

Goal

- Verification of product and process capability and reliability of the production system
- Identification of influencing factors
- Ensuring compliance with specifications prior to delivery to Schaeffler

Input

- Schaeffler Requirements
- To the M3 phase: Series production control plan of the supplier

Activities / Expectations

- Safe Launch Plan of the supplier as an extension to the series control plan (additional tests, or increased test frequency).
- Consideration of product and process stability.
- The type and scope of the tests as well as the associated test equipment for the series start-up phase have been defined and coordinated with Schaeffler.
- Reaction plans for the event of deviations are defined.
- All "special features" are included.
- Provision of additional testing capacities (SiKo/3D/...)
- Transmission of the Safe Launch results to Schaeffler at coordinated intervals.
- Coordinated exit criteria for the safe launch (e.g. achieved process capabilities, zero-defect deliveries within a defined period of time or quantity).

Output

- Safe launch concept for the RFQ / M3 phase coordinated with the supplier
- Safe launch concept for the M3 phase coordinated with the supplier
- Safe Launch Plan as an annex to the supplier's serial PLP (start to the supplier SOP)
- Delivery labelling (SL label) agreed and agreed together with the supplier, including a separate test report
- Agreed and fised exit criteria with the supplier
- Safe Launch Outflow Control Sheet

Document submission at Schaeffler

- Updated APQP Status Report
- Safe-Launch-Plan
- Safe-Launch-Sign-Off
- Safe-Launch-Outflow-Control

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Safe-Launch-Plan
- Safe-Launch-Sign-Off
- Safe-Launch-Outflow-Control

8 Requalification

SCHAEFFLER

Goal

- Regular dimensional and functional testing in accordance with the production control plan, taking into account the applicable Schaeffler specifications for material and function, in accordance with the requirements of IATF 16949
-

Input	Activities / Expectations	Output
• Schaeffler requirements (e.g. Quality Assurance Agreement (QAA)) • Requalification Agreement • Samples submission level • PVP • Norms requirements	• In the case of new parts, the scope of testing and the interval (at least once a year) must already be agreed with Schaeffler as part of the RFQ. • Additional claims of Schaeffler's customer must be taken into account. • The requirements for the requalification test must be ensured by the supplier and stored in the production control plan. • The results of the requalification must be kept at the supplier's premises and submitted to Schaeffler for inspection at any time.	• Agreed minimum requirements for the RFQ phase accepted by Schaeffler and the supplier • Finally agreed requalification concept for the M3 phase accepted by Schaeffler and the supplier

Document submission at Schaeffler	• Updated APQP Status Report • Accepted requalification concept
Documentation / Archiving at the supplier	• Updated APQP Status Report • Accepted requalification concept • Control plan

9 Technical review and action plan

SCHAEFFLER

Goal

- Technical review on all relevant topics as well as definition of necessary tests, including implementation planning:
  - Clarification of all supplier questions and comments
  - Clarity on the suitability of the supplier
  - Review of all technically and cost-specific relevant points on the basis of a checklist

Input

- Schaeffler requirements (e.g. drawings, specifications)
- Feasibility assessment
- Supplier self-assessment if applicable
- If applicable, supplier self-assessment for functional safety

Activities / Expectations

- The supplier must understand the technical requirements and functions of the product. A common understanding is to be achieved through a technical discussion at the supplier's site. In addition, the technical discussions serve to evaluate how the supplier plans to implement Schaeffler's requirements, i.e. its technical design concept depending on the product components (e.g. mechanics, software, electronics).
- The supplier and Schaeffler must be satisfied that the product is suitable for the intended application and can be produced, tested, packaged, and delivered to Schaeffler in sufficient quantities at a competitive price and in the required quality at the supplier's premises.
- The technical discussion must take place during the development phase as part of the Simultaneous Engineering; follow-up appointments may be necessary.
-

Note:
For sampling, all defined measures have been implemented, there are no open points.

Output

- Statement on technical manufacturability and supplier suitability
- Input for Risk Level Classification Supplier
- Common clear understanding of the technical requirements and the production process
- Action plan for all supplier-related topics
- If necessary, Supplier Functional Safety Self-Assessment commented by the supplier

Document submission at Schaeffler

- Updated APQP Status Report
- Technical review checklist with action plan
- If applicable, supplier self-assessment or supplier self-assessment for functional safety

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Technical review checklist with action plan
- If applicable, supplier self-assessment or supplier self-assessment for functional safety

10 Nomination / Ordering

SCHAEFFLER

Goal

- Formal order placement by Schaeffler so that investments can be made at the supplier in a timely manner
-

Input

- Investment Planning Supplier
- Risk rating of the supplier from the technical review

Activities / Expectations

- Schaeffler selects a supplier and informs him about the decision.
- The orders for prototype, sample and series parts, if necessary for tools, are sent to the supplier.
- In the case of Schaeffler specifying sub-suppliers / sources of supply to the supplier, tasks, competence, responsibilities in the network as well as interfaces have been clarified, coordinated and agreed (e.g. sampling, quality responsibility)

Note:
The scope of the contract may include development services from prototypes to series products.

