



Requirements Catalog for Suppliers

(QMD 024)

engineering.tomorrow.together.



thyssenkrupp

Preamble

thyssenkrupp Federn und Stabilisatoren has become a global synonym of innovation and high technology in suspension technology. The company with manufacturing sites in Europe, North and South America as well as in Asia supplies springs and stabilizers for all suspension solutions.

We develop every new result and sales opportunities in close cooperation with our partners. Our Purchasing department makes a major contribution to a strong operative performance and the strategic development of our business. By sustainable reduction of material costs. By ensuring the high availability of materials and service levels. By adopting technological innovation. Our highly qualified, motivated and globally networked employees, cross-functions cooperation and modern procurement practices are factors of our success. And, of course, our efficient and innovative suppliers. The target we share is to ensure the high competitiveness of our customers and companies.

Strategically picked suppliers can expect attractive volumes from CT-SP, the opportunity for joint development of pioneering technologies as well as access to growth markets and strong, expanding end customers. In return, we expect from our suppliers a particularly high innovation drive in technologies and processes – and the willingness to grow and chart out new ways with us in order to tap cost and market advantages for us and our customers.

Together with thyssenkrupp Federn und Stabilisatoren, you are a supplier of high-end products to the automotive industry. To meet the challenges of our OEM customers together, the requirements on suppliers must be defined and communicated clearly. In this context, the "Requirements catalog for suppliers" has become a major tool for the thyssenkrupp Federn und Stabilisatoren supplier management.

Scope

This standard defines the fundamental requirements of **thyssenkrupp Federn und Stabilisatoren** (hereinafter referred to as **CT-SP**) and of all its companies on suppliers with the aim of securing customer satisfaction and economic success in all divisions, from the fulfilment of quality requirements to improvements.

The standard applies to all suppliers of prototype parts, components, production materials, series components and spare parts and every kind of processing as well as to services and development activities.

In addition, the “technical delivery specifications“ of CT-SP apply to primary materials.

The requirements catalog complements the norms listed in the annex. In case of discrepancies with these norms, the supplier is required to discuss and settle such controversy with the competent technical departments.

The standard provides a comprehensive overview of the requirements of CT-SP for suppliers. Detail information, forms and agreements are defined in annexes.

The applicability of the standard, i.e., the relevance of the respective requirements relative to the scope of delivery of a supplier is defined in the different chapters. If no clear relevance can be established, the supplier is required to discuss and settle the matter with the competent project manager / purchasing engineer of CT-SP.

The abbreviation “QM“ as used throughout this document stands for the quality management of CT-SP and of the competent QM engineer, as the case may be. If the competent QM engineer or other contact should be unknown to the supplier, their names should be inquired from CT-SP Purchasing before starting a delivery or service.

The „Requirements catalog for suppliers“ may be translated in other languages. The original German version has priority in any case.

Chapters

1. FUNDAMENTAL PRINCIPLES
2. PROJECT MANAGEMENT
3. SUBMISSION OF QUOTATIONS AND ORDER ACCEPTANCE
4. PRODUCT DEVELOPMENT
5. CONSTRUCTION AND DESIGN
6. PROTOTYPES
7. PRODUCT TESTING
8. SUPPLIER MANAGEMENT
9. PRODUCTION PREPARATION AND SERIES PRODUCTION
10. LOGISTICS
11. COMPLAINTS MANAGEMENT
12. TOOLS
13. ANNEX

1. Fundamental principles

This document is intended to inform suppliers of the requirements of CT-SP early and comprehensively. The requirements apply in agreement with and in addition to the norms and standards listed in the annex (for example, ISO/TS (IATF) 16949, ISO 9001, ISO 14001, ISO 50001) and shall be considered in the supplier's quality management and the submission of proposals.

The customers of CT-SP demand that CT-SP and the suppliers of CT-SP equally comply with their requirements. CT-SP expects that the requirements defined in this standard are met from the beginning of development work and in all delivery relations.

If requested, the supplier must be in a position to demonstrate financial stability as well as references for similar products and services.

The following fundamental principles must be observed for fulfilling the requirements:

- Clear focus on the customer
- Deployment of cross-functional teams (project organization and series development teams)
- Support of the flow of information and communication
- Efficiency and effectiveness
- Cooperation in using modern methods and tools in procurement and supplier management (e.procurement; supplier portal, supplier conventions, etc.) in direct cooperation with CT-SP, including across various business areas within the thyssenkrupp clusters
- Defect prevention (zero-defect target)
- Capable processes instead of tests to discover defects
- Economic and timely completion of all supplies and services
- Compliance with agreed targets in all processes and business areas
- Constant improvement (KVP) – lessons learned
- Consideration of ecological aspects across all functional thematic fields
- Subscription to 100% delivery reliability (quantity and time)
- Availability of spares (15 years after the end of series production)
- Compliance with the General Terms of Purchase of thyssenkrupp AG
- Compliance with the thyssenkrupp supplier code of conduct

Content

- 1.1 Quality management system
- 1.2 Quality management agreement, zero defect target
- 1.3 Special features
- 1.4 Cleanness and corrosion protection
- 1.5 Traceability from procurement to dispatch
- 1.6 Production process and product release (PPF)
- 1.7 Audit / verification, pilot batches, run @ rate
- 1.8 Receiving inspections by CT-SP
- 1.9 Continuous improvement (KVP), lessons learned
- 1.10 Ecology, recycling, occupational safety
- 1.11 Substances negative list, hazardous substances, REACH Regulation
- 1.12 thyssenkrupp Supplier Code of Conduct; compliance
- 1.13 Conflict minerals compliance, responsible procurement
- 1.14 Defects liability, field complaints
- 1.15 Sharing requirements with sub-suppliers, secrecy
- 1.16 Supplier's product safety officer (PSB)
- 1.17 Process-specific audits
- 1.18 Supplier contact information
- 1.19 General Terms of Purchase of ThyssenKrupp AG
- 1.20 Validity
- 1.21 Referenced documents

1.1 *Quality management system*

The supplier's QM system has been developed according to the specific requirements of the automotive industry and should be ISO/TS (IATF) 16949 certified. Certification according to DIN EN ISO 9001 by an accredited certification body is a minimum requirement.

Generally, the most recent versions of these norms and standards apply in each case.

CT-SP reserves the right, after prior consultation, to verify the assessment of the supplier's quality capability by QM system audits and/or process audits. In addition, CT-SP also reserves the right to inspect the supplier's facilities (together with customers of CT-SP) after prior announcement.

The supplier undertakes to demonstrate to CT-SP the most recent state of certification by submitting a copy of the relevant certificate. Changes shall be reported to CT-SP Purchasing.

The supplier shall also inform CT-SP of all communications received from customers regarding a particular customer status (supplier rating) in connection with quality or delivery problems and returns from dealers, warranty cases, field actions and return calls.

1.2 *Quality management agreement; zero defect target*

The requirements of the supplier quality management are defined in this requirement catalog; special quality management agreements will only be concluded when required in the light by special arrangements or targets.

Under the quality management, the supplier is committed to the zero defect target and shall demonstrate the absence of defects by suitable quality assurance measures (e.g., test reports, SPC, measurement reports, specification and design reviews, etc.). If the supplier finds that the zero defect target will be failed, the supplier shall inform CT-SP about it without delay. If the zero defect target is not obtained reliably by the supplier, CT-SP will include that supplier in their quality improvement program, agree on measures and – where appropriate – define intermediate targets to obtain the general target. The supplier qualification system is described in detail in tkFS QuEST (qualification, escalation and supplier targeting). CT-SP informs the supplier of the required steps in connection with the latter's inclusion in the qualification program.

1.3 *Special features*

CT-SP defines the so called "special features", i.e., product features with particular relevance to safety, function, further processing and installation, for CT-SP and communicates them to the supplier. To ensure the safety and function of the products, the supplier, by applying a multidisciplinary approach, must identify and highlight all process and products features as "special features" that are important to the supplier's development and manufacturing process.

