CLEPA
European Association of Automotive Suppliers

Warranty principles in the automotive industry

Written by the CLEPA Warranty expert group

Contents

Warrant as an instrument to achieving agreeable relationships

This paper is a statement on what automotive suppliers consider as the most efficient way of managing Warranty. CLEPA considers that Warranty primarily should be used as an instrument to improve the quality and the durability of products. This paper has been drafted to provide a basis for fruitful discussions and agreeable relationships between the OEMs, Tier1s and suppliers throughout the automotive industry.

This paper is not binding and it does not make any recommendations regarding the use of specific Warranty Terms and Conditions. These terms must be negotiated individually and independently between each CLEPA member and its customers and suppliers.

This paper does not discuss the terms and costs for a vehicle recall action or service campaign since this is not a warranty issue.

1. Warranty principles and issues

- In order to ensure that clear rules are in place once a warranty issue arises, it is important that warranty agreements between the parties are connected to, and finalised as part of, the contract.

- Warranty agreements should be driven by the **objective to ensure quality, reliability improvement and early problem resolution** and should not primarily be used as a financial cost recovery process. The involvement of third parties who manage the warranty process and whose reimbursement is based on financial recovery should, therefore, be avoided.

- Warranty agreements should be **clear and unambiguous.**

- If **extended warranties**, over and above the customer warranty sold to the consumer or provided by the dealer organisation through an insurer, shall be extended to the supplier, this should be stated expressly in the warranty agreement.

- To avoid disputes about the validity of changes in warranty terms and conditions, the warranty agreement should provide that such changes are to be agreed mutually between the parties in writing.

- Disputes about the scope of the supplier's warranty obligations can be avoided by describing, in the warranty agreement, the specific product always together with the application and the proper use.

- The warranty agreement should contain a **clear definition of a warranty case** (e.g., a failure to meet the agreed specification, where such failure has caused a defect in the product delivered).

- The warranty agreement should specify when the **warranty period** starts (e.g., from the date of delivery of the product to the manufacturer or on the date of registration/ change of ownership). It is also useful to clarify in the agreement whether the maximum warranty includes the period between the delivery of the product and the date of registration or change of ownership.

- Supportive and **open communication, together with fairness** between all parties, is required to deliver effective root cause analysis and timely implementation of solutions.

2. Warranty process

This chapter has taken into consideration the official publications from AIAG-CQI 14 as well as the VDA field failure analysis procedure.[1]

- **Availability of warranty returns** – customers' commitment to collect suspect and failed warranty parts and make these available to the Supplier to undertake analysis and reporting. The warranty parts must be returned regularly and in a timely manner (which should be compatible with timelines used in the industry) and in sufficient quantities to form a statistically significant unfiltered representative sample of repairs done in the market. If required and where applicable, matching parts should be provided in order to identify warranty failure modes to enable corrective actions.

- **Availability of warranty data** – In order to complete root cause analysis, additional information may be required with respect to the application of the suspect defective part and the environment within the system. In some circumstances, vehicle service history and changes to vehicles and applications should be available to understand the circumstances of the defect and the real root cause.

- **Corrective action implementation** – The customer and supplier shall take prompt and effective action on concerns they are responsible.

- **Information from dealers** – It is necessary to make correct and complete information available to Suppliers via customers in order to understand the circumstances of the defect and the real root cause of the failure.

- **Access to dealers** in conjunction with the OEM is not the norm but can be most

[1] Released before this document

helpful to find the root cause for removal of O.K. parts after analyses by changing the service instructions to the dealers. but a proper and correct diagnosis is required in order to achieve a 'first time fix', minimise warranty repair costs, reduce unnecessary removals, minimise No Trouble Found (NTF) and assist in root cause investigation.[2]

- **Supplier reporting on warranty parts** – The supplier shall analyse and report the returned parts. Problem acknowledgement and corrective actions are to be verified where applicable. Suppliers are required to report findings of an analysis of warranty parts via input into specific recording systems as agreed with the customer. Case by case. Depends on the complexity of the supply chain. Majority of case, can be address in 20 working days, longer lead time depending on the complexity of the products.

- To improve the efficiency of the warranty analysis, suppliers need access to the relevant data and potentially parts. (e.g. DTC and surrounding information: Defect trouble code)

3. Warranty data

- **Warranty data management introduction** should be made available on a digital basis to Suppliers in a timely manner. Suppliers should have full access to warranty data held by the OEM.

- It is desirable that **access to warranty data is made available free of charge** as it is a prerequisite to observe product behaviour in the field. If the customer wishes to charge the supplier for granting access to warranty data held by it, the Warranty Agreement should state this clearly and should specify the level of fees that the customer can charge.

- To facilitate complete root cause analysis **warranty data must be comprehensive, consistent, uniform and accurate** to facilitate effective warranty problem solving and should include historical warranty data and associated additional data for example vehicle volumes etc.

- To facilitate rapid data analysis, **defect coding should be as specific as possible** and supported by the written description (verbatim). It is therefore beneficial to harmonise warranty data exchange between Suppliers and Customers through the development of common data formats/standards.

- Data on parts not returned to the supplier should be provided on a monthly basis.

[2] O.K. parts are No Trouble Found (NTF) parts

4. Warranty management

4.1. Supplier warranty period

- Warranty agreements are necessary to define, at a minimum: warranty period; warranty failure criteria and cost elements.

- Quality/Reliability (Q/R) targets do not define warranty period. The warranty period (time and/or mileage) is as stated in the warranty agreement. To establish separately agreed Q/R targets between the supplier and the OEM, and to achieve a reliability/confidence level compatible with the targets, there should be a reference to the design (i.e. materials, technical solution, interfaces, environment etc.). Q/R targets and associated reliability/confidence levels are typically demonstrated in an agreed validation program.

- The Directive 1999/44/EC (May 25, 1999) applies only to sales to consumers. Companies are not consumers. The mandatory 2 years warranty period applies only to the relationship between the consumer and the seller. In agreements between the parties of the supply chain, this period can be reduced by agreement.

4.2. Cost structure breakdown

- The warranty agreement should specify how the total warranty costs and the different cost elements are calculated.

- **Parts price** – Unless agreed otherwise, this is the supplier's selling price to the customer.

- **Labour** – The agreement should state the agreed labour rates and the agreed Remove & Refit time. The parties can agree to limit Remove & Refit time to the time of the 'typical' application.

- **Handling** – The agreement should state the agreed percentage/amount of the parts price. The parties can agree that this percentage/amount should be based on standard proven logistics and administrative costs.

- **Consequential costs**[3] – The agreement should state to what extent consequential costs can be included. The parties can agree to limit the costs that can be included

[3] The terms consequential, direct and foreseeable are not as used in terms of liability laws. In the context of this paper these terms are related to warranty costs.

to direct and foreseeable costs and/or to an agreed cap.

4.3. Financial resolution of claims

- **Warranty costs** – Unless agreed otherwise between the parties, customers are required to verify the validity and consistency of warranty expenses reimbursed through its network and to make available verification paperwork to suppliers on request.

- **Determining supplier responsibility** – To determine supplier responsibilities, the customer shall forward a statistically relevant quantity of exchanged parts representing the total claimed population.

5. Services

It is advisable that the warranty agreement also sets out any specific requirements regarding the provision of warranty services like response times, replacements, etc.

General remarks

Experience has shown that the application of the following principles typically allows for a speedy and effective resolution of warranty cases:

- Costs to be paid by the supplier take into account the supplier's economic situation, the nature, scope and duration of the business relationship.
- Possible causative or responsible contributions by the purchaser and a particularly disadvantageous situation of installation of the suppliers are taken into due consideration.
- Damages, cost and expenditures which shall be paid by the supplier are proportional to the value of part being delivered.
- Warranty costs are visible and transparent throughout the supply chain.
- Any debiting and or cost deduction are subject to agreement between the parties.
- To ensure the trust of the customer into the analysis system of the supplier it is important to agree on the analysis process (e.g. VDA Field Failure Analysis or AIAG CQI 14). Therefore, no cost-sharing should be agreed before a joint NTF exercise is accomplished to eliminate failures within the process or system.

For more information, please contact: **m.hauke@clepa.be**

About CLEPA

CLEPA, the European Association of Automotive Suppliers, represents over 3,000 companies supplying state-of-the-art components and innovative technologies for safe, smart, and sustainable mobility.

CLEPA brings together over 120 global suppliers of car parts, systems, and modules and more than 20 national trade associations and European sector associations. CLEPA is the voice of the EU automotive supplier industry linking the sector to policy makers.

The automotive sector accounts for **30% of R&D** in the EU, making it the number one investor.