Output

- Sourcing Board Decision
- Nomination / assignment is available to the supplier
- Purchase order / scheduling agreement is available to the supplier
- Investments can be made by the supplier
- If necessary, escalation to purchasing

Document submission at Schaeffler

- Updated APQP Status Report

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Letter of Nomination
- Individual order with indication of the risk level and the template level for sampling

11 Development interface agreement (DIA)

SCHAEFFLER

Goal

- Detailed regulation of responsibilities for product development-related activities and work results between the supplier and Schaeffler
- Definition and documentation of safety activities in the concept, development and production phase
- Supplementation of the product requirements from the specifications with the procedural requirements for the development services

Input

- Schaeffler requirements

Activities / Expectations

- In addition to requirements, work content and responsibilities, correlation to the scope of delivery is also defined as information relationships (type of proof documentation).
- Defined milestones, including review dates, depending on the project-specific schedule.

Note:

When defining work packages, care must be taken to ensure that they are broken down to such an extent that they can be controlled and implemented.

Output

- Coordinated minimum requirements for the RFQ phase accepted by the supplier and Schaeffler
- Signed DIA for supplier nomination

Document submission at Schaeffler	• Updated APQP Status Report • Signed DIA •
Documentation / Archiving at the supplier	• Updated APQP Status Report • Signed DIA

12 Supplier quality plan

SCHAEFFLER

Goal

- The focus of the supplier quality plan is to ensure effective quality assurance for development activities.
- The overarching goal is to make a contribution to the protection of the purchased parts so that they have the quality and safety required for their planned use (e.g. testing on public roads) and no non-compliant products are created or delivered.
- The focus of the quality assurance measures described in the QM plan is on product development activities.
- The end of the development work in the project serves as the conclusion of the QM plan.

Input

- Schaeffler requirements
- Supplier quality plan

Note:
The following points must be observed in the internal reviews:
- Plausibility of the tests carried out
- Checking the on-time creation of work products
- Documentation of detected deviations and deposit of responsibilities and corrective measures
- Storage and communication of the audit results in the project
- Changes in the project or in the Schaeffler requirements have been mapped in the work products

Activities / Expectations

- For the quality-assuring, development-accompanying tests, the supplier quality plan must be recorded in:
  - at what time,
  - which work products,
  - by which roles,
  - according to which factual and formal criteria (e.B. according to checklist(s)),
  - by which method

  the content to be checked.
- It must be stated on the basis of which facts, which tests with which test method may have to be repeated (e.g. after significant changes, in the case of further deliveries to relevant Schaeffler milestones).
- The quality assurance measures accompanying the development of the work products must be carried out by the supplier.
- The Schaeffler project-specific provisions and specifications as well as applicable norms, standards and laws must be taken into account.
- Independent internal reviews must be used to prove that the work products, process conformity and development-side delivery quality have been checked as planned in the supplier quality plan.
- The escalation strategy must be defined.
- The contents of the product quality report shall be provided with the following minimum content for each delivery:
- Abarbeitungsstatus Lieferanten-Qualitätsplan, inklusive Trend
  - Statement on Q-performance and effectiveness of QA activities
  - Deviations
  - Conclusion and outlook

Output

- Regular report with quality indicators
- Completed supplier quality plan

Document submission at Schaeffler	• Updated APQP Status Report • Product Quality Report • Action plan
Documentation / Archiving at the supplier	• Updated APQP Status Report • Product Quality Report • Action plan

13 Design-Analyse

SCHAEFFLER

Goal

- Analysis of the functions of a product, the interactions and interfaces between elements, including functional and error-related dependencies
- Gaining a product understanding
- Detection of potential error types, consequences and causes
- Assessment of planned avoidance and detection measures and, if necessary, recommendation of additional risk-reducing measures

Hint:
In this description, only term FMEA is used. Alternatively, other suitable methods can be used (see note).

Input

- Schaeffler requirements
- Norm requirements
- Supplier Design FMEA
- Project plan
- Project Team Matrix

Activities / Expectations

- Team coordinated (all necessary functions integrated)
- The evaluations of error consequences specified by Schaeffler with regard to their meanings at the interface are to be taken over by the supplier Design FMEA
- The assessment of the importance severity in the FMEA is to be correlated with the error effects from the VDA band
- The consistency of importance must also be ensured for downstream suppliers
- The remaining residual risk (high, medium) from the Design FMEA, especially with regard to product safety, must be communicated to Schaeffler
- The scope of the Design Verification Plan must be compared with the findings from the Design FMEA and supplemented if necessary
- The findings gained from findings must be compared with the Design FMEA
- Description and evaluation of prevention and detection measures
- If necessary, optimizing measures with deadlines, responsibilities and status must be initiated; the remaining risk shall be reassessed
- In the case of mechatronic purchased parts with software components, coordination of the implemented diagnostics must be agreed with Schaeffler (possibly use of FMEA-MSR)
- The implementation status of the Design FMEA must be reported in the APQP status report
- The supplier requests missing information from Schaeffler
- Transfer and integration of customer interfaces (functions) and considered in both directions (e.B. at electronics supplier: requirements for parts handling at Schaeffler)
- In the event of incomplete malfunctions at the interface, findings regarding product behavior or abnormalities, the supplier shall display them directly to Schaeffler so that the interface can be adapted.
-

Output

- Archived FMEA interface
- FMEA status report according to sample status

Note:
Within the framework of independent product development, a methodical approach corresponding to product complexity must be chosen so that sufficient design analysis can be ensured. In the case of safety-relevant functions, separate measures for safety analyses (such as .B FMEDA, FTA) in accordance with ISO 26262 must be taken into account.

As a minimum of due diligence, a methodical procedure must be carried out in accordance with the AIAG and VDA FMEA Handbook and its objectives.