The supplier defines the product and process features for the manufacturing process in any case for the supplier's process even if the part delivered is developed and designed by CT-SP.

The "special features" must be documented and identified uniformly in the drawings, in risk analyses (such as FMEA), in the production management plans and in work instructions. Customer symbols where available shall be used.

The demonstration of the process capability of special features is a general requirement. Special features shall be managed and monitored by suitable strategies (e.g., SPC).

1.4 *Cleanliness and corrosion protection*

The supplier warrants that all parts delivered are clean and free of corrosion. Chips and loose particles on parts or transport units as well as oil on parts in excess of the volume needed for corrosion protection are not tolerated.

In case of components of corrosion susceptible materials which are not provided with surface protection, the supplier, in cooperation with the competent departments of CT-SP, shall take care that corrosion is excluded for a period of three (3) months. Where corrosion protection agents are used, these shall be removable by alkaline washing, not harmful to man or the environment and compatible with further processing (e.g., hardening processes). The supplier shall document the corrosion protection agent used and shall provide CT-SP with appropriate information (technical data sheet or MSDS [materials safety data sheet]) without solicitation at the sampling stage.

1.5 *Traceability from procurement to dispatch*

The supplier is required to provide continuous traceability from raw / primary materials to the dispatch of the finished parts and components. The supplier is also required to establish the traceability within larger production batches which are shipped in part to CT-SP.

The traceability must be documented for all parts of the scope of supply and demonstrated to the QM CT-SP on the latter's request. If the parts must be marked permanently (e.g. with the production date) this will be agreed separately or is specified in the drawings.

Where possible, CT-SP recommends an individual and permanent marking of the products as that facilitates the pinning down of the cause of defects and therefore helps limit damage. The marking must be current, legible and captively mounted in such cases.

1.6 *Production process and product release (PPF)*

The supplier must organize the production process and product release (PPF) according to VDA volume 2 and the production part release process according to PPAP as required for the respective part. The initial sampling is based on the appropriate drawings, technical terms of delivery (TL) and product specifications with revision date as of the date of the initial sample order, which shall also specify the presentation stage. Exceptions are only permitted by the written release of the competent project manager / purchaser. Depending on the intended use of the component, the respective CT-SP project manager / purchaser will inform the supplier in time about the customers for whom the product is intended.

An entry in the international material data system (IMDS) shall be made about every initial sampling. The MDB ID No. shall be specified on the EMPB cover sheet.

Initial samplings shall be made for every part. If identical parts are shipped to several CT-SP destinations, a release process shall be made for each site. The scope of the release process shall be agreed with the QAM CT-SP.

The filing periods for PPF documents and retained samples shall be agreed with CT-SP; VDA volume 1 applies.

Series deliveries are not possible unless after release by CT-SP. Series initial deliveries of new parts and modified parts (parts with modified design) shall be announced by the supplier in advance and marked in accordance with the instructions by CT-SP.

If a sample is not released in accordance with the specifications (notes 1 and 3, resp.), CT-SP reserves the right of on-charging the additional cost of a new initial sampling process to the party causing the cost.

The PPF procedure shall also be applied to new parts and to notifiable changes according to the release matrix (annex 2 to VDA volume 2).

1.7 *Audit / verification, pilot batches, run @ rate*

CT-SP (when appropriate, together with their customers) is entitled to examine the quality assurance measures of the supplier and assess them in audits. The supplier is obliged to rectify all deficiencies found during such audits.

The supplier is also required to make audits of all sub-suppliers by CT-SP (when appropriate, together with their customers) possible. Basically, however, the supplier is responsible for auditing the sub-suppliers.

The supplier's quality capability is verified on the basis of VDA volume 6.3.-2016. Other audit types can be agreed.

CT-SP can perform a process validation (run@rate) as part of the PPF procedure.

The purpose of that performance test is the demonstration of:

- The process performance and quality capability of a complete manufacturing process under conditions of series production;
- The capability – with all resources provided and within the agreed time - of manufacturing the agreed specification-conforming quantity for the customer.

The duration, number of parts produced and the documentation of the process acceptance shall be agreed with CT-SP. CT-SP can perform the production and product release at the supplier's site after prior agreement of a date.

If a process release is not accepted, CT-SP reserves the right of on-charging the additional cost of a new process release to the party causing the cost.

1.8 *Receiving inspection by CT-SP*

The supplier ensures that the products delivered meet the requirements laid down in drawings and specifications. This shall be ensured at the supplier's end by controlled and capable processes as well as by suitable test methods.

The inspection of goods received by CT-SP is limited to a general visual inspection for identity, visible damage, quantity, completeness and delivery of the required test certificates. The supplier waives the defense of late notification of defect provided the defect is found in the proper course of business and the supplier is notified of it without delay.

The requirements in connection with complaints are described in detail in the Complaint Management chapter.

A product release (EMPB/PPAP) is required before series production can start. If a product has not been released at the start of series production, the supplier is required to agree on all required procedures / the special release procedure with the QM CT-SP without delay.

1.9 *Continuous improvement (KVP), lessons learned*

To ensure competitiveness also in future, it is necessary to constantly improve all processes (e.g., kaizen, six-sigma and KVP activities). This includes more than the mere rectification of existing issues. The target is to manage all processes in such a way that deviations from set-points are becoming ever rarer. Set-points are requirements such as, for example, technical specifications but also include quality targets, cost, global competitiveness, transparency of cost analysis, deadline planning, delivery reliability, etc.

The supplier is required to define suitable indicators to make the improvements visible for all departments of the company. Effectiveness and cost efficiency are important aspects of constant improvement.

The lessons-learned approach shall be applied consistently by the supplier.

The practice of experience-based findings, resulting from both positive (e.g., best practice) and negative (e.g., complaints) events, is essential to improving the competence of the personnel and of products, processes and systems throughout the company.

1.10 Ecology, recycling, occupational safety

The supplier undertakes to maintain as minimum benchmark all applicable statutory, country and industry specific provisions of occupational safety, environmental protection and recycling. Aspects of ecology to be observed include the following:

- Check of the environmental compatibility of supplied materials, manufacturing processes and products
- Minimize the consumption of resources and improve the energy efficiency
- Environmentally compatible packaging, transportation and logistics concepts (incl. return logistics)
- Use of recycled materials
- Avoid problematic materials
- Mark all materials for efficient recycling
- Recondition production materials and production auxiliaries (e.g., coolants, lubricants and washing agents)

CT-SP recommends to all suppliers certification according to ISO 14001 or a similar standard. We support the emission reduction targets of the climate protection conventions and expect from our suppliers a contribution to improving energy efficiency. A systematic approach to that target is ISO 50001 certification.

1.11 Substances negative list, hazardous substances, European REACH Regulation

As partner of CT-SP, the supplier is bound to maintain all applicable German and other national provisions, for the U.S.A. the federal and state regulations, (e.g., TA Luft, PCB, EPA [Environmental Protection Agency], end-of-life vehicle directive, etc.).

Parts, materials, transport and packaging materials must not contain substances hazardous or suspected of being hazardous to health or which are rated, in Germany and other CT-SP production sites throughout the world, as constituting a hazard or being harmful to the environment or to health.

CT-SP requires the supplier to comply with the restrictions of materials according to the end-of-life vehicle directive (AAV) and customer specific requirements (e.g., substances negative list, GADSL of the IMDS) in each case of the latest and current version. Substances or classes of substances that are rated as being critical to man and the environment can be identified from the substances negative list. It is also helpful in selecting materials and manufacturing methods, starting with the predevelopment of parts.

The supplier undertakes also to comply with all national norms, regulations and laws relating to hazardous substances in effect at the supplier's production site and the CT-SP sites for which the parts are manufactured. On request, all deliveries of hazardous materials shall contain the appropriate MSDS (Material Safety Data Sheet) document.

A supplier whose deliveries contain silicone shall contact the competent technical department of CT-SP because the product or – for example – the paint quality can be affected.

