Guideline

Quality in Supply Chain.

Quality as a Principle.
Worldwide. Made by CLAAS.

The system solutions, products and services of the CLAAS group represent technical innovation, highest quality and absolute reliability.

The image of the CLAAS products and the loyalty of our customers provide evidence for extraordinary performances and are also drivers to continue our effort for quality and our pursuit of progressive system solutions. In particular the reliable fulfilment of our customer´s satisfaction is the top priority for contribution in constant sustainable growth of the CLAAS group worldwide.

Continuous improvement of our quality standards over the entire supply chain process is our declared objective. The competence and motivation of our suppliers, the quality of our common supply relationship influence significantly the reliability and quality of our products and services. Hence fundamental elements of our quality understanding (philosophy) regarding our suppliers are

- Lean and robust processes and their permanent enhancement
- proactive, open and fast communication
- professional project management and
- the willingness to take responsibility

The following quality guideline for the entire CLAAS group explicitly documents the valid quality management (QM) elements for the procurement process to be applied. Effective application of the described procedures for identifying issues in an early stage will support us preventing errors and fixing them - when occurred - rapidly.

Collaboratively we will agree to the relevant elements and targets for the respective business with you and use this as the base for our common supply relationship.

The achievement of customer satisfaction is a key driver for a mutually positive business development in the long term.

Quality policy

We are determined to fulfil and exceed the expectations of our customers in terms of reliability, durability and efficiency.

We are committed to maintain peak customer satisfaction with excellent products and services.

Quality and „First time right“ are the non-negotiable guiding principles in running our business also together with our suppliers.

Thomas Böck
CEO CLAAS Group

Peter Schonefeld
Senior Director Corporate Quality,
Process Management & CLAAS Excellence System

Rüdiger Mohr
SVP Corporate Purchasing
Senior Director Strategic Programs

1. General Description
Premises

Purpose

This guideline explains our quality standards and processes as a baseline for our common business. The individual elements will be fixed together within our negotiation process.
The quality management standards, which are documented here, are designed to ensure that our customer can rely on the promise we have to fulfil every single day:

- The produced components meet the CLAAS specifications in every aspect.
- The supplier´s process capability and process control ensure consistent adherence to the specifications.

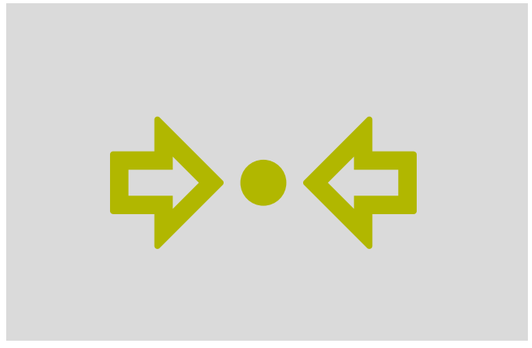
Area of Application

These processes and linked requirements enter into effect with the approval of the establishment of a business between CLAAS and the supplier.

Responsibility

The supplier is required to adhere to the demands as laid out in the agreement and to follow processes described in this guideline.

The purchasing organizations of the CLAAS Product Companies ensure that the agreed standards are implemented and fully applied.



Support documentation

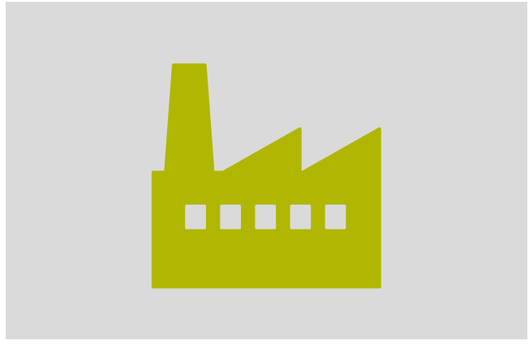
The processes and operational practices described in this guideline are based on current standards (VDA, ISO, etc.).

2. General criteria

Supplier

Documented and certified QM system conforming to:

- DIN EN ISO 9001 as minimum requirement, VDA 6.1, IATF 16949
- Development of a “Zero-Defect-Strategy” within the quality planning. Elaboration of measures to achieve the quality objective “Zero-Defect” and “first time right”
- Understanding and acceptance of CLAAS requirements
- Qualified QM personnel
- Carrying out of required planning and validation procedures, analysis, reliability and durability, planning and development, sample stages, process control plan, process capability, etc.
- Open communication and proactive information in regard to:
  - Problems that arise
  - Demands that cannot be met
  - Capacity bottlenecks
  - Qualification of sub-suppliers



CLAAS

- Define and use information to the supplier
- Define and use communication channels (supplier portal) and responsibilities
- Specific, clear and generally comprehensible documentation according to product-specific requirements
- Support and advice