European automotive suppliers invest over **30 billion euros** yearly in research and development.

Automotive suppliers register over **39,000 new patents** each year.

Automotive suppliers in Europe generate **1.7 million** direct jobs.

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Warranty handling in the automotive industry

Written by the CLEPA Warranty expert group

Contents

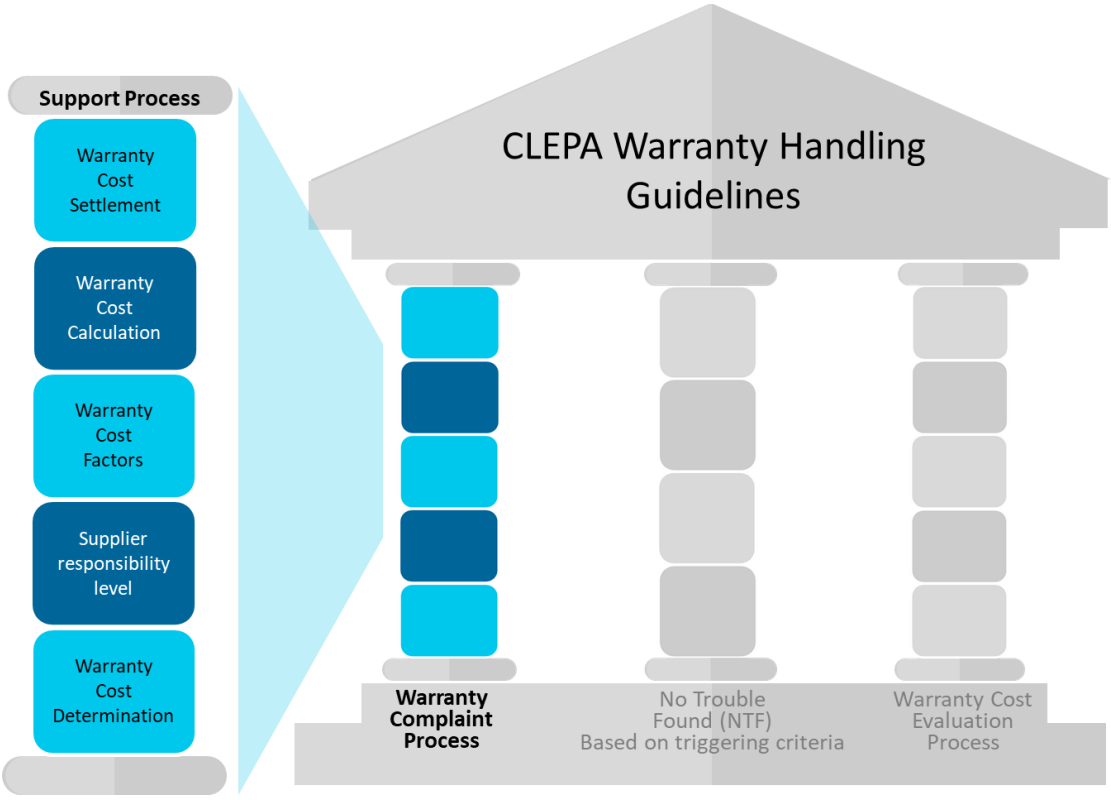
Warrant handling as an instrument to achieving agreeable relationships

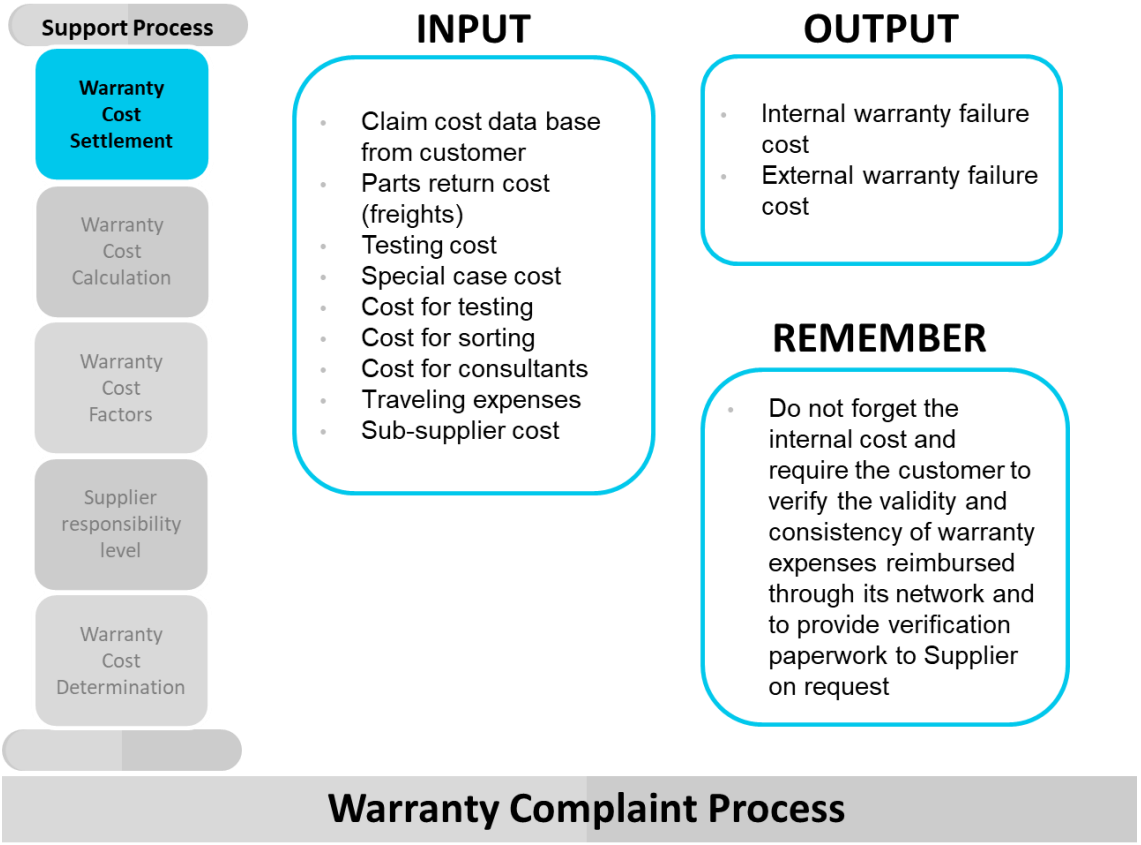
This paper is a statement on what automotive suppliers consider as the most efficient way of handling Warranty. CLEPA considers that Warranty primarily should be used as an instrument to improve the quality and the durability of products. This paper has been drafted to define the process map with all the essential inputs and outputs that may be taken into consideration in order to improve customer and consumer satisfaction, reduce waste and improve efficiency.

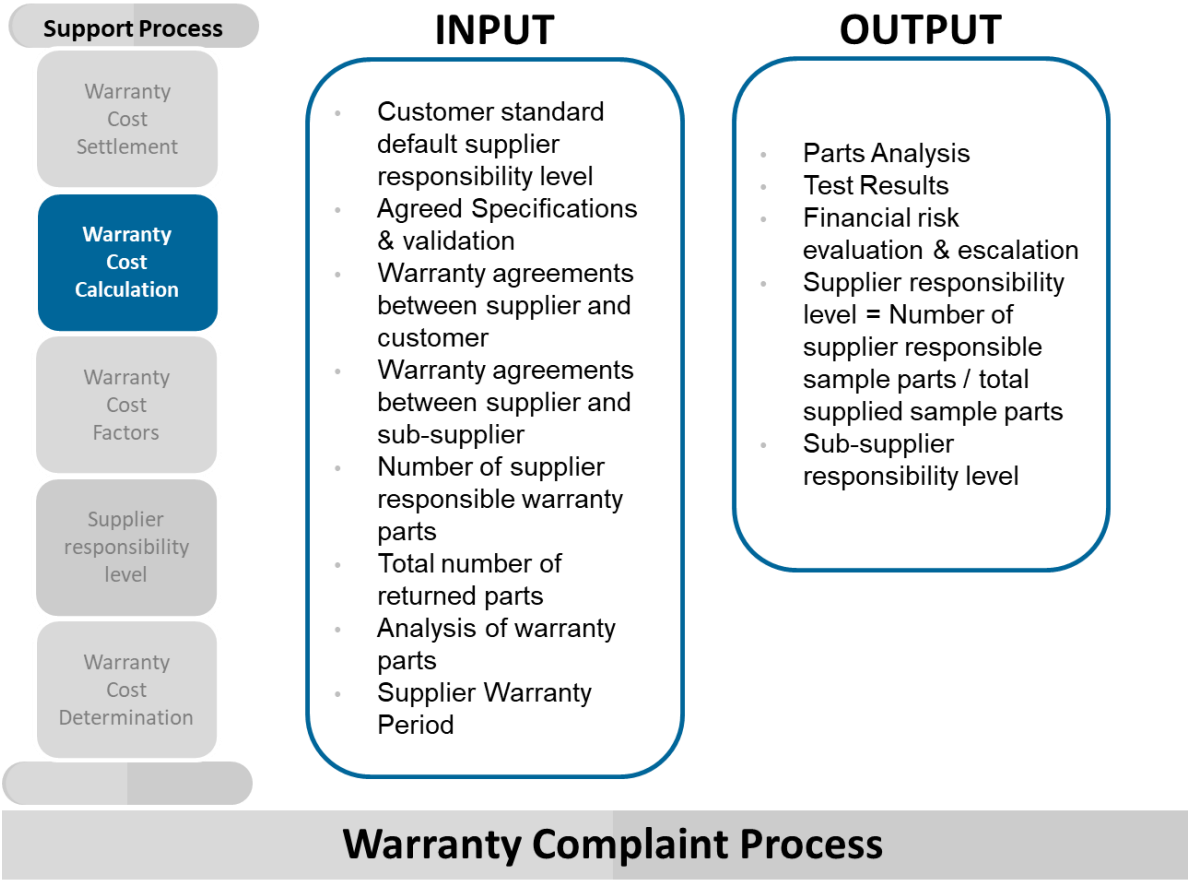
This paper is not binding, and it does not make any recommendations regarding the use of specific Warranty Handling Possesses or Terms and Conditions. These must be negotiated individually and independently between each CLEPA member and its customers and suppliers.

