



Technology with vision

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HELLA Quality Management

Guideline for Suppliers
AD-00385

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1 | INTRODUCTION

A world of continuously changing customer expectations and worldwide competition requires continuous improvement of all products and services as well as business processes and corporate procedures.

Customer satisfaction through quality in all aspects is a crucial success factor for HELLA as a SUPPLIER of complex products for the international automotive industry and consequently for you as our contractor (termed "SUPPLIER" hereafter), whose products are used in HELLA assemblies.

The achievement of zero defect(s) quality for all supplies is an absolute prerequisite which can only be achieved and secured through the common efforts of HELLA and its SUPPLIERS.

Avoiding defects instead of discovering defects and continuous improvements in the entire supply chain, customer inquiry, offer, order, product development, start of production, volume deliveries and field operation are indispensable requirements which we must and want to fulfil with the active help of our SUPPLIERS.

This guideline highlights HELLA's basic requirements for SUPPLIERS and also refers to the valid international standards, methods and implementation instructions (e.g. by VDA) which are necessary to achieve common objectives. Customer requirements may exceed HELLA's basic requirements and have to be followed as part of our customer's satisfaction policy.

APPLICABILITY AND DEFINITION

The guideline is binding for all products and services supplied by a SUPPLIER to HELLA GmbH & Co. KGaA, or to a company associated with HELLA where HELLA has the majority share and is part of "Framework Supply Agreement for the procurement of manufacturing materials", "HELLA General Terms of Purchasing" or comes into operation by individual agreements.

For clarification, in this guideline, the expressions "shall", "must" and "have to" mean "has a duty to".



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2 | HELLA'S QUALITY AND ENVIRONMENTAL POLICIES

The following extracts from HELLA's quality and environmental policies should provide the SUPPLIER an orientation which focus has to be considered with regard to these subjects.

The benchmarks for HELLA's actions are customer satisfaction through first-class quality of all products and services, as well as cooperative work and a high level of expertise.

The **zero defect(s) quality** of our products, actions and services, combined with expertise, innovation and internationalism, will secure the satisfaction of all customers in the long-term, and thus our competitiveness.

HELLA QUALITY POLICY

The target is zero defects for delivered quality during the product life and for all HELLA services. To secure these claims and to guarantee customers consistently high quality in every respect, we plan quality down to the last detail during the development of product and manufacturing process, using carefully chosen methods. This planning procedure is carried out independently of whether production is later to take place on HELLA premises or at the SUPPLIERS, and includes all substances and materials used, of course. After SOP, the serial quality of the product is assured and continually improved by means of accompanying quality observation and control.

Meeting customer requirements and fulfilling internal quality targets have the highest company priority.

We also expect this procedure from our SUPPLIERS, who have to have an effective, successful quality management system available.

HELLA ENVIRONMENTAL POLICY

HELLA is committed to protect the environment. In order to implement this environmental policy, HELLA has had its plants certified according to ISO 14001 [1]. We require our suppliers to meet the relevant valid environmental legislation. We expect an effective environmental management system from our SUPPLIERS which ensures compliance with regulations and improves the SUPPLIER's environment situation continuously and efficiently. On request, the SUPPLIER must be able to demonstrate appropriate waste avoidance, recycling and disposal concepts for both products and packaging.

Evidence of a certified environmental management system must be provided on demand.

3 | QUALITY MANAGEMENT

A correlation between the SUPPLIER's organizational and technical prerequisites and HELLA's quality requirements is the basis for a successful business relationship.

In detail, HELLA requires the following from SUPPLIERS:

3.1 QUALITY REQUIREMENT AS A CONDITION FOR DELIVERY

In order to meet the high expectations of the automobile and other industries, HELLA trusts the performance and commitment of its own employees to a large extent, and expects the same attitude towards employees and partners from its SUPPLIERS. This is a major precondition for the quality capability the SUPPLIER has to prove.

QUALITY REQUIREMENT LEVELS	ACTIONS/PREREQUISITES	METHODS, DOCUMENTS
CORPORATE CULTURE	<ul style="list-style-type: none"> Cooperative, target-oriented management 	<ul style="list-style-type: none"> Completion and follow-up of division-related target agreements
	<ul style="list-style-type: none"> Promotion of initiative and creation of opportunities for personal development of the employees 	<ul style="list-style-type: none"> Delegation of responsibility and competence
	<ul style="list-style-type: none"> Qualification of employees and promotion of quality consciousness 	<ul style="list-style-type: none"> Training in tools, methods and standards see 3.2, 3.3 Support in solving quality problems Requirement-based employee assignment
MANAGEMENT SYSTEM	<ul style="list-style-type: none"> EN ISO 9001 [2] Implementation of a Quality Management system according to IATF 16949 [3] requirements. 	<ul style="list-style-type: none"> Certification by a 3rd party
	<ul style="list-style-type: none"> IATF 16949 [3] 	<ul style="list-style-type: none"> Training and application
	<ul style="list-style-type: none"> ISO 14001 [1] 	<ul style="list-style-type: none"> Environmental management system and certification by a 3rd party on demand
	<ul style="list-style-type: none"> ISO 45001 [4] or OSHAS 18001 [5] 	<ul style="list-style-type: none"> Health and safety management system and certification by a 3rd party on demand
	<ul style="list-style-type: none"> Further development of an effective procedural organization 	<ul style="list-style-type: none"> Management Manual
	<ul style="list-style-type: none"> Creation of organizational and technical requirements for collecting and evaluated quality information 	<ul style="list-style-type: none"> CAQ (Computer-Aided quality) system
QUALITY ASSURANCE	<ul style="list-style-type: none"> Avoiding faults Systematic processing of faults Avoiding repeat faults 	<ul style="list-style-type: none"> Small Q-control loops Problem-solving techniques Cause-effect analysis Feedback to development and engineering change process
AUDITS	<ul style="list-style-type: none"> Regular internal audits (e.g. Layered Process Audit) 	<ul style="list-style-type: none"> System, Process (VDA 6.3 [6]) and Product (VDA 6.5 [7])
CONTINUOUS IMPROVEMENT PROCESS	<ul style="list-style-type: none"> Introduction and maintenance for all products, processes and services 	<ul style="list-style-type: none"> Employee training Programs, targets and reviews Reverse FMEA on demand Hidden Risk Analysis on demand
SUPPLIER DEVELOPMENT	<ul style="list-style-type: none"> Cooperation on partnership basis Joint project work 	<ul style="list-style-type: none"> Exchange of information Implementation of training sessions, providing methods

3.2 QUALITY PLANNING AND COOPERATION

Advanced quality planning carefully designed to avoid faults during product and process development ensures that only technically mature products are produced using capable