The requirements and measures resulting from the European REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) regulation must be met for all substances, preparations and products delivered to CT-SP.

1.12 thyssenkrupp supplier code of conduct, compliance

thyssenkrupp expects all suppliers, in everything they do, to comply with all applicable national laws, the principles of the United Nations Global Compact and this thyssenkrupp supplier code of conduct. It is further expected that all suppliers adopt suitable processes that support compliance with the applicable laws in their companies and a continuous improvement in relation to the fundamentals and requirements of the thyssenkrupp supplier code of conduct. In addition, thyssenkrupp expects all suppliers to ensure that their affiliated companies also accept and comply with the principles and requirements described here.

The way thyssenkrupp AG understands sustainability is described in the thyssenkrupp supplier code of conduct. The acceptance of and compliance with the CoC must be confirmed in writing by a properly authorized representative of the supplier.

The relevant documents can be downloaded from the thyssenkrupp homepage (www.thyssenkrupp.com/de/konzern/supplier.html).

The supplier also ensures compliance with these principles and is obliged to refrain from any punishable activities in all business relations with CT-SP. If this requirement is ignored, CT-SP can rescind from and terminate any legal business with the supplier without delay and may stop all negotiations.

Notwithstanding that, the supplier is obliged to observe all laws and regulations applicable to the supplier and the supplier's business relations with CT-SP.

1.13 Conflict minerals compliance, responsible procurement

Human rights, fair working conditions, environmental protection and the fight against corruption are concepts of value not only within this Group but also throughout our delivery chain. We at thyssenkrupp acknowledge our responsibility under the United Nations' Global Compact. We have made responsible acting an integral part of our procurement processes. We make our awarding decisions not only on the basis of economic, technical and procedural criteria. Sustainability also figures highly in the supplier management of thyssenkrupp. Besides, we continuously improve our processes. We want to improve the transparency of the origin of raw materials and so-called conflict materials so that risks can be identified early.

The "Dodd-Frank Wall Street Reform and Consumer Protection Act" 2010 defines new documentation requirements for companies. The law was enacted with the humanitarian aim of ending violent conflicts in the Democratic Republic of Congo (DRC) and the neighboring states that had partly been financed with the proceeds from the extraction and sale of conflict minerals.

The Act requires all companies listed at the U.S. Exchange to disclose information on the use and origin of the conflict minerals required for the functionality or manufacture of a product. This must be reported to the Securities and Exchange Commission (SEC) every year. TK-FS and many of our customers must comply with these reporting obligations. Our suppliers are an integral part of the TK-FS supply chain and as such it is on all of us to comply with the corresponding obligations.

Conflict minerals, also referred to as 3TG, at present, include the following minerals and their derivatives:

- Tantalum (Columbite/ tantalite/ coltan)
- Tin (cassiterite)
- Tungsten (wolframite)
- Gold

Additional conflict minerals or their derivatives can be included in the list by the U.S. State Department. To enable us to comply with our reporting obligation, the supplier must provide information about the origin, and use of conflict minerals in the manufacturing process and in the products delivered to TK-FS. If such products are identified, the supplier is obliged, together with the up-chain supplier, to identify the county of origin of these materials and to see whether these conflict minerals can be declared to be "DRC conflict free".

The supplier must complete the EICC-GeSI template* and mail it to:

Jens.Jaschewski@thyssenkrupp.com

For questions and more information, the data of the supplier's contact for conflict minerals compliance shall be added.

The content of the declaration must be submitted every year, latest by 1 March, verified and all important changes reported (e.g.: minerals from the Democratic Republic of Congo, new parts / new sources that contain conflict minerals, additional CFS smelters, etc.) shall be notified in a revised report.

*The most recent template can be downloaded at:

<http://www.conflictreesmelter.org/ConflictMineralsReportingTemplateDashboard.htm>

1.14 Defects liability, field complaints

The laws and regulations in force at the respective destination of the goods apply.

In addition to compliance with the laws and regulations at the respective destination of the goods, the supplier warrants for all purchase orders placed after 1 January 2007 the function for a period of four years and 100,000 km. The cost, including the consequential cost, in connection with earlier failure shall be borne by the supplier.

CT-SP can claim warranty / guaranty by demonstrating the occurrence of defects in products in reference markets.

As a deviation from this requirement, customer specific warranty terms can be agreed. In such cases, field complaints, for which the supplier is responsible, will be escalated according to the OE customer's requirements.

In cases of field complaints, the process of analysis of the defective part shall follow the customer's requirements (e.g., VDA volume defective part analysis - field).

The supplier is obliged to take out a reasonable product liability insurance commensurate with the potential warranty cost.

The supplier is responsible to ensure that the products in the supplier's scope are monitored. If the supplier becomes aware of quality issues in connection with the supplier's products delivered to whatever customer, these issues must be reported to CT-SP when the supplier delivers similar or identical parts and effects on the quality of CT-SP products or processes cannot be excluded.

For the rest, the general terms of purchase of thyssenkrupp AG apply.

1.15 Sharing requirements with sub-suppliers; secrecy

The supplier is obliged to share all applicable statutory and government requirements as well as all product or process related features (from CT-SP and CT-SP customers, resp.) with all sub-suppliers and to obtain from the sub-suppliers the undertaking of compliance with these requirements.

Generally, all documents and papers are subject to secrecy and must not be disclosed to any third party without the written approval of CT-SP.

A secrecy and non-disclosure agreement shall be concluded with CT-SP Purchasing.

1.16 Supplier's product safety officer (PSB)

In order to identify product risks early and effectively prevent their occurrence, competent product safety officers shall be appointed along the complete delivery chain.

A product safety officer shall be named for every relevant production and development site.

The training to the position of PSB must be completed with a VDA-QMC licensed partner.

1.17 Process-specific audits

The manufacturing processes listed below shall be audited by the supplier every year on the basis of the most recent version of the CQI standard. Audit report shall be made available to CT-SP on request. If any one or more of such processes are installed with sub-suppliers, the appropriate requirement shall be shared with them.

- Heat treatment processes: CQI-9 heat treat system assessment;
- Processes for surface plating treatment: CQI-11 plating system assessment;
- Surface coating processes: CQI-12 coating system assessment.

1.18 Supplier contact information

At project kick-off or before the start of a series delivery, the supplier shall provide an organizational chart / contact overview to CT-SP and inform CT-SP of all changes of the management, if possible in an electronic format agreed with CT-SP.

1.19 General Terms of Purchase of thyssenkrupp AG

Unless agreed otherwise with CT-SP (e.g., under agreement with specific customers), the General Terms of Purchase of thyssenkrupp AG apply to all deliveries by the supplier. A copy of the general terms of purchase can be obtained from CT-SP Purchasing.

1.20 Validity

The requirements catalog is an integral part of every purchase order and every call-off from suppliers; the latest revision applies in each case. The most recent revision can be obtained from the CT-SP Purchase or can be downloaded from the thyssenkrupp Federn und Stabilisatoren website under <http://www.thyssenkrupp-federn-stabilisatoren.de/einkauf/anforderungskatalog.html>.

1.21 Referenced documents

Unless agreed otherwise, the latest, most recent version of referenced documents applies.

2. Project management

Content

- 2.1 Project plans
- 2.2 Product related quality planning
- 2.3 Project reviews
- 2.4 Launch management
- 2.5 Secrecy
- 2.6 Lessons learned
- 2.7 Change management

2.1 Project plans

The supplier develops project plans which ensure that the project result is ensured in terms of time, and scope, content and format. The milestones of significance to the supplier and to CT-SP shall be agreed with the responsible project management and the responsible CT-SP contact.

2.2 Product related quality planning

The supplier shall develop a comprehensive plan of the supplier's preventive and preserving measures during the execution of the project and for series production according to APQP. That quality plan with activities, responsibilities and deadlines shall be integrated in the project plan. Supporting material such as APQP check sheets may be provided.

2.3 Project reviews

In internal project reviews, the supplier shall, at defined points in time, assess the project progress in the light of the defined targets and document the result. CT-SP shall be informed of the project progress and problems encountered as agreed.