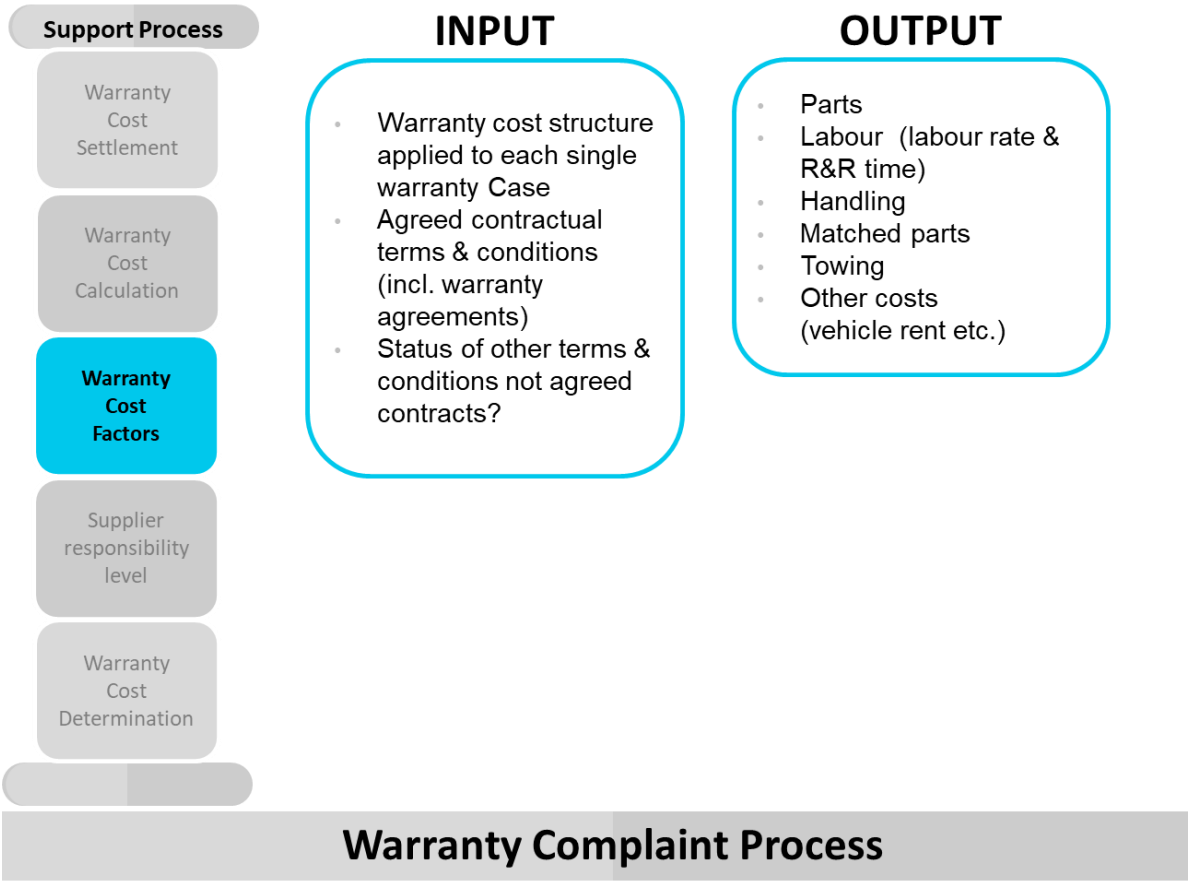
This paper does not discuss the terms and costs for a vehicle recall action or service campaign since this is not a warranty issue.