QUALITY PLANNING LEVELS	ACTIONS/ PREREQUISITES	METHODS, DOCUMENTS
DEFINITION PHASE	<ul style="list-style-type: none"> • Definition of requirements 	<ul style="list-style-type: none"> • Requirement specification • Schedule and cost frame • Preparation of inquiry
INQUIRY PHASE	<ul style="list-style-type: none"> • Selection of potential SUPPLIERS 	<ul style="list-style-type: none"> • Meeting minimum SUPPLIER requirements • System audit if appropriate • Evaluation of capability
	<ul style="list-style-type: none"> • Inquiry 	<ul style="list-style-type: none"> • Inquiry documents
CONCEPT PREPARATION	<ul style="list-style-type: none"> • Determination of HELLA expectations 	<ul style="list-style-type: none"> • Deep analysis of requirement specification
	<ul style="list-style-type: none"> • Check of specification, deadline and pricing 	<ul style="list-style-type: none"> • Revision of contract • Feasibility study • QFD (Quality function deployment) • Benchmark analysis
QUOTATION PHASE	<ul style="list-style-type: none"> • Preparation of a binding quotation 	<ul style="list-style-type: none"> • Performance specification/dead- lines/prices/feasibility commitment
PLACING ORDERS	<ul style="list-style-type: none"> • Analysis of quotation 	<ul style="list-style-type: none"> • Checklists
	<ul style="list-style-type: none"> • Placing of orders with suitable SUPPLIERS 	<ul style="list-style-type: none"> • Binding order documents, specifications, deadlines, prices
IMPLEMENTATION OF CONCEPT	<ul style="list-style-type: none"> • Integration in HELLA project team 	<ul style="list-style-type: none"> • Advanced product quality planning • Control Plan • Process Audit
	<ul style="list-style-type: none"> • Estimation of quality risks 	<ul style="list-style-type: none"> • Product/Design FMEA • Fault tree analysis/risks
DEVELOPMENT	<ul style="list-style-type: none"> • Monitoring and evaluation of design drafts and prototypes 	<ul style="list-style-type: none"> • Design review • Robust design • Design for manufacturing/Assembly • Design for reliability
	<ul style="list-style-type: none"> • Checking manufacturability 	<ul style="list-style-type: none"> • Trial planning
PRODUCTION PREPARATION	<ul style="list-style-type: none"> • Estimation of possible production risks 	<ul style="list-style-type: none"> • Process FMEA
	<ul style="list-style-type: none"> • Optimization of production methods and operating equipment, packaging 	<ul style="list-style-type: none"> • Operational test run • Trial planning • Test planning
PRE-SERIES	<ul style="list-style-type: none"> • Checking and evaluating production reliability 	<ul style="list-style-type: none"> • Analysis and proof of capability • for testing equipment, machines and processes • Full-Run test/Process Audit • Cleanness requirement according to specification
	<ul style="list-style-type: none"> • Minimization of probability of faults 	<ul style="list-style-type: none"> • Action plan
SERIES PRODUCTION START-UP PHASE	<ul style="list-style-type: none"> • Series production approval at SUPPLIERS 	<ul style="list-style-type: none"> • Measurement sequence and SPC
		<ul style="list-style-type: none"> • Process release • Initial sample inspection report acc. PPAP/PPA • Define boundary samples
RELEASE OF SUPPLY PHASE	<ul style="list-style-type: none"> • Release by HELLA • SUPPLIER assessment 	<ul style="list-style-type: none"> • Release report • Q-performance, flexibility, delivery reliability, cooperation

3.3 QUALITY CONTROL IN SUPPLIER'S SERIES PRODUCTION, CONDITIONS FOR DELIVERY

The quality assurance actions in the series production are based on knowledge gained during the development phase and observation of the field of comparable products and are used to consolidate and continuously improve the level of quality achieved.

Self-regulating processes and automated tests should be used wherever it makes technical and economical sense.

Employee quality responsibility shall be further developed in line with technical progress and customer expectations.

SUPPLIER activity
 HELLA activity
 SUPPLIER'S obligation of proof towards HELLA

AREAS OF QUALITY CONTROL	ACTIONS/PREREQUISITES	METHODS, DOCUMENTS
PROCUREMENT	<ul style="list-style-type: none"> Securing of delivery quality 	<ul style="list-style-type: none"> Evaluation of quality performance
		<ul style="list-style-type: none"> Acceptance material test certificates in compliance with DIN EN 10204 (Types of inspection documents) [8] Evaluation of supply reliability
PRODUCTION	<ul style="list-style-type: none"> Control of machine parameters 	<ul style="list-style-type: none"> Process data sheets Self-regulating processes
TESTS	<ul style="list-style-type: none"> Continuous supervision of process capability 	<ul style="list-style-type: none"> SPC/technical control chart
	<ul style="list-style-type: none"> Rapid recognition and elimination of deviations 	<ul style="list-style-type: none"> Operator self control
	<ul style="list-style-type: none"> Recording and evaluating quality data 	<ul style="list-style-type: none"> Results using suitable IT programs
		<ul style="list-style-type: none"> Pareto analysis
	<ul style="list-style-type: none"> Securing machine availability 	<ul style="list-style-type: none"> Preventative maintenance
	<ul style="list-style-type: none"> Ensuring proper packaging 	<ul style="list-style-type: none"> Packaging plan
<ul style="list-style-type: none"> Clear marking of all parts and packages 	<ul style="list-style-type: none"> ERP system 	
COMPLAINTS PROCESSING	<ul style="list-style-type: none"> Cause-effect analyses Corrective and preventative measures Avoiding repeat faults 	<ul style="list-style-type: none"> Problem-solving techniques such as e.g. DMAIC, 5 why, Ishikawa ...
		<ul style="list-style-type: none"> 8D Report
STORAGE AND TRANSPORT	<ul style="list-style-type: none"> Correct and faultless handling, storage and transport 	<ul style="list-style-type: none"> Computer-supported forced workflows
	<ul style="list-style-type: none"> Consideration of manufacturing data and expiry dates where applicable 	<ul style="list-style-type: none"> FiFo principle

4 | IMPLEMENTATION OF BASIC REQUIREMENTS

The most important HELLA requirements from the quality management process described which have to be met and documented by the SUPPLIER before the beginning of the business relationship and/or during current business have been detailed out and will be described below.

4.1 QUALITY MANAGEMENT SYSTEM AND QUALITY CAPABILITY

The SUPPLIER confirms to have effectively introduced a Quality Management System (QM-system) in his company and thus proves his quality capability.

A QM-system that is aligned to the requirements of IATF 16949 [3] is a prerequisite for a SUPPLIER relationship with HELLA.

The minimum requirement is a certificate based on the respectively valid version of EN ISO 9001 [2] and compliance with Minimum Automotive Quality Management System Requirements for Sub-Tier Suppliers (MAQMSR) [9]. HELLA recommends 3rd party certification in compliance with IATF 16949 [3]. A 3rd party certification in compliance with ISO 14001 [1], and ISO 45001 [4] (or OSHAS 18001 [5]) is required by HELLA on demand.

Additional requirements can be defined according to VDA Volume 6 Part 1 [10] or the AIAG documents [11]. Specific customer documents may also have to be heeded. The efficiency of the QM-system is mirrored in:

- Continuous and provable improvement of all business and manufacturing processes and products
- Delivery quality
- Supply reliability
- Continuous field observation of its products and commitment to provide customer information when requested
- Efficiency and speed in implementing corrective actions
- Communication on all levels
- Processing of new products and changes to serial products professionally and in line with schedules

At least 3 months before the expiring date of a certificate, HELLA must be informed by the Supplier in case no re-certification is planned. The SUPPLIER shall send new certificates to the HELLA Material Group Manager or Purchasing contact without a separate request having to be made. In case of a revocation of the certificate, the SUPPLIER shall inform HELLA immediately.

SUPPLIER shall nominate a PSR (Product Safety Representative) to be in charge of all related tasks described in IATF 16949 section 4.4.1.2 [3].

The SUPPLIER shall ensure that his sub-SUPPLIERS also meet the above-mentioned requirements. As proof, the SUPPLIER must be in a position to present the valid certificate issued by an accredited certifying company (3rd party audit). If the SUPPLIER places orders with sub-contractors, he shall ensure that his sub-contractors also meet the requirements of this guideline. HELLA must be informed in good time about the use of and change in sub-contractor and must approve this. A production process and product release must be carried out.

4.2 AUDITS

HELLA AUDITS

HELLA reserves the right to carry out audits on SUPPLIER's quality management systems, processes, products as well as on environmental management systems and health and safety management systems at short notice, with the HELLA customer if appropriate, following prior announcement. The SUPPLIER shall grant the auditor access accordingly. If the quality management systems, processes or products are subject to type approvals, the SUPPLIER shall also grant access to legal authorities or authorized technical services. The SUPPLIER shall inform HELLA about such visits in advance.

In the event that HELLA, together with its customers, wants or has to carry out audits of SUPPLIERS' contractors ("sub-contractors"), the SUPPLIER shall ensure to enable such an audit to be carried out with sub-contractors.