The primary demand of CT-SP and their customers is the smooth and time-compliant launch of series production. Project reviews with CT-SP will be made at defined project milestone dates. These milestone dates are based on the milestone plan of the OE customer. Different quality gates are assessed and passed in the project reviews. Longer-term measures can be handled and pursued, e.g., under an "open-items list". Supplier days or maturity workshops within projects are also considered to be project reviews.

2.4 Launch management

Together with CT-SP deliveries, the supplier's deliveries go into high-end systems and components of the automotive industry. Shorter development times and a high ramp up to the production peak are some of the challenges which CT-SP and the supplier must face.

In order to meet the requirements for a smooth series production launch, *inter alia*, a procedure for product and process release was developed in VDA volume 2. That standard shall be applied unless specified otherwise.

For planning and managing the launch, CT-SP needs the completed time schedule of purchased parts in an electronic format agreed with CT-SP.

All changes of deadline during the launch must be reported and agreed with the competent project management without delay or request.

The supplier issues written confirmation of the peak production output and the fulfilment of output targets during the series production launch.

Within the project, CT-SP will agree a so called “launch containment“ with the supplier, i.e., particular attention will be attached to the initial delivered quantities / batches during the launch. The launch containment will be discontinued after defect-free deliveries. The containment will continue if defects are found.

2.5 Secrecy

The supplier is obliged to secrecy and shall not disclose information about the cooperation with CT-SP to third parties. The obligation to secrecy does not apply to information that must be disclosed by law. Secrecy obligations, if necessary for the implementation of this provision, shall also be obtained from sub-suppliers / service providers.

2.6 Lessons learned

The purpose of “lessons learned“ is to ensure that experience gained is transferred to new projects. Experience from development, production, customer complaints and research projects can be applied here. Suitable tools/resources include, for example, knowledge databases, FMEA databases, design guidelines, standards. CT-SP expects that appropriate systems for improving subsequent projects are applied.

2.7 Change management

The supplier ensures careful change management within the projects. The sum total of all changes determines the parts life within the project. Basically, the supplier shall maintain a part lifetime file. Generally, the sampling of changes shall be performed in agreement with QM CT-SP.

The change management applies to production material and the related manufacturing equipment and tools.

3. Submission of quotations and order acceptance

Content

- 3.1 Inquiry
- 3.2 Submittal of quotations for individual parts, assemblies
- 3.3 Verification of the inquiry documents for missing items / ambiguities
- 3.4 Verification of the feasibility of quotation acceptance
- 3.5 Order confirmation

3.1 *Inquiry*

Inquiries to suppliers are issued by CT-SP Purchase. All inquiries are time-bound and therefore must be processed by the specified time deadline. Inquiries can be made via the e.Procurement platform of thyssenkrupp.

3.2 *Submission of quotations for individual parts, assemblies*

Quotations for the delivery of individual parts must be submitted by the supplier in a defined format. The appropriate form contains necessary information (project, quantities, contact). CT-SP expects that the supplier submits the quotation in that detailed and transparent form. CT-SP Purchasing provides these documents either directly or indirectly with detail information together with other documents in an e.RFQ / e.auction. Other procedures shall be agreed with CT-SP Purchasing.

3.3 *Inquiry documents, missing items / ambiguities*

Before acceptance of the order, the supplier ensures a demonstrable check of all documents received from CT-SP such as product description, product specification, terms of purchase, etc. If in the opinion of the supplier these documents are not sufficient, the supplier shall request more information from CT-SP.

3.4 *Verification of the feasibility of quotation acceptance*

The supplier shall check the feasibility of the supplies and services quoted. This includes, in addition to the technical feasibility (producibility of the parts under series conditions according to the specification with the required process capability) aspects such as logistics quality, time deadlines, cost, compliance with environment requirements (AAV), etc. The supplier shall inform CT-SP of the feasibility together with the quotation. Questions regarding the feasibility shall be explained in an e.auction prior to the final e.auction.

3.5 *Order confirmation*

A written order confirmation shall be issued by the supplier without solicitation within 3 working days. In checking the order, the supplier focuses on the following aspects:

- Technical execution (e.g., drawing index);
- Delivery reliability, quantity and time deadline;
- Delivery destination and marking (*inter alia*, VDA label, e.g. project reference);
- Price, pricing;
- Proof of conformity with the end-of-life vehicle directive (AAV);
- General terms of purchase of ThyssenKrupp AG.

Unless agreed otherwise in writing, the legal venue is the appropriate registered place of business of CT-SP. CT-SP can also sue the supplier at the latter's legal venue.

Confirmations of orders (call-offs) for series delivery shall be addressed to the appropriate scheduling management. Order confirmations for samples, prototypes, initial samples and test parts shall be addressed to Purchasing. In addition, CT-SP can require an ASN (advanced shipment notice) by which shipments of series parts are announced. These shall be sent to Logistics.

4. Product development

This chapter addresses suppliers with product development tasks. If a task is shared between the supplier and CT-SP, the detailed scope, responsibilities and competencies will be defined clearly. Deviations from the standard can be agreed for a particular project or customer.

Content

- 4.1 Planning of development activities
- 4.2 Methods and practices
- 4.3 Technical documentation
- 4.4 Verification of the development specifications and the feasibility
- 4.5 Design reviews
- 4.6 Homologation
- 4.7 Procedure when part design is changed

4.1 *Planning of development activities*

Before implementation, the supplier shall plan all development activities with respect to content, procedures, interfaces, time deadlines, responsibilities, infrastructure, design and test standards, form of technical documentation.

The supplier shall define a clear target of the development result together with CT-SP.

4.2 *Methods and practices*

To the extent to which required for a project, the supplier must be able to apply the following methods:

- Form and position tolerance;
- Consideration of the tolerance chain, statistical tolerancing;
- Design for manufacturing and assembly DFMA;
- Value analysis;
- Test methods (design of experiment - DoE);
- FMEA (failure mode and effects analysis);
- Finite elements method (FEM);
- Computer-aided design (CAD);
- Solid modeling;
- Reliability techniques;
- Simulation techniques;
- 3-D measuring technology;
- etc.

4.3 *Technical documentation*

The form of the technical documentation shall be agreed between the supplier and CT-SP prior to placing the order (procedure, methods, distribution, EDI, etc.)

4.4 *Verification of the development specifications and the feasibility*

Before accepting the order and starting development work, the supplier shall make sure that the requirements on the development result such as performance features, reliability, purpose, etc. are

defined in sufficient detail. The supplier must check the development specifications the supplier is expected to meet whether they can be fulfilled / made and document the results of the check. The supplier is required to confirm the feasibility in respect of process, capacity and logistics.

The confirmation shall be submitted to CT-SP without solicitation.

Compliance with the ecological requirements, e.g., the conformity with the end-of-life vehicle directive is taken for granted.

4.5 Design reviews

The supplier shall carry out design reviews at defined points in time. The purpose of these design reviews is to state whether the available development result meets the defined requirements. The procedure of the design reviews will be agreed between the supplier and CT-SP project management. The target is also focused on the OE customer's requirement. CT-SP expects the supplier to submit a brief, clear presentation of the results at each design review.

4.6 Homologation

Homologation provides proof that a product complies with the appropriate laws and norms of the country for which it is made. If homologation is agreed, the responsibilities will be defined and agreed at the time the order is placed. Responsible on the part of CT-SP is the competent project manager.

4.7 Procedure when part design is changed

The consequences of all changes of function and output, life, manufacture and assembly, etc. shall be agreed with CT-SP. The change must be released by the project management. Cases for which no approval of a change by CT-SP is required will be agreed separately. All changes made must be entered in the respective documents (drawings, part lists, etc.) as agreed, maintained in the life file of the part and communicated to CT-SP.

The supplier undertakes to ensure that the same procedure is also adopted and followed by all sub-suppliers. Samples of all changes shall be assessed according to the requirements of PPAP / VDA volume 2. Appropriate presentations shall be agreed with QM CT-SP beforehand.