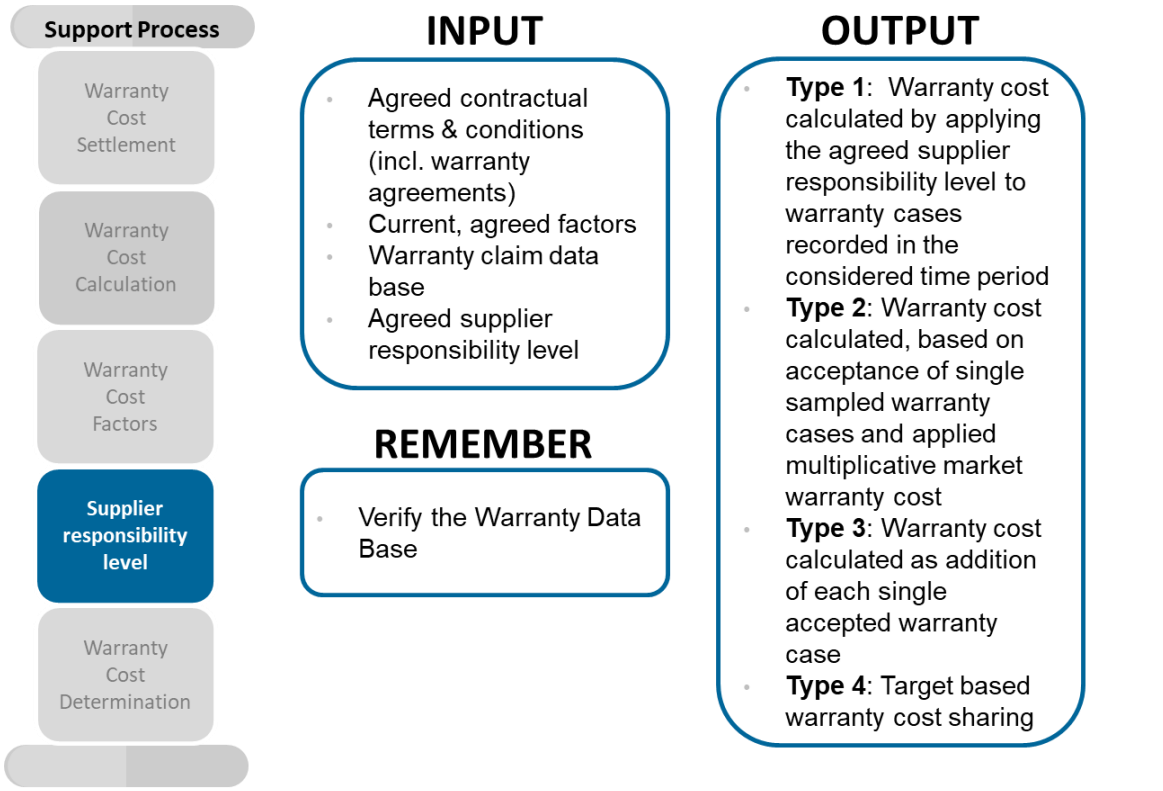
1. Warranty complaint process

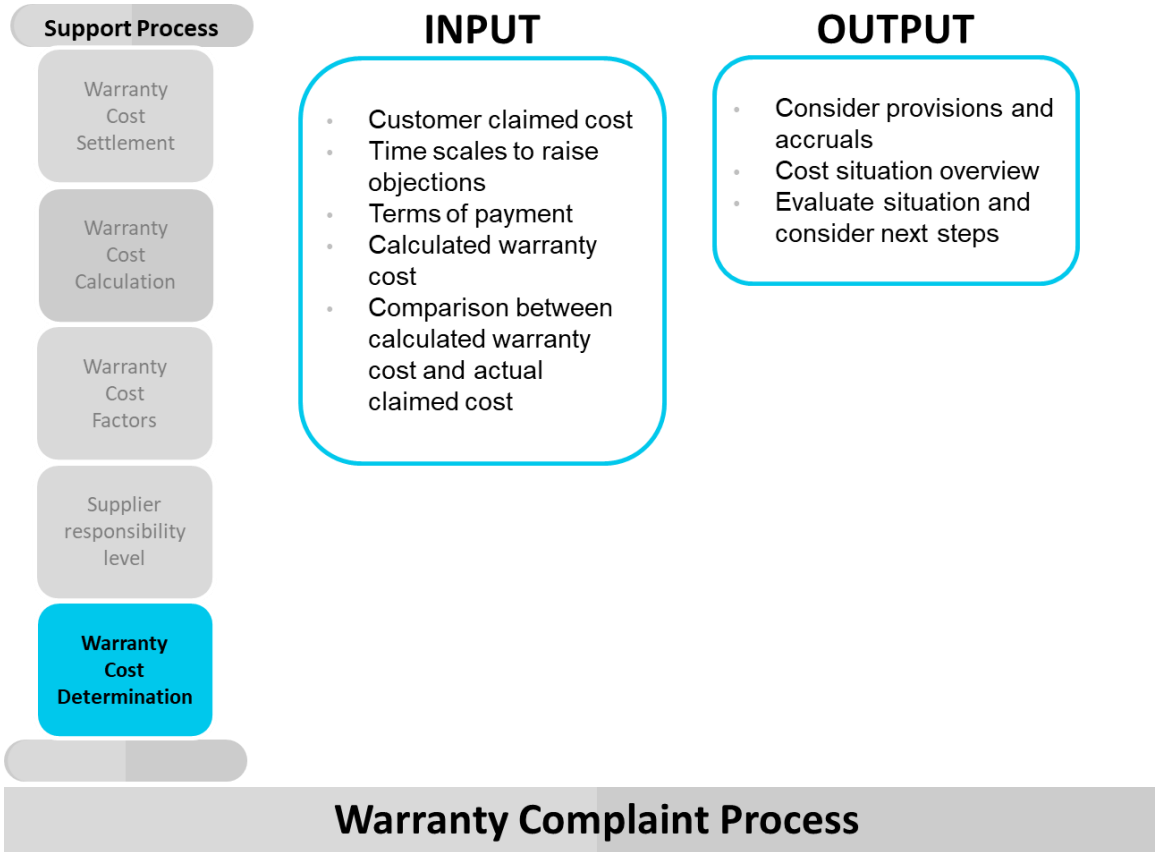




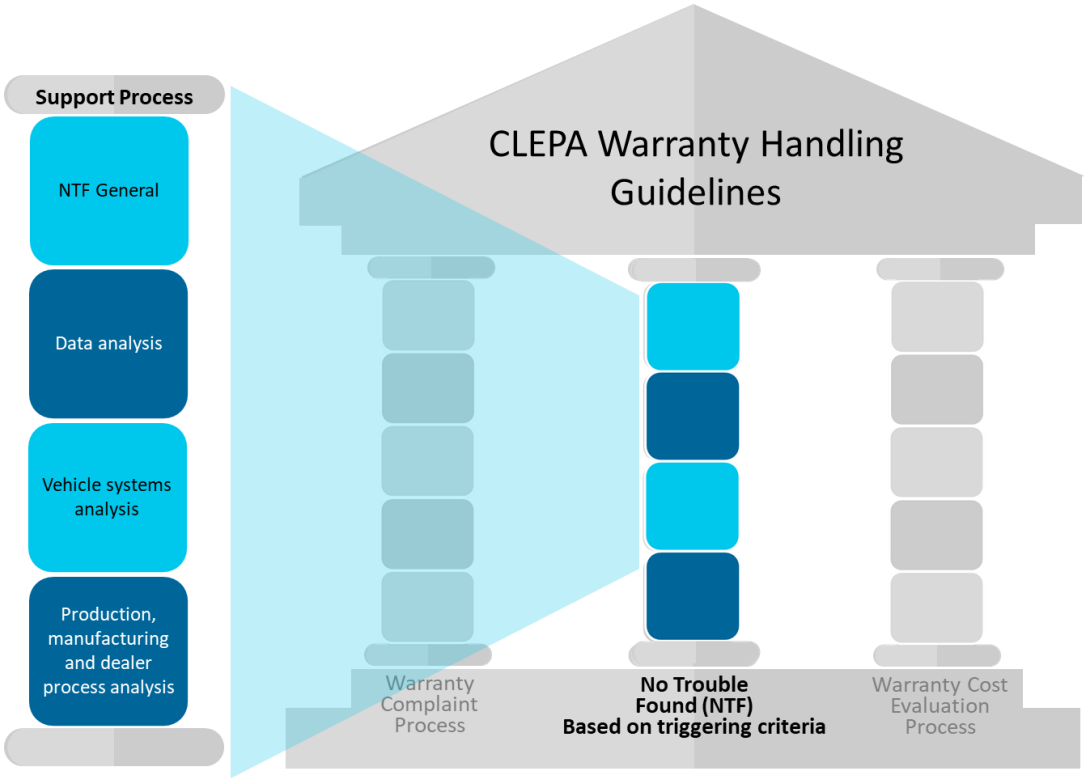

Support Process
Warranty Cost Settlement
Warranty Cost Calculation
Warranty Cost Factors
Supplier responsibility level
Warranty Cost Determination
INPUT
Customer standard default supplier responsibility level
Agreed Specifications & validation
Warranty agreements between supplier and customer
Warranty agreements between supplier and sub-supplier
Number of supplier responsible warranty parts
Total number of returned parts
Analysis of warranty parts
Supplier Warranty Period
OUTPUT
Parts Analysis
Test Results
Financial risk evaluation & escalation
Supplier responsibility level = Number of supplier responsible sample parts / total supplied sample parts
Sub-supplier responsibility level
Warranty Complaint Process


Support Process
Warranty Cost Settlement
Warranty Cost Calculation
Warranty Cost Factors
Supplier responsibility level
Warranty Cost Determination
INPUT
Warranty cost structure applied to each single warranty Case
Agreed contractual terms & conditions (incl. warranty agreements)
Status of other terms & conditions not agreed contracts?
OUTPUT
Parts
Labour (labour rate & R&R time)
Handling
Matched parts
Towing
Other costs (vehicle rent etc.)
Warranty Complaint Process