Document submission at Schaeffler

- Updated APQP Status Report
- Cover sheet of the Design FMEA with risk report
- FMEA Status-Report

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Design FMEA
- FMEA Status-Report

14 Design verification plan (DVP)

SCHAEFFLER

Goal

- Ensuring suppliers with design responsibility that your development results meet design specifications.
- Systematic planning of all tests or calculations to check whether the product or design is suitable for the application (gap analysis between planning and implementation)

Input

- Schaeffler requirements

Activities / Expectations

- The design verification plan includes, among other things, information about the date, type and extent of validation, as well as sample types and quantities.
- The "Testing Plan and Report (TP&R)" document is used for test planning and reporting purposes
- Note: The TP&R may contain Schaeffler-specific symbols and terminology
- Changes to or deviations from the DVP must be documented in the TP&R
- The product design must meet the requirements
- Validation strategy must be defined (e.g. test to failure, safety factor, statistical validation, relapse level concept,...)
- TP&R status and measures must be reviewed in regular coordination meetings with Schaeffler
- The approval of the design verification plan is the responsibility of Schaeffler

Note:

For sampling, safety measures were carried out and documented at the planned series status.

Safety measures prove the required properties of the product.

Defined test goals and the expected test coverage from the product integration and verification concept are met.

Output

- Verification of compliance with design specifications

Document submission at Schaeffler

- Updated APQP Status Report
- Test plan and test report
- Development release

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Test plan and test report (test reports, design calculations and tolerance studies)
- Development release

15 Prozess verification plan (PVP)

SCHAEFFLER

Goal

- Proof that the series product meets Schaeffler requirements with the help of a structured process verification plan (PVP)
- Identification of a possible deviation between planning and implementation

Input

- Schaeffler requirements (drawings, specifications)
- Components from series process and serial tool

Activities / Expectations

- The "Testing Plan and Report (TP&R)" document is used for test planning and reporting purposes
- The measures defined in the technology development process for the verification of the production technology (tests/calculations/simulations/trials) are planned in the Process Verification Plan (PVP)
- Acceptance conditions must be defined for the planned measures
- Note: The TP&R may contain Schaeffler-specific symbols and terminology
- PPAP requirements are included in the PV requirements
- Overarching requirements are taken into account
- Changes to or deviations from the PVP must be documented in the TP&R
- The product produced in the series process and from series tools must meet the requirements set
- TP&R status and measures must be reviewed in regular coordination meetings with Schaeffler
- Technical testing with products from the production trial run, if specified in the specification or design verification plan

Note:
For sampling, all defined measures have been implemented, there are no open points. Results are documented.

Output

- Verification of the requirements fulfillment by the product

Document submission at Schaeffler	• Updated APQP Status Report • Testing Plan und Report (TP&R) • Production validation plan and report
Documentation / Archiving at the supplier	• Updated APQP Status Report • Testing Plan und Report (TP&R) • Production validation plan and report

16 Concept for return and damaged part analysis and for concern management

SCHAEFFLER

Goal

- General condition assessment of returns and damaged parts
- Validation (suitability of the product for the intended use)
- Identification of causes of deviations and errors
- Definition of (product-independent) improvement measures

Input

- Concept of return and damaged part analysis of the supplier (incl. NTF process)
- Norms requirements

Activities / Expectations

- Calculations, design and testing based on real measurements and Schaeffler requirements
- Tests and calculations to map real conditions
- Consideration of technical and economic aspects
- Inclusion of findings from previous complaints, tests and returns
- Coordination of test methods with Schaeffler (e.g. in the case of destructive tests)
- Coordination of the fault elimination process including damaged part analysis (incl. no-trouble-found)
- Definition of communication channels and exchange of information

Note:
Return parts are products that were tested at Schaeffler during the APQP phase and are returned to the supplier for technical analysis. This does not necessarily have to be a complaint. Typically, these are prototypes or series products in new applications.
Damaged parts are products that are returned to the supplier due to defects. These can be complaints that have arisen at Schaeffler or at Schaeffler's customer, both 0 km and field failures.
The term concern refers to a documented complaint about a product or a development service. Concerns include internally or externally detected errors, defects or weaknesses as a result of non-compliance with a requirement in a product or in a development service.
Concern management is intended to ensure a timely and appropriate response to complaints and includes all activities that are part of the proper handling of concerns, such as a systematic recording, root cause analysis, definition and implementation of suitable measures to solve the concern

Output

- Agreed return and damaged part analysis concept in accordance with the relevant requirements
- Agreed concern management concept in accordance with the relevant requirements

Document submission at Schaeffler

- Updated APQP Status Report
- Testing Plan und Report (TP&R)
- Production validation plan and report

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Testing Plan und Report (TP&R)
- Production validation plan and report

17 Craftmanship / Appearance / Limiting samples catalogue

SCHAEFFLER

Goal

- Definition of properties in terms of appearance, feel, manageability and acoustics

Input

- Schaeffler requirements (e.g drawings)
- Standards requirements
- Supplier offer
- Supplier nomination
- Delivered parts with defect characteristics

Activities / Expectations

- The supplier must know and comply with the requirements for the above-mentioned properties
- To check the properties are characteristic catalogs, reference patterns or the like. and coordinate with the Schaeffler customer

Output

- Agreed boundary sample/defect catalog between Schaeffler customer, Schaeffler and supplier
- If applicable, ok / nok limiting samples

Document submission at Schaeffler

- Updated APQP Status Report
- Limiting samples / Failure catalogue

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Limiting samples / Failure catalogue

18 List of special characteristics

SCHAEFFLER

Goal

- Coordinated planning for preventive quality measures (e.g. FMEA evaluation, measurement methods, capability requirements, etc.) to achieve the 0-failure target
-

Input

- Schaeffler requirements (e.g. drawings, specifications)
- Internal special / critical characteristics of the supplier

- Retention of documentation for traceability
  - Is the storage of safety-relevant features according to VDA Volume 1 and the traceability of critical features given?