Premises-Overview QM elements in the procurement process

1. Supplier onboarding process

QM Elements in the onboarding process	Documents	Information for the supplier
1. Short and long application	Questionnaire in supplier portal	Filled out by supplier
2. Potential analysis	Quick check, according to VDA 6.3 enlarged with additional audit if necessary (e.g. software audit)	Carried out by CLAAS auditor at supplier or in combination with remote-approach
3. Process audit	VDA 6.3 enlarged with additional audit if necessary (e.g. SW audit) or Supplier Readiness Evaluation (SRE)	Carried out by CLAAS auditor at supplier

2. Production part and process qualification

QM Elements in the qualification process	Documents	Information for the supplier
1. Production Part Approval Process (PPAP)	CLAAS PPAP guideline CLAAS PPAP documentation in CLAAS Supplier Portal	PPAP Level defined by CLAAS Product and process qualification
2. Advanced Product Quality Planning (APQP)	CLAAS APQP documentation in CLAAS Supplier Portal	CLAAS APQP aligned with CLAAS Product Development Process (CPDP)

3. Series

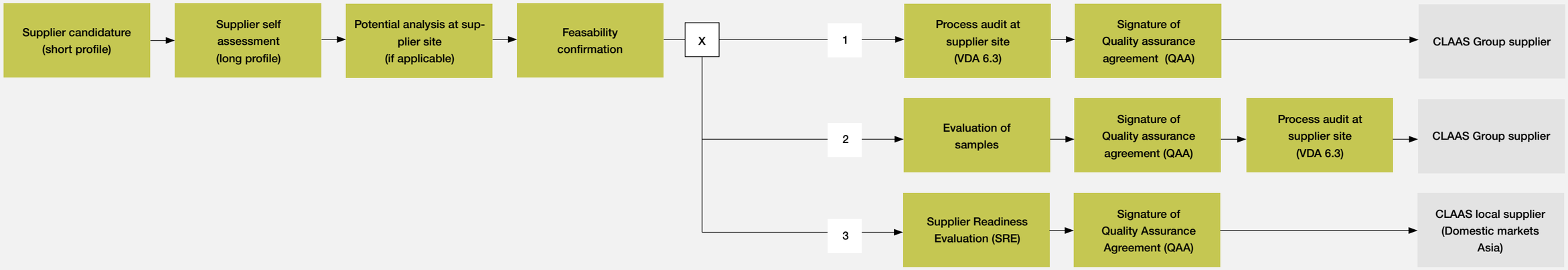
QM Elements in the series monitoring process	Documents	Information for the supplier
1. Processing of complaints	8D reports in CLAAS Supplier Portal	Claim admin fee will be charged to the supplier in case of recurrence (See Quality Assurance Agreement)
2. Continuous evaluation	Monthly report	Information about quality and logistics performance in the CLAAS Group and each entity of the CLAAS group
3. Quality escalation	CLAAS escalation model Information letter	Escalation steps if the quality result of the supplier meets defined escalation criteria (quantity, occurrence, time).
4. Strategic evaluation	CLAAS supplier yearly evaluation on hard facts / soft facts Information letter	Supplier general performance constantly monitored

4. Additional agreements

QM Elements in additional agreements	Documents	Information for the supplier
1. Exceptional approval / deviation requests	Deviation request and approval in CLAAS Supplier Portal	CLAAS approval mandatory before delivery The supplier has to inform CLAAS and submit request proactively
2. Contingency plan	VDA 6.1 VDA 6.4	Supplier responsibility in his organization and with sub-suppliers
3. Quality Assurance agreements (QAA)	Quality Assurance agreements	Contractual agreements between supplier and CLAAS
4. Confidentiality / non diclosure agreements	Agreements of confidentiality	
5. Warranty agreements	Warranty agreements	
6. Spare parts agreements	Agreements to services and spare parts	

3. Process description

3.1. Quality elements in supplier onboarding process



1 **Supplier for parts with development responsibility and / or significant specific tooling**
Takes responsibility for development and production of an assembly, which can be separated functionally, such as cutter bars, brakes, steering, hydraulics…