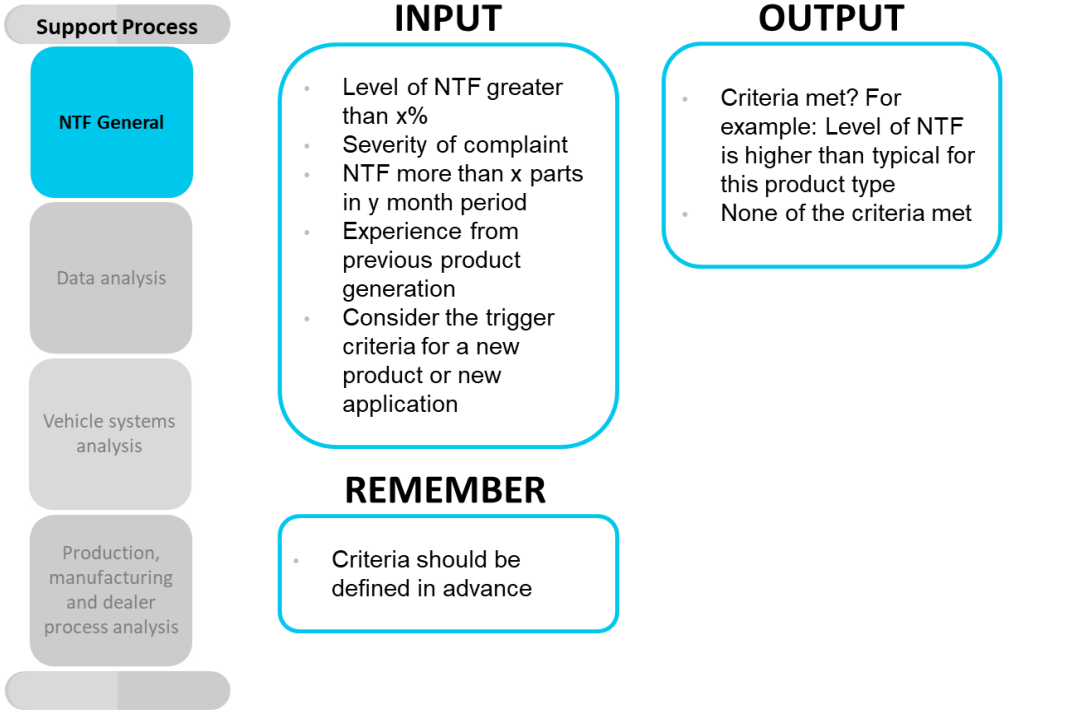

Support Process
Warranty Cost Settlement
Warranty Cost Calculation
Warranty Cost Factors
Supplier responsibility level
Warranty Cost Determination
INPUT
Agreed contractual terms & conditions (incl. warranty agreements)
Current, agreed factors
Warranty claim data base
Agreed supplier responsibility level
REMEMBER
Verify the Warranty Data Base
OUTPUT
Type 1: Warranty cost calculated by applying the agreed supplier responsibility level to warranty cases recorded in the considered time period
Type 2: Warranty cost calculated, based on acceptance of single sampled warranty cases and applied multiplicative market warranty cost
Type 3: Warranty cost calculated as addition of each single accepted warranty case
Type 4: Target based warranty cost sharing
Warranty Complaint Process


Support Process
Warranty Cost Settlement
Warranty Cost Calculation
Warranty Cost Factors
Supplier responsibility level
Warranty Cost Determination
INPUT
Customer claimed cost
Time scales to raise objections
Terms of payment
Calculated warranty cost
Comparison between calculated warranty cost and actual claimed cost
OUTPUT
Consider provisions and accruals
Cost situation overview
Evaluate situation and consider next steps
Warranty Complaint Process

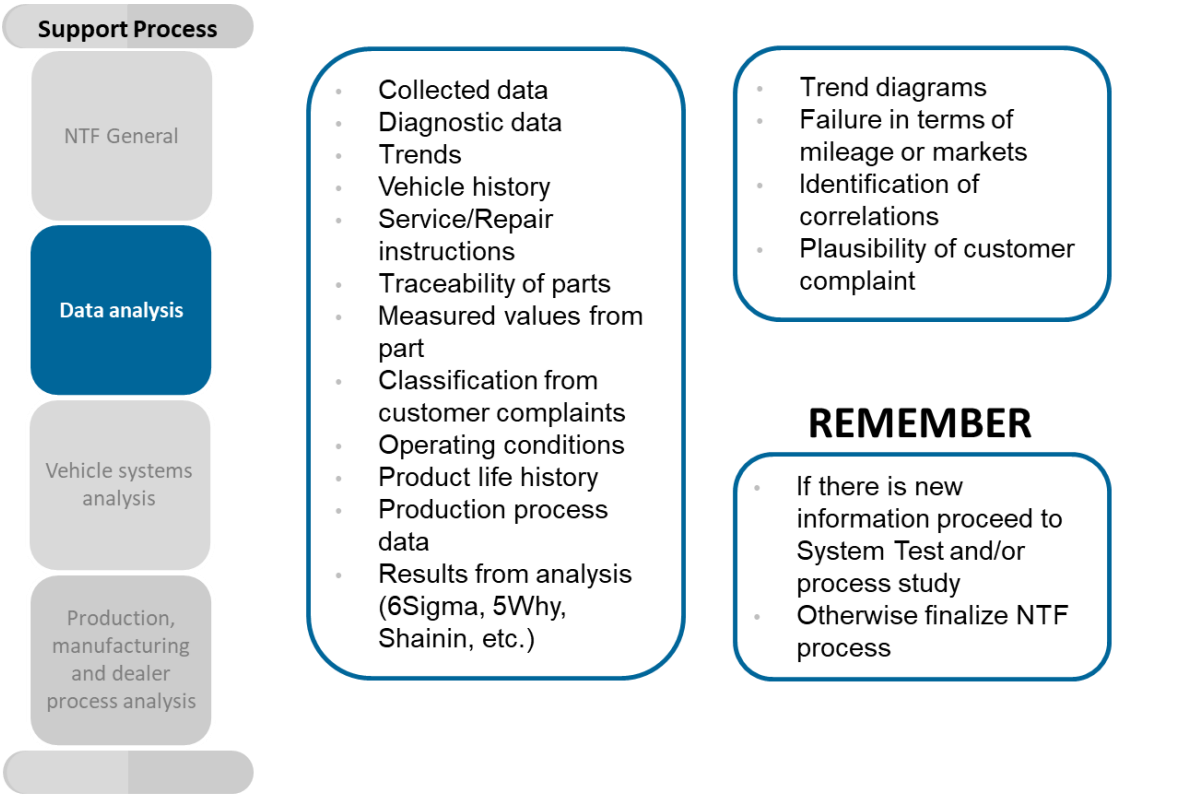
2. No Trouble Found (NTF) based on triggering criteria