SUPPLIER AUDITS

The SUPPLIER shall carry out internal planned audits according to VDA Volume 6 Part 3 [6] for all the products delivered to HELLA and all the processes linked with their development and production at regular intervals, planned annually in advance. On request the SUPPLIER shall provide the results of internal audits to HELLA. This is based on contractually defined product specifications and properties as well as further agreements affecting the deliveries, e.g. logistics and packaging. In the event of deviations, the SUPPLIER initiates all the corrective actions necessary and ensures their effective and long-term implementation.

If quality problems occur which are caused by performances and/or deliveries of the SUPPLIER's sub-contractors, the SUPPLIER shall carry out an audit at the sub-contractor's if requested to do so by HELLA, with HELLA participation if appropriate, and present the results to HELLA.

4.3 FURTHER BASIC PRINCIPLES

In addition to the standards listed in this guideline, HELLA ordering documents are binding, e.g. but not limited to:

- Order drawings including the requirements these specify such as DIN standards, HELLA standards, technical conditions of delivery, data sheets etc.
- Agreed test instructions and testing equipment
- Additional order details e.g. packaging regulations
- Special legal requirements
- Special requirements related to sustainability, environmental protection, recycling, health and safety

4.4 DELIVERED QUALITY AND INCOMING GOODS

The products need to be free of any design, material or processing defects and must comply with the specifications and properties contractually agreed. The SUPPLIER shall bring proof of composition of the materials used and their individual components as well as environment-related aspects.

In case of quality problems or blocking of products or processes the SUPPLIER is obliged to inform HELLA immediately and in writing, before the products are delivered, and to agree the necessary corrective actions with the Quality Assurance of the HELLA production plants.

For all products requested, a material data sheet must be published or preferably sent to HELLA in the IMDS (International Material Data System) or in other Material Data systems that are requested by the final end customer which must be used for specific markets, like CAMDS (Chinese Automotive Material Data System). The material data sheets (MDS) must be kept up to date according to the valid IMDS recommendations or equivalent requirements.

Missing or incorrect material data sheets (MDS) lead to a rejection or only to a conditional sample release and must be reworked until final acceptance.

HELLA assumes that all substances for use in products delivered to HELLA (e.g. raw materials, process materials, components, assemblies) that require registration in line with REACH (EC directive 1907/2006: Registration, Evaluation and Authorization of Chemicals) [12] have been pre-registered by the SUPPLIER or sub- SUPPLIER and then registered by the SUPPLIER or sub-SUPPLIER for the application used by the SUPPLIER or HELLA within the time frame given by REACH [12]. If, contrary to expectations, this is not the case, HELLA must be informed immediately.

Caused by REACH [12] every SUPPLIER of a product (including packaging) has to declare to HELLA all SVHCs (Substances of Very High Concern) within the product, which are contained in a concentration higher than 0.1 % by weight. SVHCs are listed in an EU publication and this list is permanently enlarged. The SUPPLIER must keep himself informed at all times about the current candidate list.

The restrictions of REACH [12] ANNEX XIV and ANNEX XVII have to be observed in its current version. Products delivered to HELLA must follow the restrictions of the EU ELV (Directive 2000/53/EC) [13] and EU RoHS (Directive 2011/65/EU) [14] as well as the respective legislation worldwide (e.g. China, Korea).

Regardless of legal prohibited substances and standards to substance restrictions in the automotive industry, additional substance restrictions and prohibitions are defined in the HELLA standard HN 20103 [15], e.g. for technical reasons.

A quality control report is used to inform SUPPLIERS about non-conforming deliveries. The costs incurred to HELLA for this report are to be borne by the SUPPLIER. Scrapping and reworking costs are recorded by HELLA and charged to the SUPPLIER.

Cost recovery will be communicated, if applicable, with each claim through a cost breakdown. The cost recovery process will include, but is not limited to, contaminated stock at HELLA affected plant, products in transit, OEM assembly plant, nonconforming received goods, assembly line downtime due to delivery or quality related issues, warranty returns, and costs required to analyze and rectify the effects of a quality, warranty, launch or delivery issue which result in a concern. Inspection costs, analysis costs, rectification costs, transit costs and costs to manage the implementation of a non-reversible corrective action may also be included. Level of cost recovery against concerns will be a significant factor in HELLA sourcing decisions.

The QM-system introduced at the SUPPLIERS and the quality assurance process derived from this are the basis for the ability of the SUPPLIER to achieve freedom from defects in all the products and services delivered by the SUPPLIER or on his behalf ("zero defect(s) quality").

HELLA will report defects in the delivery to the SUPPLIER immediately as soon as they have been determined according to a proper course of business. At HELLA, incoming goods inspection is restricted to a visual inspection of the transport packaging for external signs of damage, e.g. transport damage, a quantity check and an identity check based on the comparison of the delivery papers with the order documents. Further tests, in particular measuring tests, do not have to be performed. To ensure the quality of its own products, HELLA also has an efficient QM-system in place. Within this context, HELLA carries out device-specific tests accompanying production in compliance with the requirements of the QM-system in order to guarantee the earliest possible detection of defects in its production including the integrated delivery and performance scopes of the SUPPLIERS. Insofar, the SUPPLIER waives its objection of belated notice of defect.

The HELLA part number incl. revision status according to the HELLA drawing, must be quoted on the delivery note and the smallest packaging unit. If there is no revision status noted on the drawings, the issue level according to the delivery schedule or order must be quoted.

4.5 HANDLING OF NONCONFORMING OUTPUT

Unless otherwise agreed with HELLA, the SUPPLIER shall guarantee conformance to the following requirements:

- The SUPPLIER must have a documented process for handling of nonconforming output
- The SUPPLIER must ensure, that nonconforming output is identified and controlled right after detection
- In case any output produced for HELLA is to be recycled or to be scrapped, the SUPPLIER must ensure that this output is rendered unusable and unrepairable prior to disposal
- The SUPPLIER must not divert nonconforming output to service or other use
- The SUPPLIER must ensure and verify that all sub-SUPPLIERS will conform to this practice

4.6 COMPLAINTS PROCEDURE, 8D REPORT, NTF (NO TROUBLE FOUND)

8D REPORT

The SUPPLIER shall respond to every complaint within 10 working days using an **8D report** (according to the 8D report form on the HELLA website):

- 24 hours: quick response e.g. containment actions at HELLA
- 48 hours: containment actions fully implemented (D3 completed and sent to HELLA)
- 10 working days: root cause analysis done for occurrence and non-detection, permanent corrective actions defined and implemented (D4&5 sent to HELLA)
- 20 working days: effectiveness of permanent corrective actions checked and recurrence prevented (D6&7 sent to HELLA)

The 10 working days period can be shortened by HELLA, if necessary. Interim containment measures must be initiated immediately and reported

- to guarantee delivery of faultless goods
- to keep costs for the SUPPLIER and HELLA as low as possible

The SUPPLIER shall present interim reports on time on request.

HELLA must be informed by SUPPLIER in writing in advance of any possible delays. The SUPPLIER shall analyze the products complained about carefully (defect-cause analysis). He shall summarize the results and planned corrective actions including deadlines for their implementation in an 8D report without delay and forward this to HELLA. Proof shall be provided by SUPPLIER to HELLA of "effectiveness" of the corrective actions. A root cause analysis always needs to be carried out using suitable problem-solving methods. Detailed analyses (such as Ishikawa, 5 why, error simulations) shall be provided by SUPPLIER.

Subsequent deliveries after a previous fault must be marked accordingly until it has been proven that the fault has been remedied. The type of marking on the individual part needs to be agreed with the receiving plant of HELLA.

HELLA reserves the right to carry out an audit at the SUPPLIER's premises following prior notification, in case of problems caused by the SUPPLIER and unacceptable reaction times, and to charge the costs incurred to the SUPPLIER.

SORTING

Within 24 hours of notification of the complaint, the SUPPLIER must inform HELLA about his decision whether to sort, scrap, rework or collect the non-conforming materials ("chosen measures"). He shall then immediately initiate the chosen measures at his own expense. If the SUPPLIER requests the return of the parts by HELLA, these costs are passed on to the SUPPLIER.