5. Construction and design

Content

- 5.1 Design FMEA
- 5.2 Aspects of manufacture, assembly and measurement
- 5.3 Technical calculation

5.1 *Design FMEA*

Generally, suppliers with development responsibility shall provide a systematic and clear analysis of the risks of product application and possible malfunctions throughout the life of the product. This shall be supported by design FMEAs according to the latest automotive standard so that potential problems can be identified as early as possible and suitable containment action taken. The product specific agreement on FMEA topics, assessment of the significance of consequences of faults, the exchange of information, etc. shall be made between CT-SP and the supplier before the start of design work. The supplier shall provide a brief, clear presentation of the FMEA results with focus on critical points, the specific features and the action taken to mitigate the risks. An interface FMEA may be carried out with CT-SP and possibly the CT-SP customer.

5.2 *Aspects of manufacture, assembly and measurement*

During all development activities, the supplier ensures that the following aspects are considered systematically, for example:

- Manufacturability (performance of manufacturability analyses together with manufacturing engineers);
- Ease of assembly (defining effective design measures to prevent wrong assembly);
- Measurability (systematic verification of requirements);
- Availability / obtainability of materials (no problem materials);
- Envisaged target price (regular calculation of manufacturing cost);
- Process stability (assessment of the expected process variations and their impact on product functions, etc.).

5.3 *Technical calculation*

If required for a project, the supplier shall submit calculations to demonstrate that the product meets all requirements such as strength, reliability, safety, function, etc. This can be done by dynamic or kinematic simulation with CAD, lifetime evaluation, FEM, mold flow analysis, etc. The requirements are agreed with the competent CT-SP project management.

6. Prototypes

Clear agreement between CT-SP and the supplier regarding the production of supply of prototypes is required for the safety of product development. That agreement should preferably be included in a prototype directive. Together with the requirement catalog, the directive applies to the appropriate CT-SP development.

If no prototype directive is available, the rules defined herein apply.

Content

- 6.1 Technologies, processes, sub-suppliers
- 6.2 Documentation of prototypes, dummy tests
- 6.3 Test methods and procedures
- 6.4 Delivery conditions for test, prototype and initial sample parts

6.1 Technologies, processes, sub-suppliers

When possible, prototypes should be made by the same technologies, processes and sub-suppliers, including the processes of the latter, which will be used for series production. Differences to the planned series production shall be documented and reported to CT-SP in a suitable way.

6.2 Documentation of prototypes, dummy tests

The prototype parts, assemblies and units to be tested shall be documented suitably throughout their entire process of generation, part manufacture and assembly. Compliance with the AAV shall be confirmed by suitable written documentation with every delivery already at the prototype stage. Special requirements by CT-SP, if any, will be agreed separately. Any rework, repair, etc. carried out to prototype parts shall also be documented. The scope of the documentation shall be agreed between the supplier and the CT-SP project management.

6.3 Test methods and procedures

The test methods and procedures, measuring basis, points of reference, documentation, assessment, etc. shall be agreed between the supplier and the QM CT-SP in time.

6.4 Delivery conditions for test, prototype and initial sample parts

Details of the test, prototype and initial sample parts are agreed in the delivery conditions for prototypes and in complementary agreements, if any, in the respective orders. If the supplier believes that anything is not clear, the supplier shall request additional information from the competent technical departments of CT-SP.

7. Product testing

Content

- 7.1 Test programs
- 7.2 Assessment of tests
- 7.3 Tests for robustness
- 7.4 Design validation / verification

7.1 Test programs

Unless defined clearly in the product specification or the drawing, requirements in connection with the test program such as test and load spectra, load cycles, assessment reliability, number of prototypes, etc., will be agreed separately. The supplier shall consider the defined requirements on the product such as function, life, reliability, dimensions, materials, etc. in the test program with a traceable approach.

7.2 Assessment of tests

Unless defined clearly in the product specification or the drawing, the form in which the test results are assessed and reported shall be agreed separately.

7.3 Tests for robustness

The robustness of the product to fluctuations in manufacturing shall also be a part of the test. This may require deliberately not to include certain features of prototypes in the set of target values but intentionally in the limit range or outside the proposed tolerance limits.

This must be done in consultation with CT-SP.

7.4 Design validation / verification

The supplier shall carry out a design validation / design verification. The purpose is to demonstrate that the product developed meets the defined requirements. The manner in which the design validation and verification are carried out and documented shall be agreed with CT-SP; a DVP template may be requested.

8. Supplier management

Content

- 8.1 Procurement from sub-suppliers
- 8.2 Supplier evaluation
- 8.3 Supplier benchmarking and nomination
- 8.4 Supplier competitiveness

8.1 Procurement from sub-suppliers

CT-SP demands that all suppliers proceed with care in their procurement activities. Consequently, the requirements defined in this Catalog apply equally to all procurements from sub-suppliers. The supplier undertakes to obtain from their sub-suppliers an undertaking to comply with these requirements and monitor compliance with them. Deviations must be agreed separately and in writing.

When the supplier intends to change a sub-supplier, the supplier must inform CT-SP. After a joint assessment of all fringe conditions and risks, the supplier shall plan the activities expected by CT-SP and carry out the required process / product releases. Supplier changes are not permitted without the written approval of CT-SP. This also applies when the supplier's production is outsourced to a contractor (plant-in-plant).

CT-SP reserves the right to carry out process releases or together with the CT-SP customer to participate in process releases after prior arrangement.

8.2 Supplier evaluation

In the interaction between product/output, market, geographical area and process, cost, quality, reliability, innovation and sustainability are essential factors according to which we pick and assess our suppliers. The performance of the supplier is assessed regularly by CT-SP.

The strategic assessment is a multidisciplinary process which includes Quality, Logistics, Purchasing, and Development and focuses on comprehensive criteria such as:

- Conformity of the delivered products (number of complaints and ppm rating);
- Certifications;
- Escalation ratings, field failures, customer failures, if any;
- Logistic delivery performance (delivery reliability / regular quantity);
- Supplier occasioned extra trips;
- Competitiveness, identification of potential cost saving;
- Cooperation and communication;
- Innovation drive.

The result of the supplier assessment affects the performance rating of the supplier within the thyssenkrupp cluster. In addition to that, CT-SP carries out risk ratings of their suppliers so that risks in respect of financial stability, delivery performance (projects and series delivery) as well as product and production technologies can be identified early.

8.3 *Supplier benchmarking, nomination*

A supplier benchmark, e.g., within a project., includes everything, from price comparison to the competition of concepts, i.e., a RFQ for a “black box” based on product specifications etc.

In order to meet the demands of the automotive industry, the capabilities of potential suppliers are rated on the basis of a catalog of criteria (tool for selecting new suppliers for CT-SP) or potential analysis according to VDA 6.3-2016.

Process audits according to VDA 6.3-2016 can also be performed as another part of the nomination and clearance process of the supplier. Audits are agreed beforehand and may also be undertaken together with the CT-SP customer.

A formal supplier nomination can be made by issuing a Letter of Intent [LOI].

Supplier benchmarking and nomination are processes in close cooperation with the respective tk cluster.

8.4 *Supplier competitiveness*

As there is a general requirement from within the thyssenkrupp cluster, CT-SP also demands from their suppliers constant efforts for improving the cost effectiveness.

This is the only way by which CT-SP, together with the supplier, can meet the demand for environmentally compatible and safe products of high quality at a competitive price/performance ratio. The supplier shall implement the following measures to improve its competitiveness:

- Identify cost saving potentials by cost analysis;
- Identify bundling and scaling effects in the tk cluster;
- Create higher cost transparency, from a clear cost break-down to transparent calculation;
- Identify cost-saving potentials by the supplier as part of constant improvement, innovation, new technologies, new sites;
- Joint workshops for cost reduction (e.g., technical savings, revision of logistics concepts, etc.).

CT-SP expects their suppliers to assist in efforts to improve cost efficiency.