Activities / Expectations

- Consideration of Schaeffler's special features and possible other special features defined by the supplier
  - Presentation of the special features (critical features) from risk management tools such as FMEA, FuSi, or standards on the relevant drawing or in accompanying documents for the production or control of the feature
  - Implementation of all measures in accordance with the preventive risk assessment
- Initial sending of the list of special features with the offer
- Understanding of the key figures coordinated between customer and supplier
- Protection of pass-through features ensured (Production Inspection Standard).
  - The supplier is aware of which features on his drawing directly influence the customer (connection dimensions)
  - The customer drawing and supplier drawing are consistent (design review if applicable)
- All documents are consistent with regard to special features
  - Does the control plan contain the critical features derived from the drawing and accompanying documents?
  - Are identified safety-relevant critical features consistently displayed from the creation/communication of the feature to the proof of security (see S102012-1)?
  - Are the product safety-relevant characteristics "CC" e.B reflected in the PFMEA from drawings?
  - Is there a documented process to obtain or maintain all information that is relevant for traceability?

Output

- Agreed overview list of all special and critical features (including information on values, tolerances, measuring equipment, methods and procedures, the respective measuring capabilities, the process tests of the documentation and monitoring)

Document submission at Schaeffler

- Updated APQP Status Report
- List of special characteristics

Documentation / Archiving at the supplier

- Updated APQP Status Report
- List of special characteristics

19 Measuring methods definition

SCHAEFFLER

Goal

- Agreed measuring methods as well as test equipment suitable for the test tasks
-

Input	Activities / Expectations	Output
• Schaeffler requirements (e.B drawings and specifications, incl. tolerances) • Measurement proposal supplier	• The measuring methods are agreed between the supplier and Schaeffler. • The procurement or production of test equipment is monitored on schedule. • Proven suitability for testing processes.	• Ensured uniform measurement and testing concept at the supplier and Schaeffler (if necessary, at the customer) • If necessary, duplicated gauges / test hplding fixtures

Document submission at Schaeffler	• Updated APQP Status Report • Detailed schedules on request
Documentation / Archiving at the supplier	• Updated APQP Status Report • Follow up charts • Specifications in the production control plan

20 Measurement alignment

SCHAEFFLER

Goal

- Ensuring comparable measurement results at the supplier and schaeffler
-

Input	Activities / Expectations	Output
• Defined uniform measurement concept at Schaeffler and the supplier • Measurement results of the supplier	• Joint measurement coordination for complex components (measurement orientation, method, procedure, device). • Measurement comparison is carried out on the basis of defined characteristics and by means of a defined measuring device (clamping) on one and the same part at the supplier and at Schaeffler. • For components and parts that are measured via a measuring machine, it is mandatory to carry out measurement comparisons for tool-bound components and parts and to coordinate them with Schaeffler before tool optimization is carried out.	• Verification of the uniform measurement at Schaeffler and the supplier in accordance with the agreed measurement concept

Document submission at Schaeffler	• Updated APQP Status Report • Measurement alignment results
Documentation / Archiving at the supplier	• Updated APQP Status Report • Measurement alignment results

21 Inspection and measuring equipment capability

SCHAEFFLER

Goal

- Evaluation of the suitability of the intended test and measuring equipment and test processes by means of capability testing, e.g. according to VDA Volume 5 or MSA procedure of AIAG
-

Input

- List of test and measuring equipment
- Capabilities measured by the supplier (e.g. MSA method according to AIAG)
- Certificates of proficiency (e.g. printouts of statistical programs)

Activities / Expectations

- In order to check the suitability of the test and measuring equipment, capability tests must be carried out by the supplier(in this case, the measurement uncertainty must also be verified using repeated measurements).
- Schaeffler must be given the opportunity to review the results
- If necessary, test/measurement methods must be agreed with Schaeffler in good time
- In the case of modifications of the test and measuring equipment, the capability tests must be repeated

Output

- Proven capability of the inspection and measuring equipment at the supplier

Document submission at Schaeffler	• Updated APQP Status Report • Proof of ability with individual values in the context of the production process
Documentation / Archiving at the supplier	• Updated APQP Status Report • Proof of ability with individual values, e.g. printouts of the statistics program used •

22 Part history

SCHAEFFLER

Goal

- Overview of all changes and adjustments to a product that make a new or change sampling necessary (from the development phase to the end of the product life)

Input

- Schaeffler requirements
- Supplier part history

Activities / Expectations

- The part history includes at least:
  - Supplier address,
  - Supplier number,
  - Parts name,
  - Part number,
  - Drawing index,
  - Drawing status,
  - Modification made with justification of the change,
  - Quality status (e.g. design stage, quality stage etc.),
  - Identification of parts (e.g Schaeffler logo, material code, date of manufacture, nest number, etc.)
  - Date of sampling and number of sample parts,
  - Date of use in series delivery (in case of changes in series).
- Sending to Schaeffler with each new sampling or change sampling and on request by Schaeffler

Note:
The part history is continued in series production.