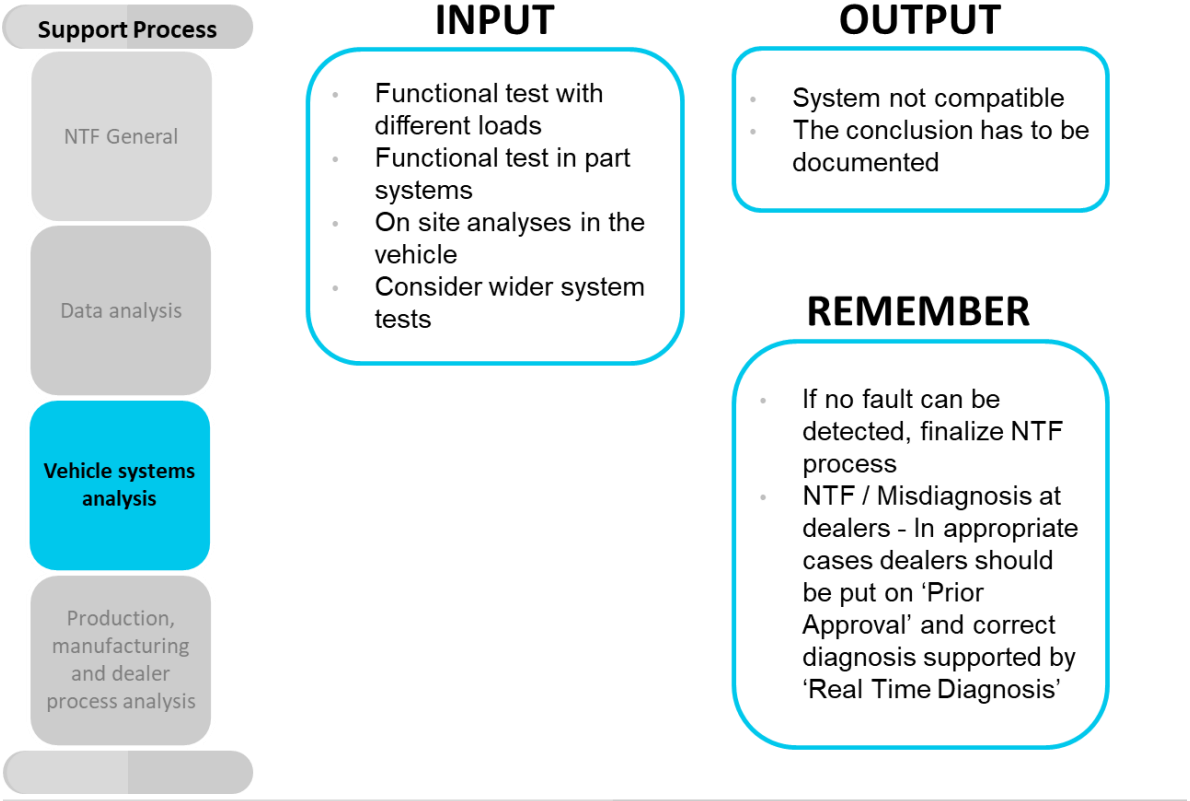


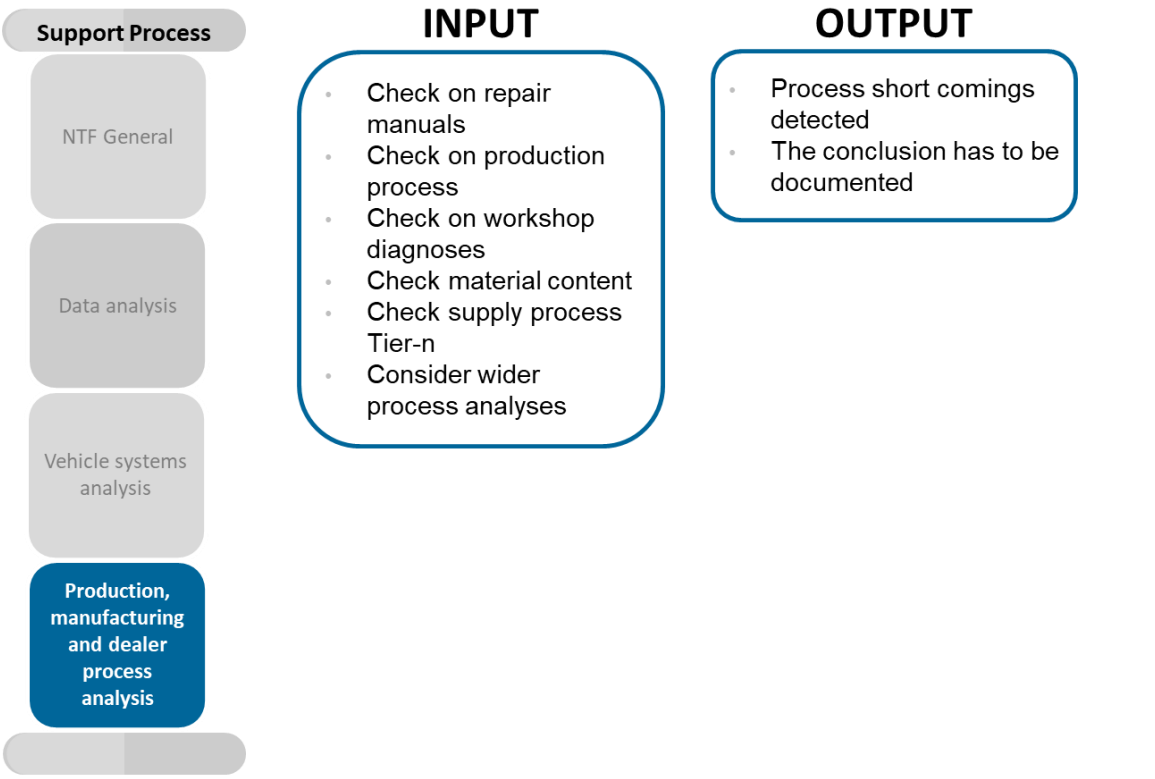
The NTF process is only started if previously agreed triggering criteria has been met. This process is not intendant for individual warranty returns.



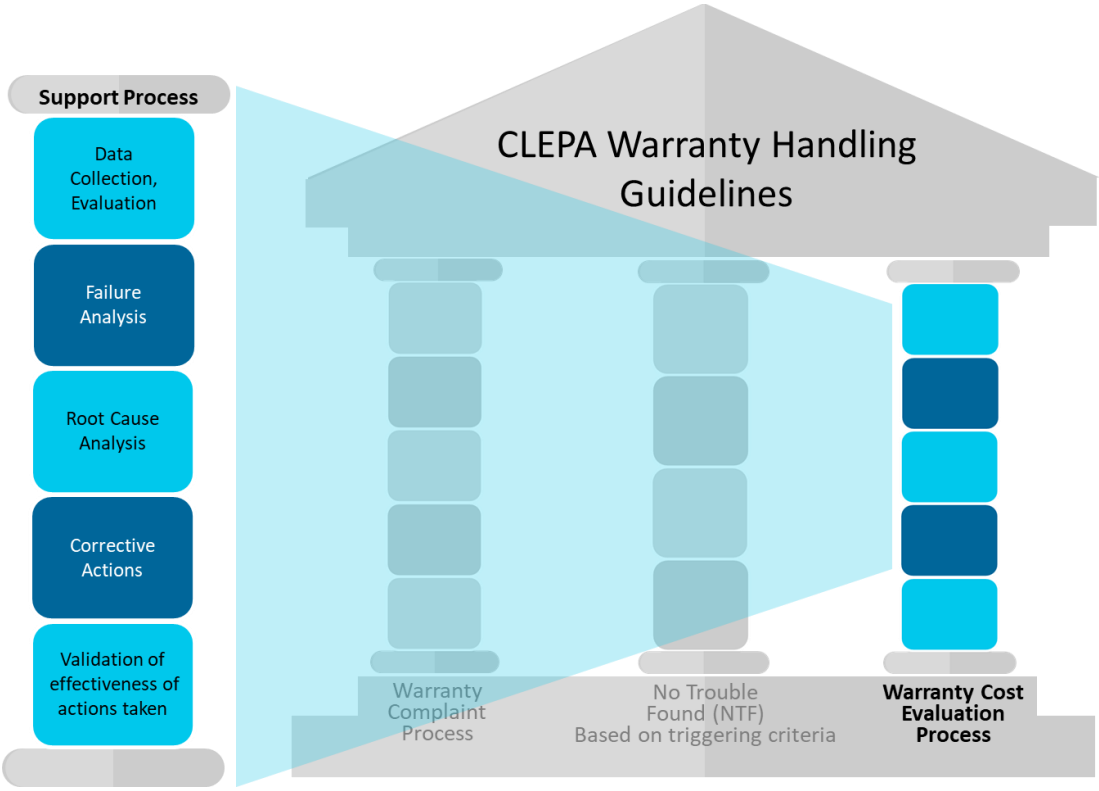
No Trouble Found (NTF) Based on triggering criteria

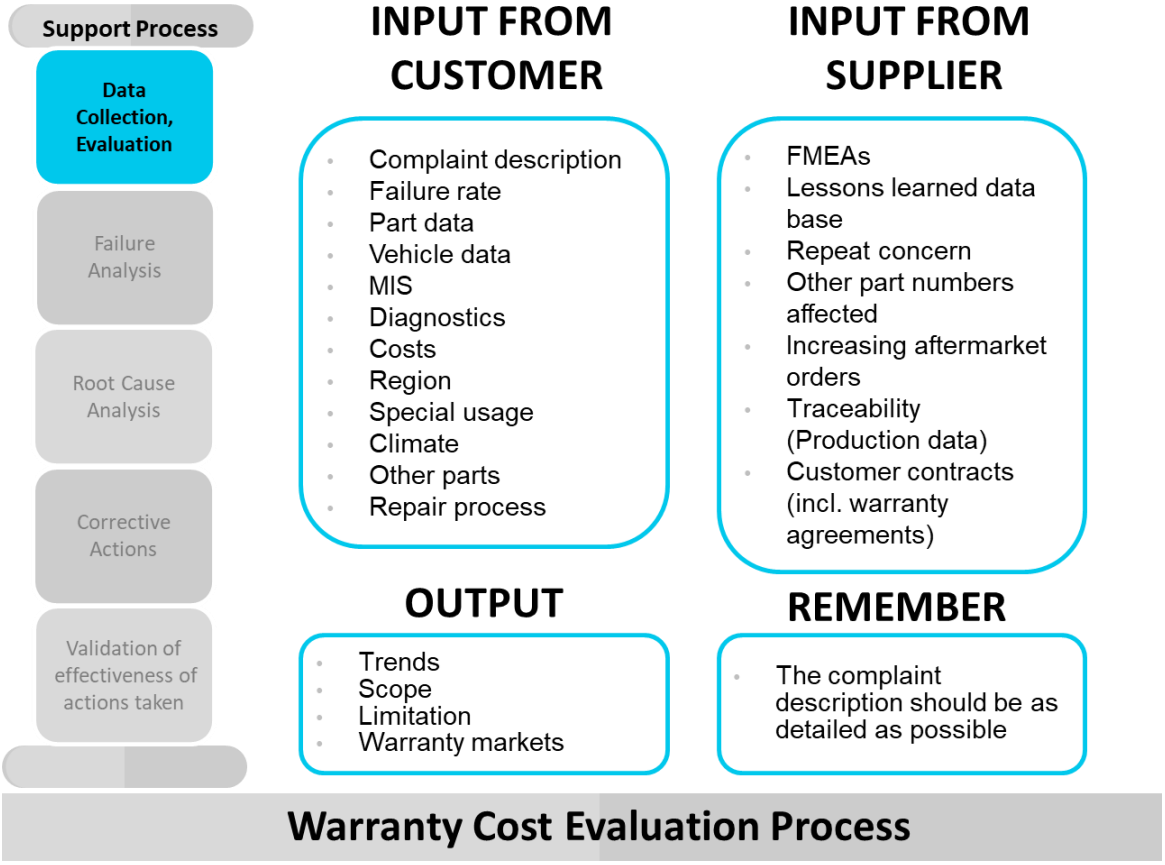

Support Process
NTF General
Data analysis
Vehicle systems analysis
Production, manufacturing and dealer process analysis
Collected data
Diagnostic data
Trends
Vehicle history
Service/Repair instructions
Traceability of parts
Measured values from part
Classification from customer complaints
Operating conditions
Product life history
Production process data
Results from analysis (6Sigma, 5Why, Shainin, etc.)
Trend diagrams
Failure in terms of mileage or markets
Identification of correlations
Plausibility of customer complaint
REMEMBER
If there is new information proceed to System Test and/or process study
Otherwise finalize NTF process
No Trouble Found (NTF) Based on triggering criteria