Details can be obtained from CT-SP Purchasing.

9. Production preparation and series production

Content

- 9.1 Process flow chart
- 9.2 Production management plans
- 9.3 Critical processes and technologies
- 9.4 Process FMEA
- 9.5 Process analysis and process capability studies
- 9.6 Product and process monitoring, process control
- 9.7 Process monitoring and tests
- 9.8 Test equipment capability, test equipment monitoring
- 9.9 Proof of conformity, test certificates
- 9.10 Maintenance and tool management
- 9.11 Changes in the manufacturing process
- 9.12 Ensuring the production and delivery capability / emergency strategy
- 9.13 Changes of product specifications
- 9.14 Deviation approval
- 9.15 Recording of product and process data, marking and traceability
- 9.16 Requalification

9.1 Process flow chart

The supplier depicts all manufacturing steps in process flow charts. The process flow charts contain easily identifiable and clear interfaces to the supplier's sub-suppliers and to CT-SP, the process steps, the type of process control, the test scopes and the quality documentation. The supplier shall constantly update the process flow charts during the project term. Changes in the process flow must be sampled and require the release by CT-SP.

The supplier is required to develop the process flow charts in accordance with AIAG, APQP. Process flow charts are part of the PPF demonstration and shall be considered for sampling according to the presentation stage.

9.2 Production management plans

As part of the APQP process, the supplier shall prepare suitable production management plans for prototypes, pre-series production and series production.

As for content and organization of these documents, Annex A to IATF 16949:2016 shall be considered.

PLPs are part of the PPF demonstration and shall be considered for sampling according to the presentation stage.

9.3 *Critical processes and technologies*

The supplier shall identify critical processes and technologies (which shall also contain a bottleneck analysis) in its production. For that, suitable measures for obtaining the required output and process capability by detailed planning, process analysis, identification and definition of “special features”, i.e. features with particular significance to the process and important process parameters, process release for series production, process monitoring and control, instant measures in case of deviation, etc., shall be defined.

9.4 *Process FMEA*

The supplier shall analyze manufacturing processes by process FMEA. A process FMEA must consider, in particular, the safe manufacturability and the required process capability of the features with particular significance. The approach in the FMEA can be agreed between the supplier and CT-SP. Generally, however, the automotive industry standards apply. CT-SP expects from the supplier a brief and clear presentation of the FMEA results. The supplier shall permit CT-SP at least insight in the FMEA. If improvements are found, these shall be considered in the FMEA and the actions implemented.

9.5 *Process analysis and process capability studies*

To obtain and demonstrate full control of all processes / capable processes, suitable process analyses and process capability studies shall be carried out.

This applies particularly to “special features“ (also see 1.3.).

The requirements of CT-SP are the following:

- For preliminary process capability (ppk) / machine capability (cmk) at least 1.67;
- For continuing process capability (cpk) at least 1.33;
- Agreement of safety-critical features with QM CT-SP.
- For processes that cannot be demonstrated to be stable and capable, suitable action shall be taken to ensure that the requirements are met (e.g., automatic 100% testing).

The zero defect target applies equally to all features.

9.6 *Product and process monitoring, process control*

The control of the manufacturing processes must include the monitoring of all product features and process influencing parameters. This shall be achieved by suitable methods, e.g. SPC. The process parameters and product features which are the subject of control shall be defined in control plans and documented suitably.

CT-SP demands proof of stability and process capability at least for safety-critical features and other “special features“.

Prevention takes priority over fault detection.

9.7 *Process monitoring and tests*

The supplier shall focus, in the first line, on obtaining and demonstrating capable processes because zero defect target strategies cannot, as a rule, be secured by tests at reasonable cost. The supplier shall schedule and carry out suitable tests during all stages in production. The features with particular significance shall be attached special attention in the test plans. The scheduled tests shall be

documented in control plans. However, the target will always be that of minimizing the number of tests by capable processes.

As far as possible, tests should only be made for confirmation and the documented proof that the requirements are met, not for identifying deviations. The test methods and procedures (measuring basis, references, test equipment, documentation, assessment, immediate action in case of deviations, etc.) shall be agreed between the supplier and CT-SP in time.

CT-SP can take part in tests and diagnostic activities made by the supplier and the supplier's sub-supplier, have third parties authorized by CT-SP, watch such tests and activities or themselves carry out such tests and activities at the supplier's and the supplier's sub-suppliers' places or have them carried out by an authorized third party after prior agreement.

9.8 Test equipment capability, test equipment monitoring

The supplier ensures that the capability of the test equipment can be demonstrated and the latest results are known at any time. This applies particularly to:

- The suitability of the test equipment for the intended purpose;
- The accuracy and precision of the test equipment;
- The stability of the measuring equipment capability in terms of repeatability and comparability (reference: MSA), particularly for special features and features with particular significance.

The supplier organizes the monitoring of the supplier's test equipment in a manner that the capability and function of the test equipment can be demonstrated convincingly at any time.

Gage concepts shall be discussed and agreed with CT-SP as early as possible.

9.9 Proof of conformity, test certificates

The supplier shall demonstrate in suitable manner that the supplier meets the requirements of CT-SP. This should be, first and foremost, by demonstrations of process capability. On the request of CT-SP, additional test certificates (e.g., according to DIN EN 10204) and agreed test certificates shall be submitted by the supplier. It can be agreed with the QM CT-SP that certificates remain with the supplier and are archived and available to CT-SP there at any time.

9.10 Maintenance of equipment and tools

The supplier takes care, by preventive maintenance, that all tools, machines and plants are ready for use and their capability is maintained.

The documentation of machines and tools shall be managed in suitable manner, i.e., tool change and new tools shall be documented together with the internal release.

Machines and tools that are not maintained properly will cause problems. With high probability, tools and machines will wear and tear excessively due to uneven stress. That reduces the life of the tools and machines. For that reason, all machines and tools must be maintained properly. To ensure 100% availability of all production resources, preventive repairs with regular maintenance shall be carried out and documented in suitable repair and maintenance plans. For further details, see the chapter on tools.

9.11 Changes in the manufacturing process

Changes in the supplier's manufacturing process that can affect, for example, the properties of the product (e.g., geometry, mechanical properties, strength, durability, machineability, etc.) shall be communicated to CT-SP before they are introduced. After a joint assessment of all fringe conditions

and risks, the supplier shall plan and implement the activities demanded by CT-SP (also see chapter 1.6).

CT-SP reserves the right to accept and release such changes after prior agreement and to treat cost by the cause principle.

9.12 Ensuring the production and delivery capability / emergency strategy

The supplier shall define suitable measures which ensure 100% of the supplier's production and delivery capability.

This includes an emergency strategy for unforeseen events:

- Tool breakage / machine failure
- Fire
- Flood
- Strike
- Power failure
- Loss of transport
- etc.

The supplier shall develop the required emergency plans to ensure the availability of products to CT-SP.

9.13 Changes of product specifications

Changes to the product must not be applied by the supplier unless with the written approval of CT-SP. Changes initiated by CT-SP during series production will be communicated by an appropriate written request. The supplier shall confirm the request and pass on all requirements to the involved sub-suppliers. With reference to the drawings index, the supplier shall make sure that the most recent drawings and specifications from CT-SP are available in each case.

The discontinuation of the old products and the introduction of the modified product version shall be marked clearly and captively on all transport units by the supplier.

The type of marking shall automatically be agreed with the competent planning engineer and with QM CT-SP. CT-SP reserves the right to make complaints in cases of goods not clearly marked and charge all cost in this connection (such as, e.g., loss of production, increased administrative expenditure, return of goods, etc.) to the supplier.

9.14 Deviation approval

The supplier shall deliver all goods in conformity with drawings and specifications. If the supplier should not be able to comply with the requirement for some time, the supplier can make a written request to CT-SP to approve of deviations. Deviations can only be approved if provided the safety, function, durability and ease of assembly of the parts are not impaired. A deviation approval in order to be effective always needs the prior written approval of CT-SP and is limited to a certain number of parts or a certain period of delivery.