If the SUPPLIER does not respond to the request within 24 hours, HELLA is entitled to make the disposition and is authorized by the SUPPLIER to assign a 3rd party to fulfill the chosen measures on behalf of the SUPPLIER and at his expense. All resulting invoices shall be handled between the SUPPLIER and the 3rd party directly.

Any costs incurred by HELLA in connection with the packaging, shipping preparation, and material handling of non-conforming materials will be charged to the SUPPLIER. For clarification, the SUPPLIER shall bear all costs related to the “chosen measures” in case the defective parts relate to a defect caused by the SUPPLIER.

The SUPPLIER is responsible for outside sources (e.g. 3rd parties, which have been assigned by the SUPPLIER or by HELLA to fulfill the chosen measures above) and must make all arrangements to ship parts between the affected plant of HELLA and the outside source in time. The SUPPLIER shall also be responsible for inspecting and monitoring the quality of sorted parts. Reworked (e.g. deburring) or repaired (e.g. exchange of single component of assembly) parts must meet specifications. The reworking or repairing of parts is not permitted without prior written authorization of HELLA.

In case a potentially defect part is delivered at any HELLA location and sorting and/or rework is required, only HELLA listed and approved contractors (3rd Party) are allowed.

In any case the SUPPLIER is responsible for inspecting and monitoring the quality of sorted parts. He must ensure the 3rd party's compliance with all obligations which apply to the SUPPLIER as well as the preparation of a daily report by the 3rd party which shall be provided directly to HELLA.

FIELD FAILURE ANALYSIS / NO TROUBLE FOUND

The investigation procedure for claims from the field as well as for NTF (No Trouble Found) is basically described in VDA Volume Joint Quality Management in the Supply Chain – Marketing and Service – Field failure analysis [16], and must be performed according to this.

4.7 QUALITY DOCUMENTATION

Documents and records from the product and process development phase, as well as from the production phase of the delivered product, must be presented by SUPPLIER on request. In particular, the results of the quality tests carried out at the SUPPLIERS' and their sub-SUPPLIERS' and the audit results shall be documented, including planned and effectively implemented corrective actions, and provided to HELLA or HELLA's customer on request at any time. Any deviations from this procedure must be agreed between the partners at the time at which the contract is concluded. For parts with special characteristics and increased documentation requirements (refer here also to VDA Volume 1 [17] or IATF 16949 [3]), quality records must be stored at the SUPPLIERS' and his sub-contractors' for at least 15 years after EOP.

For all other characteristics, a sensible documentation system must be set up as described in VDA Volume 1 (proof methods) [17] or IATF 16949 [3]. These specifications do not replace legal requirements. Longer storage times are recommended, bearing in mind the limitation periods for product liability claims.

4.8 QUALITY TARGETS AND PPM MANAGEMENT

With regard to the operational implementation of the strategic “zero defect(s) quality” target, HELLA sets up quantifiable objectives for the quality of deliveries (target settings) in relation to a period to be defined.

The target value is specified in ppm

$$\text{Fault share [ppm]} = \frac{\text{Number of defect parts}}{\text{Number of delivered parts}} \times 1.000.000$$

The ppm results are recorded at HELLA and are part of the SUPPLIER evaluation. They are the basis for specific actions for continuous improvement of quality at the SUPPLIER.

The target setting on ppm values is not an accepted quality level by HELLA. All purchased parts which are recognized as defective will not be accepted and will be claimed to the SUPPLIER.

4.9 ENGINEERING CHANGE MANAGEMENT

FOR SUPPLIER INITIATED CHANGES

The SUPPLIER shall inform HELLA (e-mail to pcn@hella.com) and the assigned Purchaser as soon as possible, but at least 9 months before carrying out all changes in products and processes, both before and after SOP (Start of Production), e.g. in case of:

- Changes in design, specification and material
- Use of new, modified or replacement tools
- Changes in manufacturing methods or production processes
- Relocation of production within a manufacturing location or to other locations
- Changes in SUPPLIERS of products, components, materials, services or software
- Restart of production equipment after closure of more than 12 months.

The SUPPLIER is also obliged to inform HELLA if one of the above points is applicable to a sub-SUPPLIER.

FOR HELLA AND SUPPLIER INITIATED CHANGES

HELLA reserves the right to carry out tests and a release process before any change is implemented.

In case of changes, which according to the latest IMDS Recommendation 001 require an update of the IMDS data sheet (respectively CAMDS or other national registration systems), those updates need to be provided immediately.

The SUPPLIER defines the scope of new approval tests (initial samples) with HELLA. He makes sure that serial production deliveries to HELLA are carried out only after the initial samples have been approved by HELLA (see section 5.9). The changes are to be documented in the part life cycle.

If old versions still exist at the time the change is made, the SUPPLIER shall inform HELLA of the quantities bound by purchasing obligation so that a decision can be taken about their use.

After changes, the first deliveries must be specially marked by the SUPPLIER on the delivery note, containers and parts themselves, if appropriate. Details of this must be agreed in writing between HELLA and the SUPPLIER before the parts are delivered.

4.10 CONTINUOUS IMPROVEMENT PROCESS

The SUPPLIER has introduced a structured process of continuous improvement for all products, processes, workflows and services in his company. He can prove that it is used for the products delivered to HELLA and the activities connected with this business relationship. Its effectiveness is proved by continuous improvement of the quality performance, prices, delivery performance, flexibility and cooperation. HELLA is shown the respective programs and actions for continuous improvement on request.

4.11 PREVENTIVE MAINTENANCE

The SUPPLIER shall employ a defined system for carrying out planned total preventive maintenance. This shall include having replacement parts available for key manufacturing equipment. A maintenance plan must be established and documented which includes the maintenance intervals and the extent of the maintenance.

4.12 COMMUNICATION

HELLA's official language is English. Unless otherwise approved by HELLA's SUPPLIER Quality and purchasing departments, all official communications with HELLA will be done in English.

Documents may display the native language when integrated with parallel translation. If this is done, only the English translation is valid.

HELLA's SUPPLIERS shall be available for technical support within the context of discussions at customers, on their own premises, or at HELLA.

4.13 SUPPLIER EVALUATION

For selected SUPPLIERS HELLA will perform a yearly evaluation based on the performance of the SUPPLIER. As a result of that evaluation the SUPPLIER will be graded into the categories A, B or C. The grading is considered during the decision process whether a SUPPLIER will get new business or not.

4.14 TARGET SETTING

For selected SUPPLIERS HELLA will set targets on a yearly base. The target setting will be submitted to the SUPPLIER after the evaluation is done. The SUPPLIER can negotiate the targets in case not achievable with Purchasing. The SUPPLIER has to set up an action plan/improvement plan in order to meet the given targets.

4.15 TRACEABILITY

The SUPPLIER is obliged to guarantee the traceability of the products he supplies.

The products shall be marked or otherwise labeled by SUPPLIER so as to ensure that in the event of a defect being discovered, all other products which could be defective can be identified and blocked until subsequent measures have been agreed between the SUPPLIER and HELLA. These requirements must be cascaded down to the complete supply chain.

Product specific traceability requirements will be detailed out in additional documents.

5 | REQUIREMENTS FOR PRODUCT AND PROCESS RELEASE

We have made it our task to involve our SUPPLIERS in the quality planning of a new project as early as possible. We always require our suppliers to carry out systematic quality planning within the context of project management. This planning includes both the parts manufactured by the SUPPLIER and his purchased parts, and applies also for new parts/processes and for changes in existing parts/processes.

The person responsible for the project at HELLA must be named. At least all the planning steps listed below must be carried out by the SUPPLIER for the respective part or project.