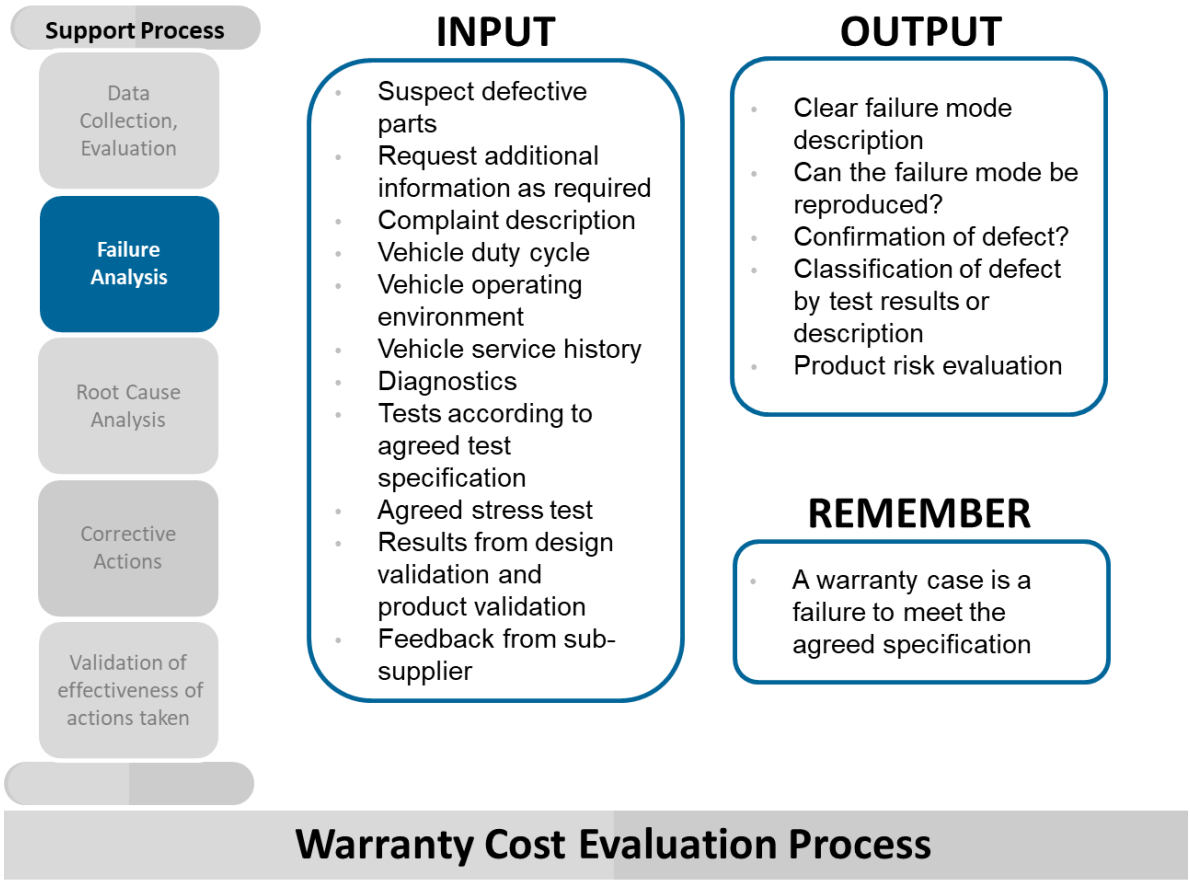

Support Process
NTF General
Data analysis
Vehicle systems analysis
Production, manufacturing and dealer process analysis
INPUT
Functional test with different loads
Functional test in part systems
On site analyses in the vehicle
Consider wider system tests
OUTPUT
System not compatible
The conclusion has to be documented
REMEMBER
If no fault can be detected, finalize NTF process
NTF / Misdiagnosis at dealers - In appropriate cases dealers should be put on 'Prior Approval' and correct diagnosis supported by 'Real Time Diagnosis'
No Trouble Found (NTF) Based on triggering criteria

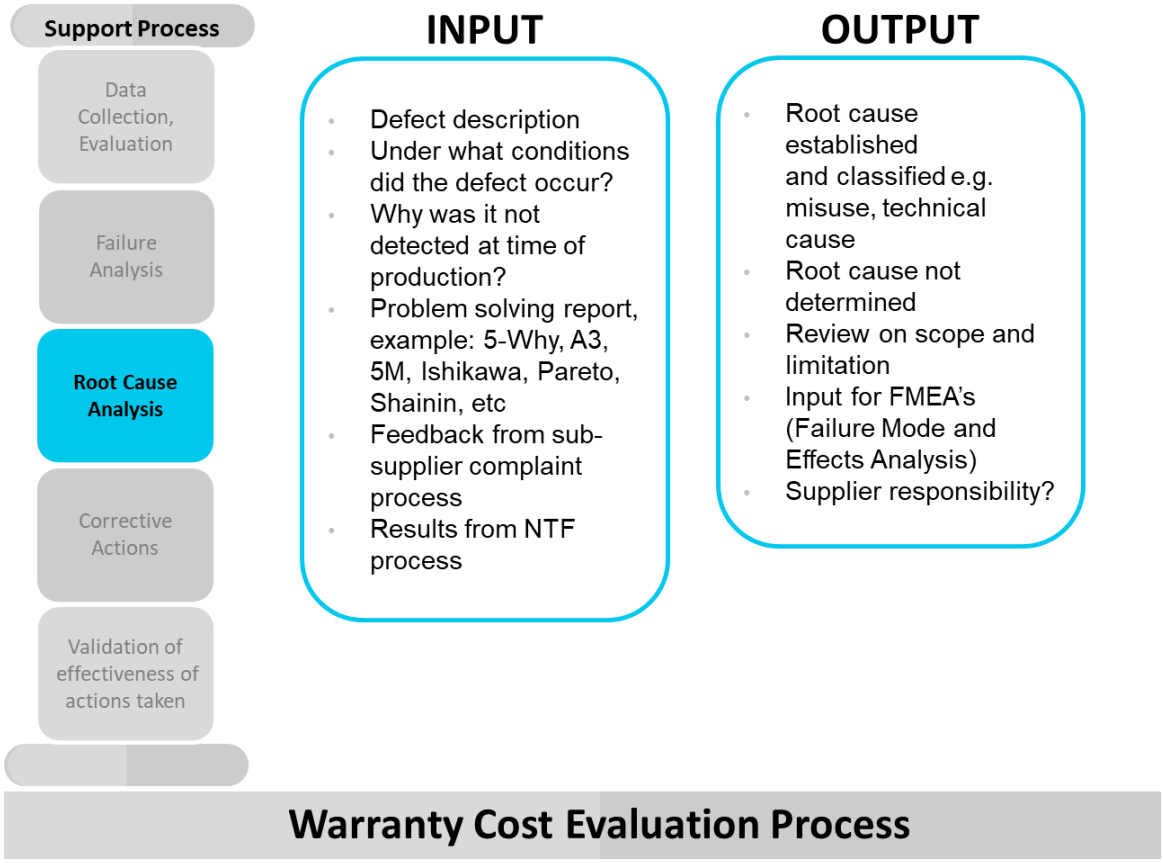

Support Process
NTF General
Data analysis
Vehicle systems analysis
Production, manufacturing and dealer process analysis
INPUT
Check on repair manuals
Check on production process
Check on workshop diagnoses
Check material content
Check supply process Tier-n
Consider wider process analyses
OUTPUT
Process short comings detected
The conclusion has to be documented
No Trouble Found (NTF) Based on triggering criteria