9.15 Recording of product and process data, marking and traceability

The supplier shall ensure the traceability of all parts and shall determine and record related product and process data. The recorded data shall make it possible to:

- assign production conditions and features of the product (actual values) to production and delivery batches;
- reconstruct chains of causes when a problem occurs;

- identify the affected units.

It is the supplier's duty, based on experience (know-how of product and processes), to define suitable marking methods and data for traceability, prepare appropriate records and archive data.

If marking is part-bound (e.g., date timer, production calendar), the supplier shall take care that the markings on all parts are legible and current.

9.16 *Requalification*

The supplier ensures that the requalification test according to ISO TS (IATF) 16949 is carried out.

Type, extent and frequency of requalification tests such as, e.g.:

- dimension tests;
- material certification, corrosion tests;
- certification of the operational stability, endurance tests;

shall be agreed with the QM and the Development of CT-SP, documented and archived suitably without solicitation. The documentation must be available at any time and shall be sent on request.

The purpose of the requalification by the supplier is to demonstrate that all products comply with the applicable laws, specifications (product specification, drawing) and the released samples.

10. Logistics

To ensure the smooth flow of parts, clear agreement must be made between CT-SP and the supplier. The agreement should preferably be defined in a provision concept and/or a TVL agreement for each CT-SP production facility. The agreement will then apply to the respective CT-SP production facility together the requirements catalog.

If extra trips are necessary to ensure the constant flow of parts the supplier shall inform the competent CT-SP planning engineer without delay.

The following points apply over and above any individual arrangement.

Content

- 10.1 Logistics concepts
- 10.2 Packaging
- 10.3 Goods marking of series deliveries
- 10.4 Order confirmation
- 10.5 Series call-offs
- 10.6 Shipments / carriers
- 10.7 Safety stock

10.1 Logistics concepts

The supplier shall define a distribution logistics concept. The concept shall be agreed with CT-SP and shall be improved by the supplier as required by the project progress. The supplier shall observe fundamental logistics aspects such as traceability, FIFO (first in - first out), etc.

The logistics concept shall be assessed systematically for possible risks, e.g., by a logistics FMEA. The supplier must ensure that all delivery obligations are met 100% in terms of quantity and time.

10.2 Packaging

The supplier shall agree the type of packaging with the respective technical departments of CT-SP (e.g., lattice box, exchange container, Euro pallet, etc.).

Unless the sub-packaging is specified in the packaging specifications, the supplier defines the sub-packaging. The sub-packaging shall ensure that:

- the goods are protected from damage, contamination and environmental conditions that might have a negative effect on the goods;
- the packaging complies with the statutory provisions of environmental protection;
- any corrosion of the goods is excluded;
- electrostatic charging of the goods is avoided;
- the containers / packages can be stored and stacked.

The supplier is required to agree a suitable packaging and marking with CT-SP Logistics before series delivery starts.

The still pending release of the packaging does not release the supplier from the obligation to deliver the goods.

10.3 Goods marking and series deliveries

Series delivery goods shall be marked such that

- the goods can clearly be identified;
- the traceability of the goods is ensured;
- the markings comply with the requirements (e.g., VDA label);
- delivery details are taken over from the order / the logistics call;
- standards of the countries through which the goods travel are complied with.

10.4 Order confirmation

The supplier must ensure that all delivery obligations are met 100 %. The supplier shall confirm the quantity, deadlines and change status of all orders. If required, an ASN (Advanced Shipment Notice) shall be prepared before the delivery and sent to CT-SP Logistics on the delivery date. The ASN should contain information such as the CT-SP drawings / part number, delivered quantity, carrier's address, consignment note number and order number.

10.5 Series call-offs

CT-SP Logistics will issue delivery call-offs for production materials with weekly or two-weekly updates. If appropriate, data transfer by EDI may be demanded.

When shipments are made directly to the respective CT-SP factory, that shall be the basis on which quantities and deadlines are calculated. The delivery dates are the dates by which the goods must be received by CT-SP and are binding on the supplier.

If the supplier's goods are delivered to a consignment warehouse, the delivery call-offs are the basis on which the supplier can schedule production. Details will be defined in a separate agreement. CT-SP expects that the supplier responds with flexibility to changes in call-offs and orders.

Specific measures should be defined to compensate for fluctuations, e.g.:

- safety stocks of finished parts and primary materials;
- flexible control of manufacture for quick response;
- special shifts.

The supplier shall be able to respond at any time to order volume fluctuations of $\pm 15\%$.

10.6 Shipments / carriers

All deliveries by the supplier for which CT-SP is the freight payer must be transported by CT-SP approved carriers. More information is available from the responsible logistics manager or the project manager. The supplier is responsible to contact the approved carriers and to work out a logistics plan for shipments to CT-SP.

10.7 Safety stock

To ensure the supplier's ability to deliver at any time, the supplier, agreement with CT-SP Logistics or the project manager, shall maintain a defined safety stock of finished products.

11. Complaint management

Content

- 11.1 General complaint management
- 11.2 Complaint processing, problem solution methods
- 11.3 Escalation management
- 11.4 Potential defects and deviations prior to delivery to CT-SP
- 11.4 Financial protection

11.1 *General complaint management*

CT-SP shall inform the supplier without delay and in writing of all deviations and complaints. Defects may be found during incoming goods inspections, in production or with the end customer. The information can be submitted as test report, advance information or by e-mail or telephone.

In case of deviations, the supplier is obliged within 24 hours to open an 8-D report and either

- deliver perfect replacement goods;
- sort or cause sorting of the goods at the supplier's cost;
- obtain a special release.

The required special measures depend on the degree of their urgency and shall be agreed with the QM CT-SP. If the supplier cannot be contacted (e.g. during night shift or at a weekend), CT-SP will take fault repair methods independently and agree on further actions when the supplier is available again.

If defective parts are only detected at the CT-SP customer's end, quick response by the supplier is absolutely essential for cost containment. Required actions shall be agreed with the QM CT-SP without delay. These will be agreed by the QM CT-SP with the OE customer.

Contact with the CT-SP Logistics shall be made without solicitation to discuss details of quantity and time deadlines and agree on any other actions to ensure the supply capability of CT-SP.

CT-SP will charge the cost accrued in connection with such special actions to the supplier on the cost-by-cause principle. Expenses actually incurred will be billed. The cost may vary from CT-SP site to site.

The quantity of bad products will be considered in the ppm score for the supplier evaluation.

11.2 *Complaint processing, problem solution methods*

After every complaint the supplier shall define suitable measures to avoid repetition of the same defect and submit the proposal to CT-SP in time. The causes shall be analyzed by common problem-solving techniques such as Ishikawa or 5-Why.

Special markings of parts and/or transport containers may only be discarded after release by CT-SP.

CT-SP reserves the right to check the efficiency of the actions taken at the supplier's place.

11.3 *Escalation management*

If a defect cannot be excluded reliably, the supplier must take further actions under the escalation management rules. These rules describe clearly defined escalation stages within the complaints handling management with the supplier. Depending on the effectiveness of the agreed actions (improvement of the delivery performance), the response time of the supplier, the quality of the

information and the supply situation with CT-SP, etc., the different escalation stages are activated. Basically, thyssenkrupp Federn und Stabilisatoren reserves the right to draw on external resources at the supplier's expense to avoid further escalation, speed up the implementation of effective measures and finally secure that OEM customers are delivered with the products ordered. All that proceeds on the basis of holistic cost minimization.

Detailed information is available from the QM CT-SP.

The activation of an escalation stage with CT-SP is communicated directly to the respective tk Cluster.

11.4 Potential defects and deviations prior to delivery to CT-SP

If a potential defect or deviation of the agreed product is detected or presumed prior to or after shipment but prior to delivery (passing of risk) to CT-SP, the supplier is obliged to respond instantly (voluntary declaration).