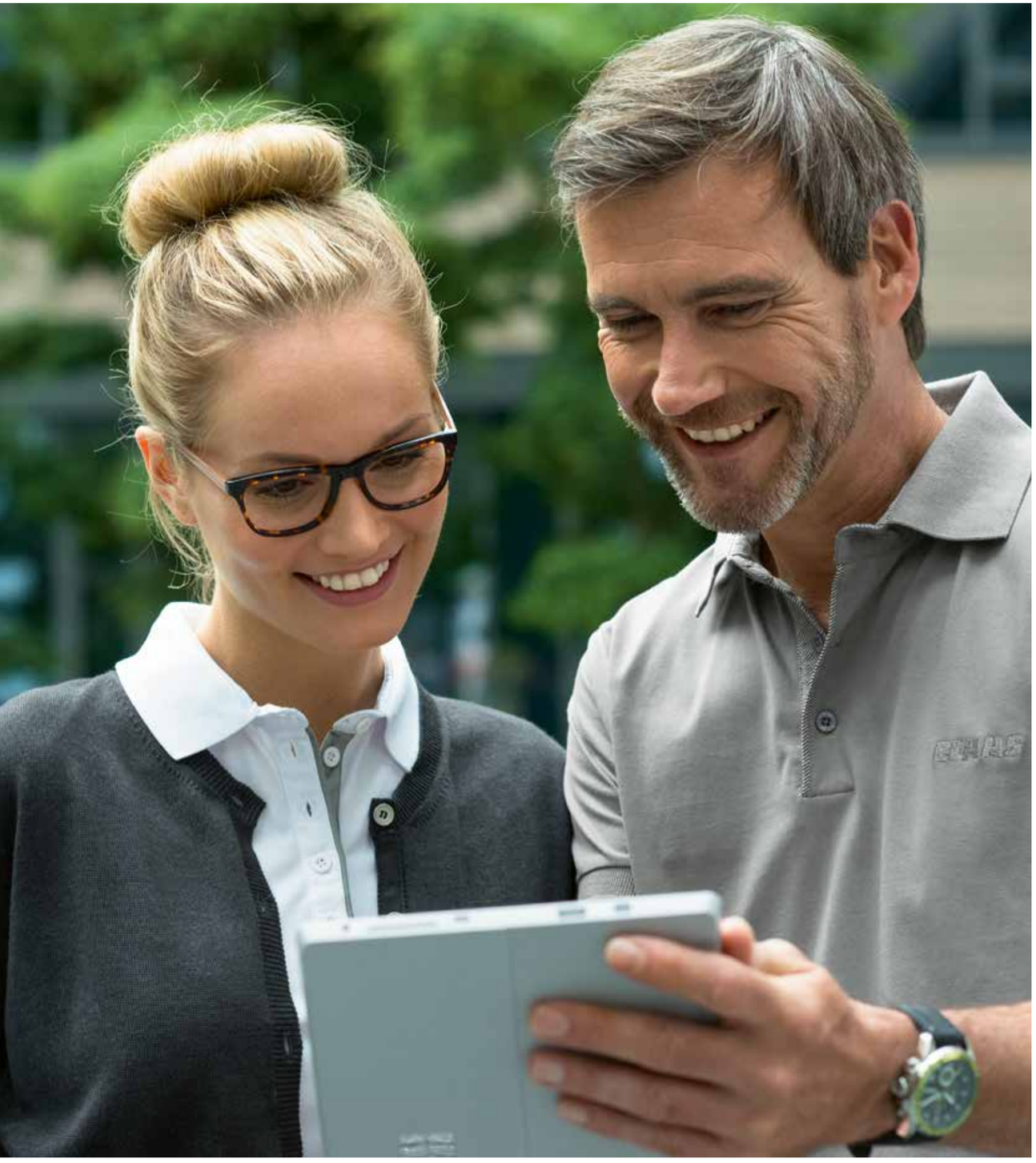
Takes responsibility for development and manufacturing of specific tools such as injection moulding…

2 **Supplier for parts without development responsibility and no significant specific tooling**
Works on the basis of documents, drawings, specifications etc. provided to them with no development responsibility (build to print).

No critical specific tools are required to produce the parts or systems.

3 **“Local for local suppliers” for CLAAS in Asia**
Supplier **R**eadiness **E**valuation (SRE) is an assessment of the supplier‘s ability to deliver the required quality for CLAAS products on their respective domestic market. Applicable only for suppliers of CLAAS plant CMS (China) and CLAAS plant CIL (India).

Quality elements in the supplier onboarding process



1. Short and long application

Self-assessment short and long profile

Short profile
General information about the company and customer base of a potential supplier.

Long profile
Information about the company profile on following points:
- General company data
- Technical information
- QM-System and certification
- …

Implementation
The questionnaire about supplier self-assessment (supplier profile) is to be filled out by the supplier in the CLAAS Supplier Portal.

2. Potential Analysis

Potential analysis

Objective
- Find the right suppliers for a short list
- Support steps of sourcing process

Implementation
Can be carried out to assess
- new, not known supplier
- new locations or technologies
- new organisation development and process potential

Basis in accordance to VDA6.3 enlarged with additional process audits if necessary (e.g. software audits).

3. Audit

Process audit

Objective
Assessment of process quality capability.
Support of the continuous improvement process.

Implementation
Process audits can be carried out in agreement between the supplier and CLAAS.
Basis:
- VDA 6.3: group supplier
- SRE: Supplier Readiness Evaluation for “local for local suppliers” in Asia

A process audit is carried out either on individual components or on component families, if they are manufactured using the same process.
- Additional audits if necessary (e.g. SW audits)

Audit result		Supplier onboarding decision
VDA 6.3	SRE	
A	AL	The supplier can be onboarded without restriction. An action plan (continuous improvement) will be required.
B	BL	The supplier can be onboarded under restriction of a confirmed audit action plan. A re-audit will be performed before or after onboarding
C	CL	The supplier cannot be immediately onboarded. An improvement action plan will be required. A confirmation re-audit is necessary . Re-audit result must be B or A for further steps.