Output

- History of the components with all relevant information (e.g. part number and designation, sequential index number, changes made with justification, Identification of the parts)

Document submission at Schaeffler	• Updated APQP Status Report • Part history •
Documentation / Archiving at the supplier	• Updated APQP Status Report • Part history

23 Product audit supplier

SCHAEFFLER

Goal

- Regular product audit of Schaeffler products, which takes place at least annually and is to be carried out by the supplier in its production
-

Input

- Schaeffler Requirements
- Norms requirements (e.g. VDA 6.5)
- Suppliers internal product/process audit planning

Activities / Expectations

- Inclusion of the Schaeffler product in the product family / product audits
- Verification of product quality with regard to Schaeffler requirements, technical specifications, and the manufacturing and testing methods used
- In the event that the supplier supplies Schaeffler with complete modules consisting of several components, a product audit must be carried out both for individual components manufactured by the supplier itself and for the complete assembly.
  Note: Since the module must be disassembled into its components for this, this is also referred to as a so-called dismantling audit

Note:
The product families are to be considered in audit planning.

Output

- Confirmation of supplier product audits in accordance with Schaeffler requirements

Document submission at Schaeffler	• Updated APQP Status Report • Product audit planning, audit report and action plan on request
Documentation / Archiving at the supplier	• Updated APQP Status Report • Product audit planning, audit report and action plan

24 Material declarations and conformity certificates

SCHAEFFLER

Goal

- Collection, maintenance, analysis and archiving of all materials contained in the delivered product (component, semi-finished product or material), including material and chemical composition

Input

- Legal requirements (REACH, ROHS, GADSL, etc.)
- Schaeffler requirements
- Norms requirements
- Substance prohibition standard S 132030-1 and other documents (IMDS entry, BOM check, CADMS entry, etc.)

Activities / Expectations

- Mandatory for products delivered to the automotive division
- Compliance with REACH requirements (registration, evaluation, authorization and restriction of chemicals)

Output

- Complete and correct material data or confirmation of conformity for all delivery products

Document submission at Schaeffler	• Updated APQP Status Report • Confirmed substance prohibition standard S 132030-1 • Access to databases such as IMDS, CADMS, BOM-Check • Material data sheet
Documentation / Archiving at the supplier	• Updated APQP Status Report • Confirmed substance prohibition standard S 132030-1 • Access to databases such as IMDS, CADMS, BOM-Check • Material data sheet

25 Equipment and tools

SCHAEFFLER

Goal

- Capable and approved equipment at the supplier

Input

- Schaeffler requirements
- Schaeffler Schedule / Milestones
- Supplier offer
- Supplier nomiation
- Project schedule supplier
- Tool schedule supplier
- Machine delivery times and schedules supplier
- Machine capabilities supplier (M4)
- Tool history supplier (M3 – M4)
- Machine and tool maintenance plans (maintenance concept M2 / final M4)
- Emergency concept (M4)
- Spare parts planning (concept M2 / final M4)

Activities / Expectations

- Planning, scheduling and provision of all required equipment.
- Scheduling monitoring of the procurement or production of equipment and tools.
- Testing of the equipment and tools before the production test run.

Note:
In the M3 phase, the series tools must be able to produce the components in such a way that requirements for a part (tolerances, function, quality, installability, etc.) are met in accordance with the specifications conditions.

Output

- Complete and timely planning and provision of all necessary tools, machines and systems (industrialization matrix)
- Monitored deadlines for procurement and manufacture of tools, machinery and equipment
- Available, tested and capable machines and tools at the right time at the supplier's premises (according to schedule and in compliance with Schaeffler's schedule)
- Employee coordination planned and implemented on time
- Approved maintenance and emergency concept
- If necessary, escalation to purchasing

Document submission at Schaeffler

- Updated APQP Status Report
- Industrialization matrix
- Schedules on request
- Proof of capability on request

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Industrialization matrix
- Schedules
- Capacity planning
- Proof of capability

26 Process FMEA

SCHAEFFLER

Goal

- Analysis of the functions of a product and the detection of the associated potential error types, error consequences and causes of errors
- Assessment of whether already planned prevention and detection measures are sufficient or whether additional risk-reducing measures are recommended
- Understanding the product by analyzing interactions and interfaces between elements, including functional and error-related dependencies
- Support in the development of comprehensive specifications and test plans

Input

- Schaeffler requirements
- Norms requirements
- Project plan
- Project team matrix

Note:
For sampling, structure, function, error, risk and optimization analysis as well as Identification of necessary measures for risk reduction (incl. confirmation of effectiveness) are completed.
Remaining risks are in the green area of the risk priority matrix

Activities / Expectations

- When creating the supplier's FMEA, Schaeffler's assessments of error consequences with regard to their meanings must be adopted at the interface
- The consistency of the process FMEA with the design FMEA from the supplier is present
- The critical process steps are identified, fully evaluated and relevant measures are derived according to VDA/AIAG
- The "pass-through" characteristics are identified, fully evaluated and relevant measures derived
- The safety scopes (FuSi) are marked in the process FMEA?
- The consistency of importance must also be ensured for downstream suppliers
- The remaining residual risk (high, medium) from the FMEA, especially with regard to product safety, must be communicated to Schaeffler
- The scope of the Design Verification Plan must be compared with the findings from the FMEA and supplemented if necessary
- The findings obtained from findings must be compared with the FMEA
- Prevention and detection measures must be described and evaluated.
- If necessary, optimizing measures with deadlines, responsible persons and status must be initiated; the remaining risk shall be reassessed
- Coordination of the implemented diagnostics with Schaeffler, in the case of mechatronic purchased parts with software components (possibly use of FMEA-MSR)
- The implementation status of the FMEA in accordance with APQP must be communicated