In any case, the following actions must be ensured by the supplier:

- Information to the QM CT-SP about the type and scope of the presumed / detected defect and/or deviation.
- This also applies in case of delayed or non-arrival of shipments as well as excess or short delivery. The information and the measures intended for securing the production capability of CT-SP shall be reported to CT-SP Planning without delay.
- Stoppage of the delivery and shipment and immediate full defect-free replacement within the agreed delivery periods.

The supplier is required to ensure full traceability at any time and to submit the corresponding documentation on request. If no immediate defect-free replacement is possible within the agreed delivery periods, a written application shall be made to QM CT-SP to agree to a deviation for limited batch sizes and to prevent shipment until the confirmation from CT-SP is available.

CT-SP reserves the right to charge the supplier with the cost accruing in connection with the above actions. A voluntary declaration will not be considered for the supplier assessment.

11.5 Financial protection

CT-SP demands from all suppliers to protect themselves from damages claimed by CT-SP or their customers by taking out an appropriate insurance.

12. Tools

Content

- 12.1 Financial assistance towards tools
- 12.2 Maintenance and custody
- 12.3 Tool changes
- 12.4 Duty to return
- 12.5 Restrictions on use/markings
- 12.6 Tool insurance
- 12.7 Liability

12.1 Financial assistance for tools

For new parts, CT-SP grants financial assistance for tools only as non-recurrent payment provided the money is refunded by the CT-SP customers. In all other cases, financial assistance for tools is available for a jointly agreed number of parts within the part price. Unless agreed otherwise in individual contracts, the title to the tools shall pass to CT-SP to the extent to which CT-SP takes over part of the tool cost by non-recurrent or recurrent payment. The transfer is replaced by the fact that after acceptance of the initial sample the supplier has free usage of the tools and CT-SP acquires the indirect title to the tools by way of that usage contract. Financial assistance for other production resources required for making the parts or for the cost of maintenance and repair will generally not be provided. Tool change cost will be billed to the party causing the cost.

12.2 Maintenance and custody

Generally, all tools shall be stored properly and clean and protected from any kind of damage. The supplier shall ensure the constant defect-free functional availability of the tools for the purpose of defect-free production and delivery by providing regular maintenance and repair at supplier's cost. This includes all expenses for maintaining the functional readiness and for repairing all defects and damage as well as expenses for changes and impairment as a consequence of the use of the tools. The supplier shall demonstrate that by a maintenance schedule, which CT-SP shall be permitted to inspect on request.

Unless agreed otherwise (e.g., manufacture of all-time need), the supplier is obliged to store tools and manufacturing equipment in a proper and clean state and keep the tools ready for use and ensure the delivery of spare parts for a period of 15 years after the end of series production. These requirements also apply to tools and manufacturing equipment for which no financial assistance is provided. Before the tools and other manufacturing equipment can be scrapped, the supplier is obliged to obtain a scrapping permission from CT-SP because vintage car market needs may have to be delivered by alternate or one-time production, etc., before the equipment is scrapped.

12.3 Tool changes

Tool changes must not be made unless after prior written approval of CT-SP. If tool changes are required due to changes of the technical specifications by CT-SP, at first a written change proposal shall be submitted.

12.4 Duty to return

If demanded by CT-SP, the supplier is obliged to return the tools in the property of CT-SP or of CT-SP customers at any time and in good technical state.

12.5 Restrictions on use / marking

Tools for which financial assistance is provided (including payback through the part price) must not be used by the supplier for any purpose other than meeting the delivery obligations to CT-SP and shall be marked as being the property of the owner. The owner may be CT-SP or the CT-SP customer. Unless agreed otherwise, the owner, the part name, the part number, the construction date and where applicable the project to which the tool relates shall be marked on the part permanently and legibly. If owner nameplates are provided by OEMs, these shall be used, the captive attachment documented by photograph and sent to CT-SP.

If the property of CT-SP or their customers is at risk, particularly by attachment, confiscation, insolvency proceedings, the supplier shall inform CT-SP of this without delay. In any case, the enforcing body shall be made aware of the ownership of CT-SP or their customers without delay. At the same time the supplier shall send copies of the enforcement documents to CT-SP.

12.6 Tool insurance

The supplier is obliged to insure tools for which the customer has provided financial assistance sufficiently against fire, theft, explosion, storm, water damage, etc. and to provide proof of such insurance.

12.7 Liability

The supplier is responsible for all defects, damage, changes or impairments of the tools. The supplier is not responsible to the extent to which defects, damage, changes or impairments of tools are due to force majeure.

The supplier must ensure that the tools do not cause any personal or material damage. The supplier keeps CT-SP free of any damage claims in this regard.

13. Annex

Content

- 13.1 Standards cited
- 13.2 List of abbreviations
- 13.3 Change history of the “Requirements catalog for suppliers“

13.1 Standards cited

- AAV End-of-life vehicle directive
- CQI-9 Assessment of heat treatment systems
- CQI-11 Assessment of systems for surface treatment by plating
- CQI-12 Assessment of surface coating systems
- DIN EN ISO 14001 Environment management system requirements
- DIN EN ISO 50001 Energy management system requirements
- DIN EN ISO 9001 Quality management system requirements
- DIN EN ISO/IEC 17025 Requirements for accreditation of test laboratories
- DIN EN 10204 Types of test certificates
- ISO/TS 16949 Quality management system requirements
- IATF 16949 Quality management system requirements (new)
- VDA volume 1 Documentation and archiving
- VDA volume 2 Production process and product release PPF
- VDA volume 6 part 3 Process audit

(Unless agreed otherwise, documents cited always refer to the latest, most recent version)

13.2 List of abbreviations

AAV	End-of-life Vehicle Directive
AIAG	Automotive Industry Action Group
APQP	Advanced Product Quality Planning
ASN	Advanced shipment notice
CAD	Computer Aided Design
CC / SC	Special features
CQI	Continuous Quality Improvement
CoC	thyssenkrupp Supplier Code of Conduct
DFMA	Design for manufacturing and assembly
DoE	Design of Experiment
DVP	Design Verification Plan
EDI	Electronic Data Interchange
EMPB	Initial sample test report
ET	Original spare part
FEM	Finite Elements Method (FEA)
FiFo	First in - First out
FMEA	Failure Modes and Effects Analysis
GADSL	Global Automotive Declarable Substance List
i.O. / n.i.O.	okay (good) / not okay (bad)
IMDS	International Material Data System
KVP	Continuous Improvement Process
LOI	Letter of Intent
MSDS	Material Safety Data Sheet

MSA	Measuring System Analysis
OEM	Original Equipment Manufacturer
PLP	Production control pan
PPF	Production process and product release
PPAP	Production Part Approval Process
ppm	parts per million
PSB	Product safety officer
QM	Quality management
QSV	Quality assurance agreement
QuEST	Qualification, Escalation and Supplier Targeting
REACH	Registration, Evaluation, Authorization and Registration of Chemicals
RPZ	Risk priority index
SPC	Statistical Process Controlling
STA	Supplier Technical Assistant
TVL	Parts supply depot
VDA	Verband der Automobilindustrie
WE / WA	incoming goods / outgoing goods
8-D Report	Systematic problem-solving Q tool

13.3 Change history of the “Requirements catalog for suppliers“

Based on BILSTEIN – requirements catalog on suppliers (rev. 4, January 2011)

Change status	Date	Changes
Release 0	December 2011	Original release
Release 1	May 2014	Changed the corporate abbreviation from TKFS to CT-SP; Added energy management; Added conflict materials; Made several editorial changes
Release 2	September 2017	Added IATF 16949 requirements Added Product safety officer (PSB) Added process specific audits Added tk code of conduct requirement Added requirements from the tk cluster organization Made several editorial changes New corporate design Added preamble

Components Technology
Springs & Stabilizers (CT-SP)

thyssenkrupp Federn and Stabilisatoren GmbH
Oeger Str. 85
D-58119 Hagen-Hohenlimburg
P: +49 2334 5049 - 0
www.thyssenkrupp-springs-stabilizers.com