3.2. Production part and process qualification

1.PPAP Production Part Approval Process

Objective

- Ensure that the supplier can meet CLAAS manufacturing and quality requirements for their products.
- Prove, with objective evidences, that the supplier fulfilled all CLAAS specifications
- Verify that the supplier can successfully manufacture the CLAAS product using their established and approved manufacturing process.
- Risk oriented management: according to CLAAS Risk Management approach

Implementation

The supplier will be requested to provide a list of evidences according to the CLAAS PPAP 1.0 Level and if applicable to deliver initial samples.

The PPAP Levels 1 to 4 calculation, as well as the delivery and inspection of initial samples is based on a CLAAS risk assessment on the product and on the supplier.

PPAP is generally required at three phases of the product life cycle:

- Product development (B and C samples)
- Production release of a new product into production
- Validate and document product or process changes in serial production, in order to ensure continued production capability.

Documentation

CLAAS PPAP Guideline

			Series release				B,C samples
			Level 1	Level 2	Level 3	Level 4	Level 2
PPAP documentation	1	Part Submission Warrant (PSW)	X	X	X	X	X
	2	Dimensional test report		X	X	X	X
	3	Material test report		X	X	X	X
	4	Commodity relevant test report		X i.a.*	X i.a.*	X i.a.*	X i.a.*
	5	Customer engineering approval			X	X	
	6	Process flow diagram			X	X	
	7	Control plan(s)			X	X	
	8	Design FMEA				X	
	9	Process FMEA				X	
	10	Process capability				X	
	11	Measurement system analysis				X	
Initial Samples (IS)	12	Initial samples inspection	i.a.* Initial Samples	i.a* Initial Samples	i.a.* Initial Samples	i.a* Initial Samples	B,C samples

* i.a.: if applicable

2. APQP: Advanced Product Quality Planning

Objective

- Early detection of (potential) failures and implementation of linked actions within the different project phases
- Ensure that new product and process CLAAS requirements are fulfilled for series production
- Smooth transfer of development to series production
- Transparency

Implementation

- Components or systems with specific tooling and long development time, and development by suppliers based on CLAAS specification.
- Quality planning activities in the project are planned and synchronized with the project milestones
- Methodical planning aligned with CPDP and continuous follow up
- Structured and standardized documentation with the CLAAS Supplier Portal
- Monitoring and data exchange using the CLAAS supplier portal

CLAAS Product Development Process (CPDP) for series and features*

Develop concept & precise business model | Validate concept | Validate product | Prepare production | Prepare production

M1 — M2 — R3.1 — Function Mock up — M3 — R4.1 — Prototypes — M4 — R5.2 — Pilot — Pre-series — SOP

Samples stages acc. CN 01 0402:

PPAP BS | PPAP CS | PPAP (i.a.IS)

Feasibility & sourcing**

APQP management:

- Contracts
- Specification & master planning
- SC/CC agreement
- Needs identified (resources, tools, production & checking fixtures…)
- Commitment
- Design validation plan
- Sourcing decision

B-sample stage

- Start DFMEA
- Design review
- Design validation-plan & measurements reports

- Update DFMEA
- Process flow chart
- Start PFMEA
- Customer engineering approval

C-sample stage

- Sub-suppliers approvals
- Control plan and-testing
- Facilities, tools,-checking fixtures
- Packaging
- Work & checking instructions
- Training plan
- Maintenance plan

- PFMEA & control plan update
- Appearance approvals if applicable

D-sample stage

- PFMEA update
- Measurement process & process capability studies
- Process review
- Dimension and commodity test reports

D-sample (series parts)

* standard CLAAS synchronisation of CPDP milestones to sample stages. The synchronisation is to be confirmed by CLAAS for each single project.

** development suppliers for critical components will be defined prior M1

Delivery of sample stage representative parts for machine assembly event CLAAS

FMEA

Objective
Early recognition of potential for error in design and/or production by using risk assessment.

Decide and implement early preventive (e.g. poka yoke) and detection actions to possible failures in order to avoid occurrence of these failures by analysing their root cause.

Plan early action for detection of possible failures (testing or controls).

Implementation
The supplier is requested to carry out a systematic analysis of potential errors within design and/or production planning. (Basis VDA 4.1 / 4.2, ISO 9001 FMEA)

After completion of the Design- / Process- and / or System-FMEA the documented risk priority numbers (RPN) may not be higher than the predefined RPN threshold.

Key and Safety critical characteristics (SC / CC) should be clearly identified in the FMEA and reported from the DFMEA to the PFMEA.

Process Control Plan

Objective
Assurance that CLAAS quality standards are complied with by describing methods and checking procedures to the planned processes.

Plan early detection of possible deviations / non conformities on specified characteristics and linked process characteristics on each process step (incl. incoming inspection) and avoid introduction of wrong items in the production to the next process step or in the logistic flow.

Implementation
The supplier plans and documents the procedures for parts and component groups (QM-plan / control plan). CLAAS supports the supplier with the review of CLAAS specification (e.g. drawings, instructions, standards).