Output

- Archived FMEA interface
- FMEA assessment report

Document submission at Schaeffler

- Updated APQP Status Report
- Cover sheet of the process FMEA with risk matrix
-

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Process FMEA
- Action plan at high risk
-

27 Prototype Control Plan

SCHAEFFLER

Goal
- Ensuring prototype quality

Input
- Drawings and specifications, incl. tolerances
- FMEA supplier
- Prototype control plan supplier
- Work and test instructions for prototypes supplier

Activities / Expectations
- The type and scope of the tests as well as the associated test equipment for prototypes have been defined and agreed with Schaeffler.
- All "special features" are included, with reference to specifications, drawings and quality agreements/regulations.

Output
- Complete documentation of all quality assurance measures along the entire value chain for the prototype phase at the supplier

Document submission at Schaeffler	• Updated APQP Status Report • Prototype control plan
Documentation / Archiving at the supplier	• Updated APQP Status Report • Prototype control plan

28 Process flowchart & layout

SCHAEFFLER

Goal

- The flowchart of the series production process (graphical representation of the planned workflow) as a basis for investment planning, process FMEA, production plan, control plan and visual aid

Input

- Supplier's process flow diagram
- Supplier's layout
- Machine and plant planning of the supplier

Activities / Expectations

- Planned sequence of all series production and inspection steps from goods receipt to goods issue.
- Designation of areas with special requirements, such as .B ESD or technical cleanliness.
- Early concept for lean processes and optimized logistics routes.
- Special features taken into account.

Output

- Coordinated process flow diagram and series layout of the supplier as a basis for process FMEA, production planning and control plan

Document submission at Schaeffler	• Updated APQP Status Report • Process flowchart
Documentation / Archiving at the supplier	• Updated APQP Status Report • Process flowchart • Machine layout

29 Process planning assessment

SCHAEFFLER

Goal

- Early review of the development processes at the supplier
-

Input

- Schaeffler requirements
- Supplier documentation (communication matrix, resource planning, D-/ P-FMEA, project schedules, etc.)

Activities / Expectations

- Fulfillment of Schaeffler requirements with regard to project management, product and process planning and implementation.
- For findings, measures, including responsibility and deadline, are defined and implemented accordingly.

Output

- Evaluated, approved review for product and process planning and implementation
- Action plan in case of deviations
- If necessary, planned follow-up assessment
- If necessary, escalation to purchasing and project management

Document submission at Schaeffler	• Updated APQP Status Report • Process planning assessment report with action plan
Documentation / Archiving at the supplier	• Updated APQP Status Report • Process planning assessment report with action plan

30 Production and inspection of prototype parts

SCHAEFFLER

Goal

- On-time delivery of cost- and quality-compliant prototype parts
-

Input

- Prototype order from Schaeffler (fixed price, quantity, deadline)
- Prototype parts from supplier
- Test reports for prototype parts

Activities / Expectations

- Deadlines and quantities for prototype and sample production must be planned, monitored and adhered to.
- Delivery of prototypes / sample parts with test report (see QAA brochure „Production process and product release“.
- For non-compliant prototypes / samples, approval must be obtained from Schaeffler before delivery (see QAA brochure „Special Release and Modification Approval“.
- Product delivery documentation (per sample status) can include, for example the following topics:
  - Product-ID / Schaeffler-Product-ID
  - Product name / Product description
  - Product configuration/ Version Product
  - Product configuration of product components / Version product components
  - Compatibility matrix
  - Implemented changes/fixed bugs (problems, concerns)
  - Status V&V Measures/ Summary (relevant) V&V results
  - Test coverage
  - Concerns and Actions
  - Unimplemented Functions & Diagnostics
  - Description Deviation(s)
  - Recognition / marking deviation from the ok samples
  - Restriction(s)
  - Intended use (intended use)
  - Recommended regulation for user/ operating personnel (optional)
  - Possible hazards / warnings & precautionary or safety measures
  - Note on service / support

Output

- Prototype parts at Schaeffler, at the right time, in the right quantity and in compliance with price and quality requirements
- Accepted test reports for prototype parts
- Schaeffler approval for non-compliant prototypes before delivery
- If necessary, escalation to purchasing

Document submission at Schaeffler

- Updated APQP Status Report
- Prototypes and test reports
-

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Prototypes and test reports
-

31 Preliminary process capability study

SCHAEFFLER

Goal
- Statistical proof of capable processes

Input
- Schaeffler Requirements
- Norms requirements
- Target values for process capabilities (ppk, cpk)
- Defined specification limits
- Preliminary process capability study of the supplier
- Records and statistical evidence of the supplier's process capability (e.g. control charts)

Activities / Expectations
- Preliminary process capability under series conditions, e.g. according to VDA Volume 4, with Pp/Ppk >1.67 (at least 25 samples of 5 parts each), or machine capability (50 parts) Cm/Cmk >1.67.
- In the case of incapacitated processes, appropriate corrective measures must be initiated in order to achieve process capability.
- A 100 % test shall be carried out until a process capability has been achieved.