5.1 FEASIBILITY STUDY

Technical documents (e.g. drawings, specifications, legal/environment requirements, packaging regulations, requirement specification etc.) prepared by HELLA or legally mandatory, must be analyzed and evaluated by the SUPPLIER in the context of checking the contract. This check provides the SUPPLIER with the possibility of submitting his experience and suggestions to the advantage of both sides. A feasibility study must be presented to Purchasing, together with the quotation, and is a prerequisite for order placement. Feasibility study must be updated by SUPPLIER for each new/changed drawing.

Please note: The analysis of legal requirements is not limited to pre-defined HELLA specifications. Each SUPPLIER is responsible on its own to identify, analyze and comply with all necessary legal requirements (in process validation and series production).

In addition, after SUPPLIER nomination, HELLA might carry out together with the SUPPLIER a detailed "Characteristic Based Feasibility Study" (CBFS) with regard to every characteristic on the drawing.

5.2 ADVANCED PRODUCT QUALITY PLANNING

To ensure "zero defect(s) quality" in all phases of the cooperation, the SUPPLIER is obligated to draw up a binding advanced quality plan for prototypes, pre-series samples and serial production deliveries, to document this in test sequence plans (Control Plan) and to coordinate it with HELLA.

The Control Plan is in accordance with the requirements of IATF 16949 [3], annex A. It must be agreed in advance if the advanced quality planning should meet the requirements of VDA, Volume "Maturity Level Assurance for new parts" [18], or the AIAG documents (APQP/Advanced Product Quality Planning) [11], according to the APQP-report form on the HELLA-website.

The commitment to "zero defect(s) quality" and therewith to defect prevention as well as to continuous improvement is an essential part of the contract and valid without any acceptance.

5.3 PLANNING CONTENTS

SCHEDULING

The SUPPLIER draws up a project-related schedule based on the deadlines presented by HELLA. The schedule is updated regularly by the SUPPLIER during the whole project phase and presented to HELLA if requested. Potential deviations from the schedule have to be indicated by the SUPPLIER in good time and agreed with HELLA.

WORK-/ PRODUCTION FLOW CHART

The SUPPLIER prepares a production flow chart for the whole process chain. Work plans have to be drawn for all component parts and components. These must contain complete information of process steps, internal and external transportation, means of transport as well as the machinery and equipment used. Manufacturing and raw part drawings as well as process descriptions have to be drawn as required.

RELIABILITY REQUIREMENTS

The reliability requirements contained in the requirement specification/drawing must be implemented with the aid of suitable methods of reliability management and validated based on respective reliability tests and evaluations.

5.4 DESIGN AND PROCESS FMEA

Taking the application of his products at HELLA and HELLA's customers into account, the SUPPLIER shall carry out preventive risk analysis (FMEA) for all products delivered to HELLA and the processes linked with these and updates the FMEA whenever deviations of product and/or process quality occur as well as when changes are made as described in section 4.9. All parameters affecting product safety must be integrated in the analysis. Points evaluated as critical must be improved in the short-term by means of suitable corrective and preventive actions to enable specifications, properties and product safety as well as capable manufacturing to be guaranteed. To implement the actions, deadlines, and responsible persons have to be named and proved if required.

Independently of the design- and process-FMEAs prepared on his own responsibility, the SUPPLIER agrees to cooperate in the system or interface FMEAs initiated by HELLA. Results must be taken into account in the SUPPLIER's further development process. The SUPPLIER shall make the Process-FMEA available for review on HELLA's request.

Details are defined in VDA Volume 4 Part 2 [19], as well as in the AIAG documents [11]. Results must be recorded as described in section 4.7.

5.5 CONTROL PLAN

Within the Control Plan, the results of the Design-FMEA, Process-FMEA, experience with similar processes and products as well as the utilization of methods of improvement have to be considered. A detailed description of the procedure of drawing up a Control Plan is available in VDA Volume 4 [19] and in the AIAG documentation (APQP) [11].

Based on the Control Plan, the SUPPLIER assures compliance with all the routine tests, taking the agreed measurement and inspection equipment as well as the sampling scheme into consideration.

The Control Plan must also include all necessary actions to comply with the legal requirements (in EU/ECE regulations called "Conformity of Production"). This is compulsory for legal requirements which have to be identified both by HELLA and by the SUPPLIER at his own responsibility.

The Control Plan and all other related documents (records of part and process approvals as well as inspection results) have to be provided to HELLA on request.

5.6 PLANNING SERIAL PRODUCTION

The planning of lines and operating equipment includes the planning and manufacturing/procurement of all the operating equipment required to produce the component. The capability or suitability of operating equipment must be proved. Capabilities must be proved individually for multiple jigs or molds. Care must be taken that operating equipment in sufficient capacity and function is available at the latest when off-tool parts are produced at the sampling date. Internal and external means of transport and packaging must also be taken into consideration.

COORDINATION OF SERIAL MONITORING

All product and process characteristics are important and must be kept in a reliable process. Special characteristics require the proof of process capability. For this purpose, the SUPPLIER shall use suitable methods e.g. quality control cards (SPC) to monitor these characteristics. If process capability cannot be proven, a 100% test must be carried out. Characteristics that cannot be measured or only measured in a destructive test must be monitored and documented using suitable methods.

BOUNDARY SAMPLES

Where necessary, boundary samples must be agreed between HELLA and the SUPPLIER. In the case of decorative parts, this is obligatory.

5.7 CAPABILITY OF TESTING EQUIPMENT, MACHINES AND PROCESSES

By applying suitable statistical procedures, the SUPPLIER shall guarantee that the used machines, tools, measuring and test equipment as well as the processes in which these are introduced are suitable and capable for the production of products supplied to HELLA.

The characteristics for which capability studies have to be provided will be agreed between HELLA and the SUPPLIER. However, this does not release the SUPPLIER from his responsibility of defining further characteristics related to his processes or characteristics of the sub-SUPPLIERS.

CAPABILITY OF TESTING EQUIPMENT

For all characteristics, the SUPPLIER defines the testing method with the appropriate testing equipment. For the planned measuring equipment a suitability of the test-process has to be proven. The measuring process and the tolerances of the characteristic to be measured has to be considered for this.

Proof has to be brought in accordance with the requirements of VDA Volume 5 [20] (test process suitability) or AIAG [11].

PROOF OF MACHINE AND PROCESS CAPABILITY

The investigation of machine capability and process capability are basically described in VDA Volume 4 Part 1 [19] and must be performed according to this.

For all agreed special characteristics, the following capability indices are binding:

Short-term/machine capability index: $C_{mk} \geq 1.67$

Note: here, a large number of random checks is taken and evaluated within a short period of time.

Preliminary process capability index: $P_{pk} \geq 1.67$

Long-term process capability index: $C_{pk} \geq 1.33$

Note: here, smaller numbers of samples are taken and evaluated over a longer period.

If these minimum requirements are not met, 100% tests must be carried out until the capability is achieved through corrective actions. Deviations from this must be agreed with HELLA.

The requirements of the special characteristics are specified in HN 20037 [21] (Guideline for the Uniform Marking of Special Characteristics and their Verification Requirements).

In certain cases, the following capability indices can be agreed for special characteristics or process parameters:

- Short-term/machine capability index: $Cmk \geq 2.0$**
- Preliminary process capability index: $Ppk \geq 2.0$**
- Long-term process capability index: $Cpk \geq 1.67$**

5.8 STATUS OF SUB-SUPPLIERS AND THEIR PRODUCTS

The use of sub-SUPPLIERS that meet the quality requirements as well as the environmental, health and safety requirements and those arising from the HELLA CODE OF CONDUCT for SUPPLIERS [22] has to be guaranteed for the project and is the responsibility of the SUPPLIER. In case of nonperformance, sub-SUPPLIER development programs have to be set up. Implementation must be guaranteed before the start of series deliveries at the latest.

The status of quality planning for purchased parts must be reported regularly. The production process and product release of products from sub-SUPPLIERS has to be concluded before production process and product release of HELLA SUPPLIERS.