In the control plan, the frequency of controls and sample size is decided according to the risk and process capability.

Process Capability

Objective
Proof of process capability by use of statistical methods for the significant and critical characteristics as defined * in the CLAAS specification or separately aligned characteristics (e.g. from FMEA) for:
- Reduction of checking effort for customers and suppliers
- Early recognition of process changes (trends)

Implementation
At marked * or separately aligned parts, which have a major impact on function, safety, assembly and reliability of the product.

- **Evidences**
  The supplier at least has to prove that all marked parts have been produced under controlled process conditions (controlled and stable).

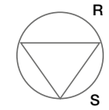
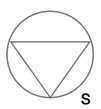
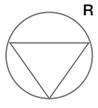
- **Process capability analysis**
  The supplier checks the capability on at least 125 production parts produced in sequence. Preferably the sample batch should be produced in 5 lots of 25 units each.
  However, depending on order volumes agreed with CLAAS the number of parts and lots for the process capability can be agreed with the CLAAS supplier quality management. The process capability calculation takes place with familiar statistical methods (VDA Volume 4, ISO 9001…).

- **Variances**
  If the characteristic does not comply with the given criteria, a selection test (e.g. 100% control) has to be carried out until 100% compliance is reached. The planned and implemented corrective actions are to be documented in action plans with schedules and responsibilities and made available to CLAAS if requested.

- **Attributive critical characteristics**
  In cases of attributive characteristics, which are marked characteristics* in the drawings (significant characteristics or critical characteristics) all of the samples selected for the capability tests have to meet the specifications.

Documentation
During production, the documentation is provided by the methods of statistical process control (SPC).

*symbols

Critical characteristics			Significant characteristics
Regulation & Safety	Safety	Regulation	Function / Assembly
			

Measurement System Capability

Objective
Proof of measurement system accuracy and precision in relation to the specified characteristic and its tolerance under influence of several users and environment.

Implementation
The supplier checks the capability on at least 10 production parts produced in sequence.
However, depending of order volumes agreed with CLAAS the number of parts and lots for the measurement process capability can be agreed with the CLAAS supplier quality management.

Basis: MSA or VDA5 or ISO22514-7
The supplier has to confirm the measurement system capability before performing process capabilities.

Durability and Reliability Testing

Objective
- **Reliability**
  - Likelihood that the product will not have malfunction or fail within the time period specified by CLAAS.

- **Durability**
  - Confirmation that the product lifetime specified by CLAAS will be reached

Implementation
- **Tests**
  - The supplier carries out tests on the products that have been attributed a specific lifetime in the CLAAS drawings and documentation.

- **Calibration of the test equipment**
  - The test rigs must be calibrated in accordance with the manufacturer's instructions with reference to the relevant national norms.

- **Test procedures**
  - The supplier refers to the specifications and drawings from the CLAAS R&D function for the test procedure. In the case that CLAAS R&D gives no clear specifications the missing information has to be requested by the supplier.

- **Reliability Minimum standards**
  - A minimum product confidence level of 0.95 (95%) has to be attained in order to carry out the reliability data analysis.
  - Products, which fail to meet the minimum specified lifetime would not be accepted under any circumstances.
  - Reliability analysis methods
  - The analysis and interpretation of the results are analyzed using the Weibull method.
    Basis: VDA Volume 3, reliability testing

Documentation
Test conditions and test results have to be recorded and when required to be presented to CLAAS.

Product audit

Objective
Inspection of the level of effectiveness of the QM activities installed by the supplier in respect on components or families involved.

Implementation
The supplier is requested to plan and carry out product audits.
Basis: VDA Volume 6.5

The results are to be analyzed and documented in a comprehensible manner, which includes target definition. Deviations have to be eliminated by fault analysis and corrective actions.

Initial Samples

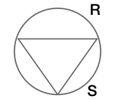
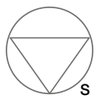
Objective
The supplier provides proof that the products have been produced under series conditions and that they comply with the CLAAS specification. Components for series production require an approval for initial samples.

Implementation
The supplier provides the samples and PPAP documentation to CLAAS. The list of evidences to be provided with the PPAP documentation will be specified according to the PPAP submission level.

Clear matching of drawing parameters to test results by markings in the drawings as well as clear matching of test results to the samples. Initial samples must be marked and delivered separately to production parts.

Documentation
See CLAAS PPAP Guideline. Supporting documentation for process capability for all *marked characteristics

*symbols

Critical characteristics			Significant characteristics
Regulation & Safety	Safety	Regulation	Function / Assembly
			

3.3 Series monitoring

1. Processing of complaints

Objective
Rapid elimination of the fault at CLAAS.
Damage limitation by narrowing errors down.
Resolution of the problem, no repetition.

Implementation
- Rapid detailed information to the supplier by CLAAS in the CLAAS Supplier Portal
- Handling of claims with 8 D process and expectations in supplier portal
- Root cause analysis with standard tools (e.g. 5 why, fish bone diagram…)
- Claim admin fees will be charged to the supplier in case of recurrence in one fiscal year (see Quality Assurance Agreemant).