Output
- Preliminary process capability study of the supplier
- Records and statistical evidence of the supplier's process capability (e.g control charts)
- Measures (input for action plan) to achieve the required process capability, if necessary
- Accepted proof of preliminary process capability within the framework of the production process and the product and process release procedure
- Implementation of the long-term process capability and corresponding verifications coordinated
- If necessary, decision on 100% controls until the process capability is achieved

Document submission at Schaeffler
- Updated APQP Status Report
- Proof of capability with individual values
- If necessary, action plan to achieve the required process capabilities on request

Documentation / Archiving at the supplier
- Updated APQP Status Report
- Proof of capability with individual values
- If necessary, action plan to achieve the required process capabilities

32 Mass Production Control Plan

SCHAEFFLER

Goal

- Compliance with process and product requirements in series production

Input

- Drawings and specifications, incl. tolerances
- FMEA supplier
- Mass production control plan supplier
- Work and test instructions supplier

Activities / Expectations

- The type and scope of the tests as well as the associated test equipment for mass production have been defined and coordinated with Schaeffler.
- Essential contents:
  - Test/ measurement planning
  - Product and process audits
  - Maintenance
  - Requalification
- Reaction plans for the event of deviations are defined.
- All "special characteristics" are included.
- The understandability for the employees is given (language).

Output

- Complete documentation of all quality assurance measures along the entire value chain for mass production at the supplier's site

Document submission at Schaeffler	• Updated APQP Status Report • Mass Production Control Plan
Documentation / Archiving at the supplier	• Updated APQP Status Report • Mass Production Control Plan

33 Process instructions

SCHAEFFLER

Goal

- Ensuring quality and quantity

Input

- Process instructions of the supplier (e.g. production orders, work instructions, test instructions, maintenance plans, error catalogs, process parameters)
- Training matrix supplier
- Training certificates
- Mass production control plan supplier

Activities / Expectations

- Easy-to-understand (local language of the production site) and accessible instructions are available at the workplace to ensure that processes are adhered to and requirements for the process and the product are implemented.
- Procedures for steering defective products are described.
- All employees are trained or instructed according to their tasks.
- Training certificates are kept and competences are regulated.

Note:
Process instructions are all instructions for the production personnel, e.g. production plans, work, test and packaging instructions, maintenance plans, failure catalogs, process parameter definitions (with tolerances where appropriate).

Output

- Process instructions cross-checked by Schaeffler at the supplier to ensure quality and quantity in production
- Training concept accepted by Schaeffler at the supplier

Document submission at Schaeffler	• Updated APQP Status Report •
Documentation / Archiving at the supplier	• Updated APQP Status Report • Process instructions • Training certificates

34 Logistics concept

SCHAEFFLER

Goal

- Definition and assurance of a process-reliable supply chain from supplier to Schaeffler

Input

- Requirements Schaeffler
- Logistics guideline Schaeffler
- Capacity confirmation supplier

Activities / Expectations

- Compliance with Schaeffler's logistics guideline and other logistics requirements (e.g. GTL, transport and shipping regulations).
- Delivery schedules based on the ramp-up curve are defined.
- The logistics concept from the goods receipt of the supplier to the loading of the finished products has been defined and will be implemented on time.
- Schaeffler's delivery concept from the supplier's goods issue to the installation site has been defined and will be implemented on schedule.
- Systematic processing of Schaeffler call-offs has been proven.
- Emergency analyses have been carried out for the supply chain and emergency plans have been drawn up.
- If necessary, MMOG / LE5 (logistics self-assessment).

Output

- Logistic agreement defined and agreed

Document submission at Schaeffler

- Updated APQP Status Report
- Logistic agreement

Documentation / Archiving at the supplier

- Updated APQP Status Report
- Logistic agreement
- Minimum stock planning

35 Packaging concept

SCHAEFFLER

Goal

- Preservation of product quality in sample and series deliveries as well as agreed packaging suitable for material flow and provision

Input

- Schaeffler requirements
- Norms requirements

Activities / Expectations

- Suitable packaging is specified for:
  - internal transport / internal storage,
  - Shipping to Schaeffler.
- Packaging design and packaging-side corrosion protection for shipping to Schaeffler are coordinated with Schaeffler.
- Schaeffler's applicable packaging regulations are complied with.
- Ensured product quality during packaging, shipping, storage and removal.
- If necessary, residual quantity concept and batch purity defined
- Defined alternative packaging.
- ESD criteria for mechatronic products are met (Spec. IEC 61340-5-2).

Note:
For the SOP, the agreed special and/or standard transport means must be available in the planned quantity.

Output

- Agreed packaging concept
- Defined alternative packaging

Document submission at Schaeffler	• Updated APQP Status Report • Packaging data sheet (defined packaging specifications and corrosion protection)
Documentation / Archiving at the supplier	• Updated APQP Status Report • Packaging data sheet (defined packaging specifications and corrosion protection)

36 Traceability concept

SCHAEFFLER

Goal

- Product-specific traceability in the entire supply chain
-

Input

- Schaeffler requirements
- QM specifications
- Traceability concept supplier

Activities / Expectations

- Ensured marking and traceability (on the load carrier as well as scope of purchase / part) is ensured for pre-series and series marking (e.g. traceability to supplier product, batch number, production order, worker, inspector, raw material, etc.)

  Note: In the event of a complaint, defective products must be reliably identifiable and findable within the supply chain of the supplier and Schaeffler. For this purpose, a FIFO (first in – first out) and a traceability system for forward and backward tracking (including sub-supplier connection) must be introduced and maintained by the supplier in advance.