5.9 PRODUCT AND PROCESS RELEASE

INITIAL SAMPLES

For product release, the SUPPLIER is obligated to submit initial samples to HELLA before the start of serial production; these samples must comply with all the specifications and properties specified in the contract:

- Dimensions
- Materials and processing
- Applications/functional interface
- Boundary samples

Unless agreed otherwise, this proof must be brought on at least 5 parts/cavity.

This allows any deviations to be corrected in good time, thereby preventing systematic errors in serial production.

PRODUCTION PART APPROVAL PROCESS

Without part and process approval any series deliveries are forbidden. Initial samples and all component parts and materials used for their production, have to be produced under series conditions with series equipment without any exception. Reference samples from initial sampling must be kept by the SUPPLIER for at least 15 years after EOP, unless otherwise agreed in writing. If necessary boundary samples (e.g. photometric samples) must be regularly updated in agreement with HELLA.

For ISIR submission, HELLA requests the SUPPLIERS to use the ePPAP (electronic supported procedure of the Production Part Approval Process), unless otherwise agreed.

The content and complexity of necessary documents must be discussed with the HELLA Purchasing department for the specific project. The IMDS MDS or equivalent MDS submission by the SUPPLIER is mandatory.

It has to be decided in advance which bases for initial sample reports have to be used: VDA, Volume 2 [23] or AIAG documents [11]. The respective submission level must be defined.

The alignment points given on the drawing must always be considered. If the HELLA drawing does not contain this information, the alignment points determined during measurement must be recorded by the SUPPLIER in the release documentation (ISIR/PSW).

SERIAL PROCESS RELEASE

The process release at the SUPPLIER's is granted when a process audit according to VDA Volume 6 Part 3 [6], has been passed successfully with rating A, as well as after a Full-Run capacity test passed according to HELLA guidelines. The duration of the Full-Run has to last minimum one shift. The duration can be reduced in agreement with HELLA SQA-department. The result of the Full-Run conducted by the SUPPLIER has to be attached to ISIR/PSW.

A process release can also be granted in the case of a B rating. An improvement plan must be drawn up and processed for the open points.

HELLA reserves the right to carry out the process audit and Full-Run test, or request the results of the process release, at the SUPPLIER's and at the sub-SUPPLIER's if necessary.

For standard parts as well as products for the aftermarket, releases can be agreed based on "SUPPLIER data sheets" upon request and requirement by HELLA Purchasing. Only products for the aftermarket can be exempted from the requirement to submit IMDS MDS or equivalent MDS upon agreement by HELLA Purchasing.

SAFE LAUNCH

With start of the Production Part Approval Process (PPAP acc. to AIAG [11]) / Production process and product approval (PPA acc. to VDA Volume 2 [23]), and latest with the start of serial production, the SUPPLIERS should participate in Safe Launch Planning under the direction of their assigned SQA.

5.10 REQUALIFICATION TEST

Contents, complexity and intervals are agreed between HELLA and the SUPPLIER before the start of series production and documented within the Control Plan. If there is no agreement, requalification tests have to be carried out at least once a year.

In the event of negative test results, the reason for the defect must be determined, corrective actions initiated and the Quality Assurance staff in the Incoming Goods department of the plant to be supplied must be informed immediately.

Unless otherwise agreed, the respective requirements from IATF 16949 [3] or the AIAG documents [11] are valid. All products are subject to a complete dimensional and functional test, in accordance with the Control Plan, taking the customer's specifications for material and function into account. The SUPPLIER provides HELLA with the documentation within three working days on request. After previous agreement with HELLA, for parts that are similar for HELLA, the requalification can be carried out per product group ("family").

5.11 FUNCTIONAL SAFETY

As far as the scope of the SUPPLIER's product development tasks for parts that can be either electronic components, SW component, assemblies or complete devices including SW and HW development , the SUPPLIER shall in particular comply with the requirements of "Functional Safety" according to ISO 26262 [24] (FuSa).

Work products required by FuSa shall be available as defined in Development Interface Agreement (DIA). On HELLA's request Organization-specific rules and processes for functional safety and Evidence of competence at Supplier shall be provided in writing in a standard form as applicable.

5.12 QUALITY REQUIREMENTS FOR DEVELOPMENT OF EMBEDDED SOFTWARE

Embedded software developed and delivered to HELLA either as a work product or a product delivered which contains embedded software shall satisfy Automotive SPICE® level 2 (HIS-scope – Hersteller Initiative Software) unless otherwise specified by HELLA.

It is a requirement of HELLA that:

- a) The SUPPLIER produces and provides evidence of a self-assessment and/or
- b) The SUPPLIER agrees to be audited by HELLA assessors upon request or
- c) Upon HELLA request, a 3rd party assessment is conducted (by certified Automotive SPICE® Assessor) on supplier costs

If the SUPPLIER does not meet the above requirements at start of an awarded project, an improvement program must be established to meet HELLA requirements before start of serial production. A regular progress reporting of the improvement project to HELLA is requested. More details are defined in HELLA norm HN 20146 [25].

6 | METHODS OF SUPPLIER ESCALATION

6.1 ESCALATION PROCESS FOR SUPPLIERS

In case of repeated quality or logistic problems (e.g. unsuccessful complaint management of the SUPPLIER, long-term and/or multiple cases of missed target agreements, customer complaints due to defective purchased parts, ...) at the SUPPLIER's, the HELLA escalation process will apply. The aim of the process is to implement suitable actions at the SUPPLIER's so that the products and materials delivered meet HELLA requirements again. Depending on the duration and seriousness of the problems, they are classified in one of three escalation levels.

The basic procedure for each level is as follows:

- Analysis of the escalation cause and of the problem
- Agreement on an action plan to eliminate the causes of the escalation, in order to bring back the quality in line with targets
- Implementation of the action plan
- Monitoring/tracking of the action plan
- Depending on the effectiveness of the actions, either escalation or de-escalation takes place to the next level

If the subjects and actions are not processed efficiently by the SUPPLIER, HELLA retains the right to compel the SUPPLIER to obtain external help from a competent service provider.

Escalation level 1: Escalation level 1 is activated when the problems cannot be processed satisfactorily within the scope of normal workflow. In the course of the escalation process, the SUPPLIER has to set up an effective problem-solving process and present this to the Quality department of the HELLA production plant regularly on site.

Escalation level 2: In escalation level 2 the action plan is monitored on site at the SUPPLIER's to make sure it is adequate and effective. This shall take place within the context of quality and/or logistics audits. The results of the onsite analysis are documented in an action plan. The SUPPLIER is responsible for implementing the actions and has to report to those responsible about the respective status at regular intervals.

Escalation level 3: If the quality requirements in escalation level 2 are not fulfilled, the SUPPLIER is classified under escalation level 3. This means the SUPPLIER is blocked for new inquiries and placement of orders for all HELLA companies world-wide. HELLA also reserve the right to forward the information to the SUPPLIER's certification authority.

At escalation level 3 the existing problems are analyzed by a HELLA team on site. The SUPPLIER must be prepared to support all activities of the HELLA team. The SUPPLIER's general management must ensure the compliance with all the actions agreed. In order to guarantee the implementation and effectiveness of the planned actions, progress is supervised and documented based on regular reviews.

Escalation level 3 ends with de-escalation. If a SUPPLIER support project does not run successfully and the reason for this is caused by the SUPPLIER, a re-positioning of this SUPPLIER in the portfolio of HELLA Purchasing will take place.

6.2 ADDITIONAL CONTROL LEVEL

The "Additional Control Level" is an additional inspection of purchased parts. The purpose of this process is to implement a filter which avoids defective purchased parts caused by poor SUPPLIER quality performance arriving at HELLA production lines.

ACL 1 (Additional Control Level 1): ACL 1 requires an additional 100 % inspection of the material to be provided by the SUPPLIER. The appropriate testing station must be separated from production (minimum distance 10 m). The test results must be documented every day at the testing station. The marking of the purchased parts checked by the SUPPLIER must be agreed between HELLA and the SUPPLIER.

The SUPPLIER must report the inspection results regularly to HELLA according to ACL report (HELLA form 1280).