Priority	Response time targeted (working days)						
		D2	D3	D4	D5	D6	D7	D8
1: Very high IPR [3] 192-300	8D report	1 day [1]		4 days			20 days
2: High IPR [3] 60-191	8D report	2 days [2]		5 days			20 days
3: Medium IPR [3] 35-59	5D	3 days		10 days			n.a.
4: Low IPR [3] 0-34	short confirmation	5 days		n.a.			

[1] If necessary sorting action (if applicable by representative company) on CLAAS site included
[2] If necessary sorting action (if applicable by representative company) within 2 days on CLAAS site included
[3] IPR: Issue Priority Ranking based on damage or disturbance on CLAAS assembly lines
[4] Without logistics failures

	8D steps
1	team
2	acceptance & error description
3	immediate actions
4	root causes
5	planned corrective actions
6	established corrective actions
7	preventive actions
8	finish comment

2. Continuous Evaluation

Objective
Have an overview of quality results out of single claims but with high frequency in order to be able to react quickly for improvement

Implementation
Monthly monitoring of the relevant data:
- Quality
- Logistics

Overview of results over years, rolling last months for CLAAS group and each entity of the group the supplier deliver to. Monthly report available in the supplier portal quality. In the event of unsatisfying results the supplier is required to provide an action plan about cause and corrective action including proof of efficiency.

Quality PPM performance rules:
- A, B,C and initial samples are not PPM relevant.
- Every technical failure on released parts is PPM relevant.
- In case the supplier has a special release based on an approved deviation request issued by the supplier, only 1PPM will be counted (no consequence on PPM rate).
- In case the supplier doesn´t submit a deviation request or at least doesn´t inform CLAAS about the deviation, the whole amount of parts will be PPM relevant even if the parts can be used by CLAAS afterwards.

See also: exceptional approval / deviation request

$$PPM = \frac{\text{QTY CLAIMED [4]}}{\text{RECEIVED QTY}} \times 10^6$$

$$\text{DISTURBANCE RATE (\%)} = \frac{\text{NUMBER OF QUALITY CLAIMS}}{\text{NUMBER OF QM INSPECTION LOTS}} \times 100$$

3. Supplier escalation

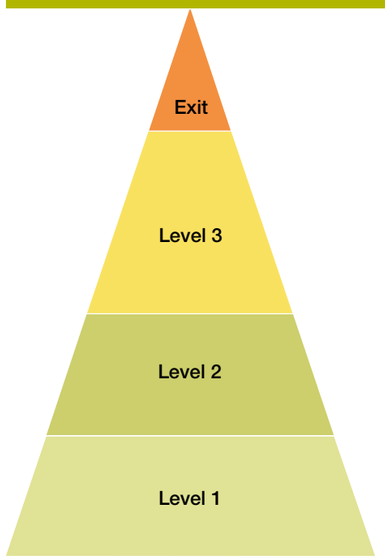
Objective
The supplier escalation process is an increased level of activity with failing supplier in achieving CLAAS demand in terms of quality.

The CLAAS supplier escalation process is a set of defined decisions and tools used by CLAAS and the supplier to reach the right level of quality and minimize business impact.

Implementation
Quarterly Performance evaluation per CLAAS PC based on following criteria:
- Supplier PPM performance against the defined (assigned) threshold
- Disturbance rate product in %, with threshold of 3 %
- Time

Four Escalation levels and linked requirements on Supplier and CLAAS sides according to the performance evaluation.

In case of escalation the supplier will be informed and requested to implement in the process defined actions.



Escalation level	Escalation criteria	Escalation Mode	Timeline	Supplier recommended consequences
Exit	**Level 3 12 months not successful**	– Relocation of product. – Inform the supplier when the exit plan is ready.	24 months	Phase-out the supplier
Level 3	**Rolling 3 & 6 &12 months:** **PPM > 2x PC* PPM threshold &** **Disturbance rate >3%**	– CLAAS: informs the supplier by letter – Supplier: implements CSL-2 – CLAAS & supplier: – Escalation workshop at supplier – Create + follow action plan	12 months	No new business CLAAS Group level during this phase
Level 2	**Rolling 3 & 6 months:** **PPM > 2x PC* PPM threshold &** **Disturbance rate >3%**	– CLAAS: informs the supplier by letter – Supplier: shall implement CSL-2	6 months	No new business on PC* level
Level 1	**Rolling 3 months:** **PPM > 2x PC* PPM threshold &** **Disturbance rate >3%**	– CLAAS: informs the supplier by letter – Supplier: shall implement CSL-1	3 months	None

*PC = CLAAS Product Company

CSL1 = Controlled Shipping Level 1 – Controlled Shipping is a formal demand for a supplier to put in place an additional inspection process to sort for nonconforming material, while implementing root-cause analysis and corrective actions. The supplier shall implement at his own manufacturing site a 100% outgoing inspection and ensure a full documentation and traceability of this process.