Output

- Agreed traceability concept, in accordance with Schaeffler requirements

Document submission at Schaeffler	• Updated APQP Status Report
Documentation / Archiving at the supplier	• Updated APQP Status Report • Labelling and traceability instructions

37 Quality planning subcontractor

SCHAEFFLER

Goal

- Overview of all sub-suppliers or subcontractors involved in the project
- Ensuring that Schaeffler requirements are passed on and complied with throughout the supply chain

Input

- Schaeffler requirements (e.g. APQP requirements)
- Customer requirements
- Offer supplier
- QAA Schaeffler
- Supplier documents (contracts with subcontractors, including passing on Schaeffler requirements, supplier evaluations, capacity confirmations, schedules, scheduling agreements, delivery schedules, manufacturability confirmations, audit planning, etc.)

Activities / Expectations

- Requirements of the Schaeffler Quality Assurance Agreement must be met throughout the entire supply chain
- The supplier ensures the transmission of Schaeffler requirements to the sub-suppliers
- In the event of deviations, measures must be taken to meet the requirements, the implementation of which must be ensured before the start of series delivery
- An overview of the subcontractors, must be submitted to Schaeffler on request
- The status of the quality planning of the subcontractors must be monitored regularly and reported to Schaeffler on request
- The quality planning of the subcontractors must be organized in such a way that the purchased part sampling is completed with the subcontractors before the process and product release of the Schaeffler component
- Schaeffler is granted the right, after prior notice, to accompany or carry out process audits and reviews at the subcontractor's premises; also accompanied by the Schaeffler customer
- Audits or reviews accompanied or carried out by Schaeffler do not release the supplier from his responsibility towards the subcontractor, subcontractor or Schaeffler

Note:
Before sampling to Schaeffler, all products / services / processes of the supply chain (subcontractors) must be approved.

Output

- Assessed risk of sub-suppliers / subcontractors by the supplier
- Project status reports of the subcontractors at the supplier
- Detailed supplier schedules at Schaeffler's request

Document submission at Schaeffler

- Updated APQP Status Report
- APQP/sampling status of sub-suppliers and subcontractors

Documentation / Archiving at the supplier

- Updated APQP Status Report
- APQP/sampling status of sub-suppliers and subcontractors
- Sample approval for sub-suppliers and subcontractors

38 Prozess Launch Assessment

SCHAEFFLER

Goal

- The Prozess Launch Assessment complements the initial sampling

Input

- Schaeffler requirements
- Supplier self-assessment of the process
- Mass production control plan + Safe Launch Plan
- Series layout and process flow diagram

Activities / Expectations

- Stable production process under series conditions at the supplier confirmed by the assessment.

Bemerkungen:
A process can be approved/accepted "green" and "yellow" (with conditions).
A "red" (not mature) process cannot be approved/accepted for the series.
For determinations, measures, including responsibility and deadline, are defined.

Output

- Evaluated production process, including all process steps, under series conditions
- Agreed and verified safe launch measures
- If applicable, approved production process
- If necessary, planned follow-up assessment
- If necessary, escalation to purchasing and project management

Document submission at Schaeffler	• Updated APQP Status Report • Process launch assessment report with action plan
Documentation / Archiving at the supplier	• Updated APQP Status Report • Process launch assessment report with action plan

39 Capacity trial run

SCHAEFFLER

Goal

- Effectiveness check of the series production process at the supplier

Input

- Schaeffler requirements
- Total demand quantities
- Ramp-up curve
- Peak numbers
- Flexible additional requirements to be provided
- Capacity confirmation supplier
- Offer supplier
- OEE supplier
- Implemented production process under series conditions

Activities / Expectations

- Use of series equipment, machines, tools, test equipment and environment (including regular operating personnel) also at subcontractors.
- Linked production process.
- Use of the serial material.
- Assurance of the agreed product quality and the planned target quantity (capacities).
- The production quantity consists of at least one production lot size representative of the process (usually the daily requirement of the annual quantity).
- Taking of the initial samples from this lot.
- All process stages / work sequences and relevant test processes are recorded.

Note:
Output of the agreed capacities must be confirmed in compliance with Schaeffler specifications (e.g. working days / week, shifts / day, etc.).

Output

- Evaluated performance test under series conditions
- If applicable, released capacity trial run
- If necessary, request for repeated trial run
- If necessary, escalation to purchasing and project management

Document submission at Schaeffler	• Updated APQP Status Report • Capacity trial run report, with action plan if necessary
Documentation / Archiving at the supplier	• Updated APQP Status Report • Capacity trial run report, with action plan if necessary

40 Sampling and product release

SCHAEFFLER

Goal

- Documented proof that the product manufactured under series conditions meets Schaeffler requirements.

Input

- Current specification
- Schaeffler requirements
- Sample parts
- Supplier initial sample documentation
- If applicable, supplier product self-assessment
- If applicable, supplier process self-assessment

Activities / Expectations

- On-time production of the series first samples.
- Preparation of documentation for all elements required by Schaeffler's production process and product release procedure.
- Timely provision of documentation; Scope depending on the specified submission level.

Note:
Serial samples (initial samples) are products and materials that have been manufactured entirely with serial means of production under series conditions.

Output

- Measurement report of the submitted sample parts
- Cross-checked PPAP documents
- Delivery documentation
- Decision on sampling:
  - Approval
  - Conditional approval with time or quantity restriction (re-sampling needed)
  - Rejection and request for new sampling

Document submission at Schaeffler	• Updated APQP Status Report • Series initial sample with initial sample documentation according to the defined submission level
Documentation / Archiving at the supplier	• Updated APQP Status Report • Series initial sample with initial sample documentation (all elements required by the production process and product release procedure)