ACL 2 (Additional Control Level 2): ACL 2 requires an additional inspection of the purchased parts by an independent service provider representing HELLA interests. The SUPPLIER pays the costs incurred for this inspection. The selection of the service provider must be agreed with HELLA, since customer requirements (OEM) must be taken into account.

A weekly report of the inspection results must be sent to HELLA by the service provider according to ACL report (HELLA form 1280).

To revoke ACL 1 / ACL 2, all the following conditions must be met:

- Preventative measures must be implemented and their effectiveness proved
- At least four weeks of faultless additional 100 % test
- or at least as many faultless parts during the additional 100 % testing as would make up 5 delivery batches

7 | SPECIFIC REQUIREMENTS FOR ELECTRONIC COMPONENTS

7.1 RELEASE OF ELECTRONIC COMPONENTS

The following proofs are to be provided by the SUPPLIER for all new electronic components to be introduced at HELLA:

- Successful implementation of the release test according to the qualification requirements of the Automotive Electronic Council (e.g. AEC-Q100/101/102/200) [26, 27, 28, 29] (more detailed tests must be carried out in addition if required)
- Complete proof methods according to PPAP level 3

Furthermore, all the requirements documented in "HELLA Requirements for Electronic Components" HELLA norm HN 67500 [30] must be met.

7.2 PROOF OF PROCESS CAPABILITY

Process capabilities, in accordance with section 5, must be proven for electronic components for all functional-, safety- and quality- related processes. In addition, the use of statistical methods such as Part Average Test and Statistical Bin Analysis are a prerequisite to support the zero defect(s) strategy.

8 | APPLICABLE DOCUMENTS, LITERATURE

Details on the standards and methods of Quality Management specified in this guideline can be found in the respectively latest version of the following documents.

Send your request to
Hella, Central Purchasing
Purchase Management (PU)
Quality Management
Rixbecker Str. 75
59552 Lippstadt/Germany
Tel.: +49(0)2941/38-0
Internet: www.HELLA.com

or contact your dedicated Purchaser who will be glad to help with the interpretation and introduction of methods and standard requirements.

The HELLA documents referenced throughout this Manual can be found under Purchasing Philosophy documents download from the HELLA home page.

[1]	ISO 14001	Environmental management systems
[2]	EN ISO 9001	Quality management systems – Requirements
[3]	IATF 16949	Quality management system requirements for automotive production and relevant service parts organizations
[4]	ISO 45001	Occupational health and safety management systems – Requirements with guidance for use
[5]	OSHAS 18001	Occupational Health and Safety Management
[6]	VDA Volume 6 Part 3	Process audit
[7]	VDA Volume 6 Part 5	Product audit
[8]	DIN EN 10204	Metallic products – Types of inspection Documents
[9]	MAQMSR	Minimum Automotive Quality Management System Requirements for Sub-Tier Suppliers – Sections of IATF 16949 selected for supplier QMS development
[10]	VDA Volume 6 Part 1	QM-system audit serial production
[11]	AIAG	Automotive Industry Action Group manuals: Advance Product Quality Planning and Control Plan (APQP) Measurement System Analysis (MSA) Potential Failure Mode Effects and Analysis (FMEA) Production Part Approval Process (PPAP) Statistical Process Control (SPC)
[12]	(EC) No. 1907/2006 (REACH)	EU Regulation concerning the Registration, Evaluation, Authorization and Restriction of Chemicals
[13]	2000/53/EC (ELV)	EU-Directive on End of Life Vehicles
[14]	2011/65/EU (RoHS)	EU-Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment
[15]	HELLA Norm HN20103	Restrictions and prohibitions of Substances

[16]	VDA Volume	Joint Quality Management in the Supply Chain – Marketing and Service – Field failure analysis
[17]	VDA Volume 1	Documentation and Archiving – Code of practice for the documentation and archiving of quality requirements and quality records
[18]	VDA Production creation	Maturity Level Assurance for new Parts
[19]	VDA Volume 4	Quality Assurance in the Process Landscape
[20]	VDA Volume 5	Capability of Measurement Processes; Capability of Measuring Systems
[21]	HELLA Norm HN 20037	Guideline for the Uniform Marking of Special Characteristics and their Verification Requirements
[22]	HELLA Regulation SCoC	CODE OF CONDUCT for SUPPLIERS and SERVICE PROVIDERS
[23]	VDA Volume 2	Quality Assurance for Supplies Production process an and product approval PPAP
[24]	ISO 26262	Road vehicles – Functional safety
[25]	HELLA Norm HN 20146	Guidelines for Software Suppliers
[26]	AEC-Q100	Failure Mechanism Based Stress - Test Qualification for Integral Circuits
[27]	AEC-Q101	Failure Mechanism Based Stress Test Qualification for Discrete Semiconductors
[28]	AEC-Q102	Failure Mechanism Based Stress Test Qualification for Discrete Optoelectronic Semiconductors in Automotive Applications
[29]	AEC-Q200	Stress Test Qualification for Passive Components
[30]	HELLA Norm HN 67500	HELLA Requirements for Electronic Components

ABBREVIATIONS

TERM	DEFINITION
8D-Report	Eight Disciplines Problem Solving
ACL	Additional Control Level
AD	Additional Document
AEC	Automotive Electronics Council
AIAG	Automotive Industry Action Group
APQP	Advanced Product Quality Planning
CAMDS	Chinese Automotive Material Data System
CAQ	Computer-Aided Quality
CBFS	Characteristic Based Feasibility Study
Cpk	Long-term process capability
CPM	Cooperate Purchase Management
Cmk	Short-term machine capability
Co.	Compagnie
.de	Top-level domain Germany
DIN Standards	Deutsches Institut für Normung (German institute for standardization)
DMAIC	Define, Measure, Analyze, Improve and Control
EC	European Community
e.g.	For example (exempli gratia)
EVL	End of Life Vehicles
EN	European Norm Standards
EOP	End of Production
ePPAP	Electronic supportet procedure of the Production Part Approval Process
ERP	Enterprise-Ressource-Planning
etc.	And so on (ecetera)

TERM	DEFINITION
EU	European Union
e. V.	Eingetragener Verein (registered association)
FIFO	First-In, First-Out
FMEA	Failure Modes Effects Analysis
FuSa	Functional Safety
GmbH	Gesellschaft mit beschränkter Haftung (Limited Liability Company)
HIS	Herstellerinitiative Software (OEM Initiative Software)
HN	HELLA norm
HP-C	HELLA Corporate procedure
IATF	International Automotive Task Force
IMDS	International Material Data System
incl.	inclusive
ISIR	Initial Sample Inspection Report
ISO	International Organization for Standardization
IT	Information Technology
KGaA	Kommanditgesellschaft auf Aktien (Partnership limited by shares)
MAQMSR	Minimum Automotive Quality Management System Requirements for Sub-Tier Suppliers
MDS	Material Data Sheet
OEM	Original Equipment Manufacturer
PPA	Production process and product approval
PCN	Product / Process change notification
PPAP	Production Part Approval Process
PPF	Produktionsprozess und Produktfreigabe
Ppk	Preliminary process capability

TERM	DEFINITION
PPM	Parts-per-Million
PU	Purchasing
PSR	Product Safety Representative
Q	Quality
QFD	Quality Function Deployment
QM	Quality Management
QMC	Quality Management Center of the VDA
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals
RoHS	Restriction of Hazardous Substances
SOP	Start of Production
SPC	Statistical Process Control
SPICE	<u>S</u> oftware <u>P</u> rocess <u>I</u> mprovement and <u>C</u> apability <u>D</u> etermination
SQA	Supplier Quality Assurance
SVHC	Substances of Very High Concern
VDA	Verband der Automobilindustrie e. V. (German association of the automotive Industry)
www	World Wide Web