The Controlled Shipping process is in addition to normal controls. The data obtained from the Controlled Shipping inspection process is critical as both a measure of the effectiveness of the containment process and the corrective actions taken to eliminate the initial non-conformance.

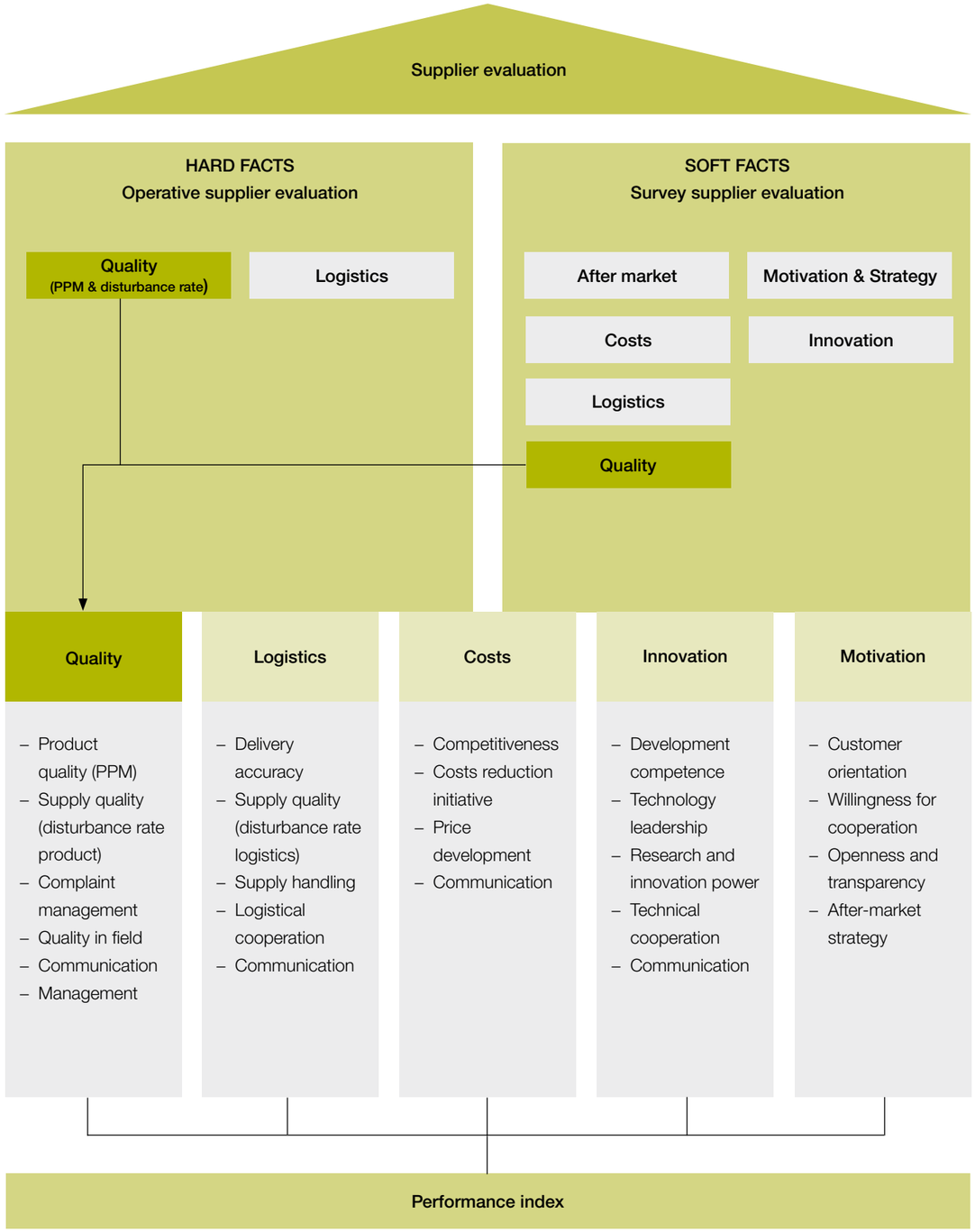
CSL2 =Controlled Shipping Level 2 – Includes the same processes as Level 1 Controlled Shipping, while the 100% outgoing inspection, documentation and traceability of this process is completed by a third party company on supplier site and on supplier cost.

CLAAS and the supplier will mutually agree upon the third party company.

4. Strategic evaluation of suppliers

Objective
With the strategic evaluation of suppliers, CLAAS gives feedback to the supplier on his level of performance in order to focus on partnership improvement potential.

Implementation
Performance index by combination of hard and soft facts evaluation:
- Yearly evaluation based on soft facts (survey on quality, logistics costs, innovation, after-market, motivation & strategy) for the CLAAS group
- Yearly evaluation of hard facts quality and logistic



3.4. Further agreements

1. Exceptional approval / Deviation request

Objective
- Avoid that components, which are nonconforming, get, without a special release, into the production process.
- Securing the delivery capability

Implementation
After detection of a deviation the supplier has to inform CLAAS (purchasing / procurement) immediately in written form in the CLAAS supplier portal. CLAAS decides on further action and informs the supplier in written form if the deviation request is approved or not.