9 | REVISION HISTORY

CHAPTER	CHANGE SUMMARY
	Completely revised 2019-03-12
	<ul style="list-style-type: none"> Document number changed from HP-C 509 to AD-00385
1	<ul style="list-style-type: none"> Updated APPLICABILITY AND DEFINITION
2	<ul style="list-style-type: none"> Added requirements for evidence of a certified environmental management system
3.1	<ul style="list-style-type: none"> Added requirements regarding ISO 45001 [4], OHSAS 18001 [5] and MAQMSR [9] Added Methods/ Documents for CONTINUOUS IMPROVEMENT PROCESS
4.1	<ul style="list-style-type: none"> Added requirements regarding ISO 14001 [1], ISO 45001 [4] and OHSAS 18001 [5] Added requirements for PSR (Product Safety Representative)
4.2	<ul style="list-style-type: none"> New chapter "AUDITS" Added requirement for submission of internal audits Added "health and safety" to the HELLA audit scope Added requirements regarding access for legal authorities or authorized technical services
4.3	<ul style="list-style-type: none"> Renamed headline: "PRINCIPLES" instead of "QUALITY PRINCIPLES"
4.4	<ul style="list-style-type: none"> Added requirements regarding the restrictions of REACH [12]
4.5	<ul style="list-style-type: none"> New chapter "HANDLING OF NONCONFORMING OUTPUT"
4.6	<ul style="list-style-type: none"> Added requirements regarding NTF (No Trouble Found) and Field Failure Analysis Updated handling of 3rd Party contractors for sorting and/or rework
4.9	<ul style="list-style-type: none"> Added contact for supplier initiated changes
4.13	<ul style="list-style-type: none"> New chapter "SUPPLIER EVALUATION"
4.14	<ul style="list-style-type: none"> New chapter "TARGET SETTING"
4.15	<ul style="list-style-type: none"> Chapter "TRACEABILITY" moved from Chapter 5 to Chapter 4
5.1	<ul style="list-style-type: none"> Added requirements regarding update of the Feasibility Study Added requirements regarding the analysis of legal requirements
5.2	<ul style="list-style-type: none"> Renamed headline: "ADVANCED PRODUCT QUALITY PLANNING"
5.4	<ul style="list-style-type: none"> Renamed headline: "DESIGN AND PROCESS FMEA"
5.5	<ul style="list-style-type: none"> Added requirement for the control plan regarding legal requirements
5.6	<ul style="list-style-type: none"> Renamed "Limit samples" to "Boundary samples"
5.8	<ul style="list-style-type: none"> Added requirement for sub-SUPPLIERS regarding the HELLA CODE OF CONDUCT for SUPPLIERS
5.9	<ul style="list-style-type: none"> Renamed "Limit samples" to "Boundary samples" Added requirement that boundary samples must be updated if necessary Added requirement for IMDS MDS or equivalent MDS submission Added requirement for Full-Run Added IMDS MDS exceptions for the aftermarket
7.1	<ul style="list-style-type: none"> Added requirements for AEC-Q102 [28]
8	<ul style="list-style-type: none"> Revised and updated

Completely revised 2015-04-15	
1	<ul style="list-style-type: none"> ■ Update of last paragraph (introduction of customer specific requirements compliance)
2	<ul style="list-style-type: none"> ■ HELLA environmental policies: revised (small changes in re-written)
3.1	<ul style="list-style-type: none"> ■ First paragraph revised (applicability for "other industries" introduced) ■ Abbreviations explained: CAQ (Computer-Aided quality), QFD (Quality function deployment)
3.2	<ul style="list-style-type: none"> ■ Updated points: "concept preparation", "quotation phase", "development"
3.3	<ul style="list-style-type: none"> ■ Abbreviation explained: DIN EN 10204 (Types of inspection documents) [8] ■ Updated ISO 9001 [2] naming to EN ISO 9001 [2]
4	<ul style="list-style-type: none"> ■ QS9000 compliance replaced with AIAG [11] compliance.
4.1	<ul style="list-style-type: none"> ■ Revised and re-written sentence "Continuous field observation [...]" ■ Revised and re-written sentence concerning "certification"
4.3	<ul style="list-style-type: none"> ■ Added additional specification regarding IMDS submission ■ Removed the requirement: "In the case of defects of low value and minor importance, HELLA works with specified flat rate amounts." ■ Added "Cost recovery" detailed requirements ■ REACH [12] (SVHC) compliance revised and re-written. Introduced compliance with HN 20103 [15] ■ Updated "zero defect(s) quality" policy; removed sentence: "Because on account of the high quality standard [...] no defects to be found in random sample testing of incoming goods"
4.4	<ul style="list-style-type: none"> ■ Added detailed timing for 10 working days reply in case of complaints ■ Added requirements in case of sorting/ rework activities ■ Added requirements in regards of the usage of problem solving tools (e.g. Ishikawa, 5Why, etc.) ■ Added requirement for marking the "subsequent deliveries after a previous fault" ■ Revised: "audit on the SUPPLIER's premises", done with "prior announcement"
4.5	<ul style="list-style-type: none"> ■ Updated requirement regarding the storage of quality records, 15 years after EOP. ■ Quality documentation: added compliance with ISO/TS 16949 (alternative to VDA)
4.6	<ul style="list-style-type: none"> ■ Revised "Fault share (ppm)" formula in english
4.7	<ul style="list-style-type: none"> ■ Added: "Changes in" manufacturing methods or production processes ■ Added IMDS requirements in case of changes ■ Removed the specification: "If this procedure is not followed, HELLA reserves the right to charge any related costs incurred to the SUPPLIER"
4.9	<ul style="list-style-type: none"> ■ New chapter introduced "Preventive maintenance"
4.10	<ul style="list-style-type: none"> ■ New chapter introduced "Communication"
5	<ul style="list-style-type: none"> ■ QS9000 compliance replaced with AIAG [11] compliance
5.1	<ul style="list-style-type: none"> ■ Added requirement regarding CBFS (Characteristic Based Feasibility Study)
5.4	<ul style="list-style-type: none"> ■ Added requirement regarding PFMEA submission
5.7	<ul style="list-style-type: none"> ■ Revised and re-written "special characteristics" (instead of "special and critical characteristics") ■ Updated naming of capabilities, according to HN 20037 [21] ■ Updated reference to "special" characteristics in case of minimum capability requirements: "For all other special characteristics [...]" ■ Removed "temporary" in case of "minimum requirements not, 100% tests must be carried out [...]" ■ HN 20037 (Guideline for the Uniform Marking of Special Characteristics and their Verification Requirements) introduced [21]
5.9	<ul style="list-style-type: none"> ■ Revised sentence "The SUPPLIER has to carry out [...]" ■ [...] "In addition HELLA and its customer [...]" revised (small changes in re-written)
5.10	<ul style="list-style-type: none"> ■ Revised requirement for proof measurement quantity: "5 parts/cavity" ■ Added requirement regarding the "reference samples from initial sampling" ■ Added requirement regarding ePPAP usage (electronic PPAP) ■ Revised: "process release can also be granted in the case of a B rating" (replaced AB old rating) ■ Added requirements for Safe Launch activities

5.11	<ul style="list-style-type: none"> ■ Added applicability of traceability in the entire automotive chain. ■ Added "Product specific traceability requirements"
5.12	<ul style="list-style-type: none"> ■ Added additional specification regarding requalification of "product group"
5.13	<ul style="list-style-type: none"> ■ New chapter "Functional safety"
5.14	<ul style="list-style-type: none"> ■ New chapter "Quality requirements for development of embedded software"
6.1	<ul style="list-style-type: none"> ■ Revised and updated with details "quality and logistics issues [...]" ■ Escalation level 2: updated mandatory requirement for audit
6.2	<ul style="list-style-type: none"> ■ Revised and re-written "ACL 1 requires an additional 100% inspection [...]" (instead of "test")
7.1	<ul style="list-style-type: none"> ■ Revised and re-written "HELLA norm HN 67500" (instead of standard)
8	<ul style="list-style-type: none"> ■ Revised and updated according with changes ■ Added "Abbreviation list"

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