Implementing of the decision
For the case of a delivery approval for a limited lot size, these lots have to be marked clearly and precisely in the shipping documents regarding to the exceptional approval.
Basically the delivery can only be carried out after submission of the deviation approval.

2. Emergency / Contingency Plan

Objective
Continuity of supply in case of crisis, as for example may result from:
- Machine or tool breakdown
- Breakdown of computer system
- Power failure
- Damage to buildings and equipment (natural disasters)
- Stability of upstream supply chains (e.g. 2nd / 3rd tiers)
- Relocation

Implementation
Joint agreement on components that are essential for an emergency programme. Development and regular operational testing of an emergency plan with breakdown to sub suppliers
Joint checking and approval of the emergency plan

3. Quality Assurance Agreement

Objective
The Quality Assurance Agreement (QAA) is the contractual determination of the technical and organisational framework conditions and processes between the concerned CLAAS product company and the supplier, which are necessary for the achievement of the desired quality objectives. It describes the minimum requirements of the contractual partner‘s management system with regard to quality assurance.

Implementation
The QAA will be agreed as entire part (annex) of the basic supply agreement. The QAA will be signed with all CLAAS product companies the supplier concluded business.

4. Confidentiality agreement

Objective
With this agreement both parties ensure the confidential handling of all information and data, which will be exchanged between CLAAS and the supplier.

Implementation
CLAAS Agreement of confidentiality

5. Warranty agreement

Objective
With this agreement both parties agree on process and requirements in case of defects liability claims of „0 km goods“ and products in the markets.
Items:
- Customer service
- Timing
- Cost refund
- Assertion of claims
- …

Implementation
The warranty agreement will be agreed upon as an entire part (annex) of the basic supply agreement. The warranty agreement will be signed with all Product Companies the supplier concluded business with.

6. Spare parts agreement

Objective
With this agreement both parties agree on condition and delivery of spare parts after end of production and commercialisation Items:
- Availability of relevant documentation, specification
- List and bill of material
- Repair manuals
- Tools
- Packaging, Logistic
- Timing
- Intellectual property
- …

Implementation
The spare parts agreement will be agreed upon as an entire part (annex) of the basic supply agreement. The spare parts agreement will be signed with all Product companies the supplier concluded business with. CLAAS quality requirements and processes are applicable for spare parts.

4. Appendix

1. Definitions

Key characteristics SC/CC
Characteristics of a product or production process that have a considerable influence on safety, function, assembly, adherence to legal safety standards and customer satisfaction.

SC: Significant Characteristics of product for dimension and / or function of the component or system

CC: Critical Characteristics to be documented for safety and/ or regulations requirements

SC and CC have also to be considered also in the production process

Lifetime
Period from initial use to the point of failure after which the product cannot be returned to a functional state.

Weibull median rank method
Statistical method used in calculating product and component unreliability.

Critical characteristics			Significant characteristics
Regulation & Safety	Safety	Regulation	Function / Assembly
			

2. Abbreviations

APQP	Advanced Product Quality Planning
BOM	Bill Of Material
CPDP	CLAAS Product Development Process
Cp/Ppk/Cpk value	Process capability value
CSL-x:	Controlled Shipping Level –x
DFMEA	Design FMEA
FMEA	Failure Modes and Effects Analysis
IPR	Issue Priority Ranking
MSA	Measurement System Analysis
PC	Product Company (CLAAS)
PCP	Process Control Clan
PFMEA	Process FMEA
PPAP	Production Part Approval Process
PPM	Parts Per Million
PSW	Part Submission Warrant
QAA	Quality Assurance Agreement
QM	Quality Management
R & D	Research and Development
RPN	Risk Priority Number
SC/CC:	SC: Significant Characteristic CC: Critical Characteristic R: Regulation S: Safety
SPC	Statistical Process Control
SRE	Supplier Readiness Evaluation
VDA	German automotive industry association

3. Sources

VDA Volume 2: Quality Assurance for Supplies
VDA Volume 3: Reliability assurance of car manufacturers and suppliers
VDA Volume 4: Quality assurance in the process landscape
VDA Volume 5: Capability of measurement processes
VDA Volume 6 (Part 1): QM system audit - Serial production
VDA Volume 6 (Part 2): QM system audit - Services
VDA Volume 6 (Part 3): Process-audit
VDA Volume 6 (Part 4): QM system audit - Production Equipment
VDA Volume 6 (Part 5): Product audit
PPAP Guideline Production Part Approval Process (CLAAS)
Planning and Control Plan
ISO9001 FMEA Guideline Failure Mode and Effects Analysis
AIAG & VDA FMEA Handbook
ISO9001 SPC Guideline Statistical Process Control
ISO 9001 MSA Guideline Measurement System Analyses
CN 01 0402 CLAAS Norm Sample stage definition
CLAAS PPAP Guideline

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