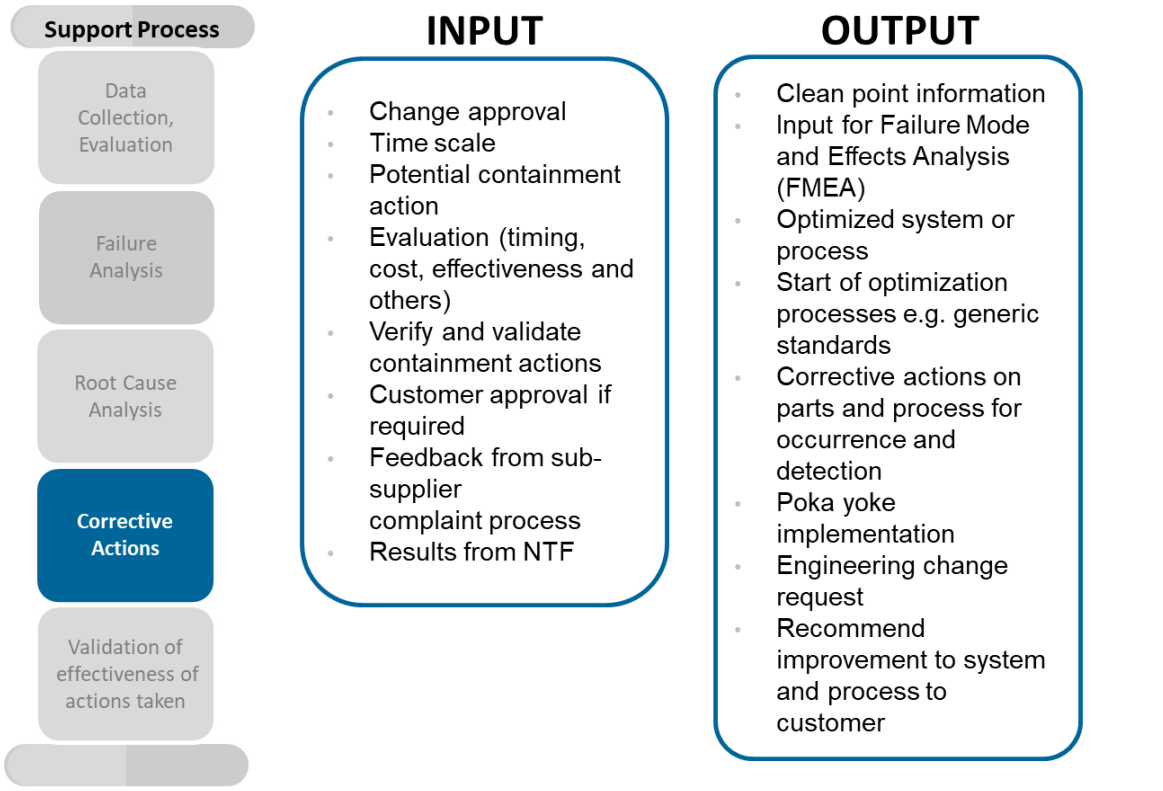
3. Warranty cost evaluation process

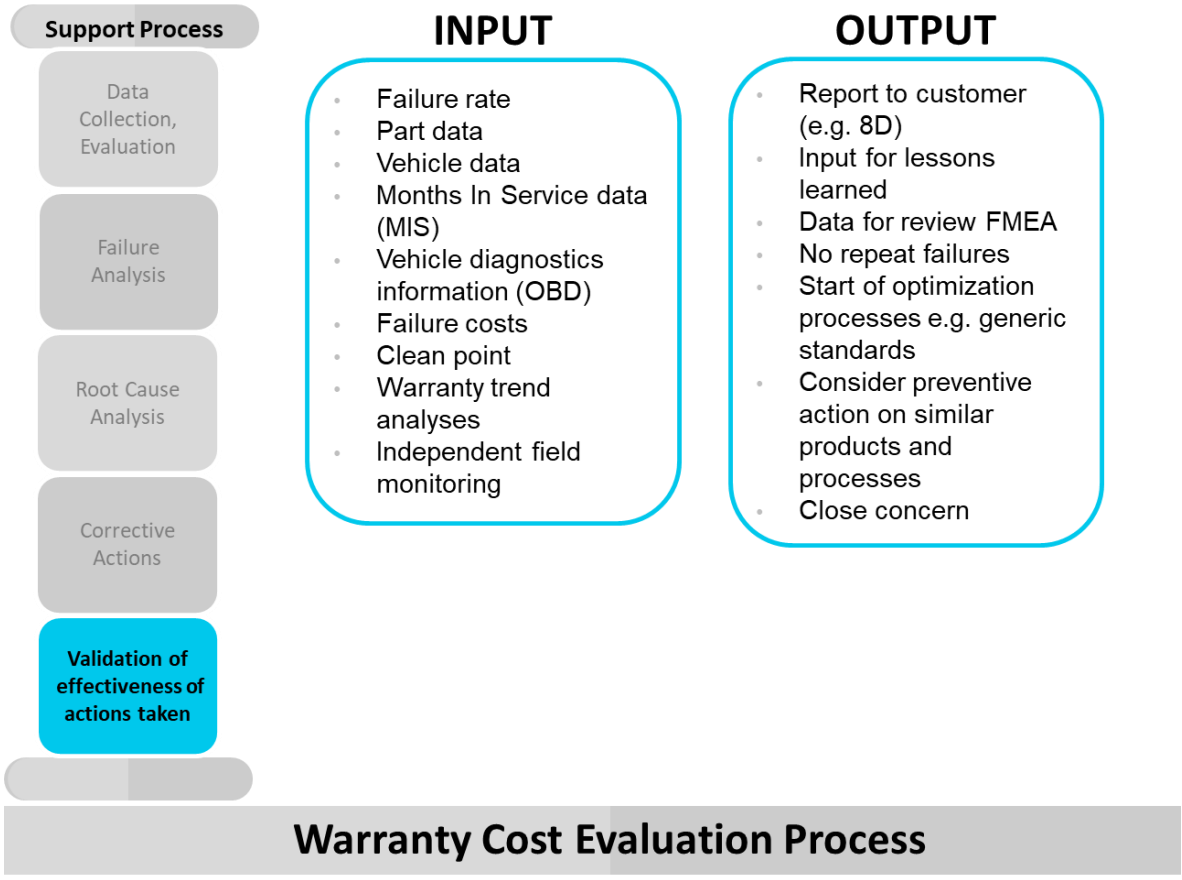





Support Process
Data Collection, Evaluation
Failure Analysis
Root Cause Analysis
Corrective Actions
Validation of effectiveness of actions taken
INPUT
Suspect defective parts
Request additional information as required
Complaint description
Vehicle duty cycle
Vehicle operating environment
Vehicle service history
Diagnostics
Tests according to agreed test specification
Agreed stress test
Results from design validation and product validation
Feedback from sub-supplier
OUTPUT
Clear failure mode description
Can the failure mode be reproduced?
Confirmation of defect?
Classification of defect by test results or description
Product risk evaluation
REMEMBER
A warranty case is a failure to meet the agreed specification
Warranty Cost Evaluation Process


Support Process
Data Collection, Evaluation
Failure Analysis
Root Cause Analysis
Corrective Actions
Validation of effectiveness of actions taken
INPUT
Defect description
Under what conditions did the defect occur?
Why was it not detected at time of production?
Problem solving report, example: 5-Why, A3, 5M, Ishikawa, Pareto, Shainin, etc
Feedback from sub-supplier complaint process
Results from NTF process
OUTPUT
Root cause established and classified e.g. misuse, technical cause
Root cause not determined
Review on scope and limitation
Input for FMEA's (Failure Mode and Effects Analysis)
Supplier responsibility?
Warranty Cost Evaluation Process


Support Process
Data Collection, Evaluation
Failure Analysis
Root Cause Analysis
Corrective Actions
Validation of effectiveness of actions taken
INPUT
Change approval
Time scale
Potential containment action
Evaluation (timing, cost, effectiveness and others)
Verify and validate containment actions
Customer approval if required
Feedback from sub-supplier complaint process
Results from NTF
OUTPUT
Clean point information
Input for Failure Mode and Effects Analysis (FMEA)
Optimized system or process
Start of optimization processes e.g. generic standards
Corrective actions on parts and process for occurrence and detection
Poka yoke implementation
Engineering change request
Recommend improvement to system and process to customer
Warranty Cost Evaluation Process


Support Process
Data Collection, Evaluation
Failure Analysis
Root Cause Analysis
Corrective Actions
Validation of effectiveness of actions taken
INPUT
Failure rate
Part data
Vehicle data
Months In Service data (MIS)
Vehicle diagnostics information (OBD)
Failure costs
Clean point
Warranty trend analyses
Independent field monitoring
OUTPUT
Report to customer (e.g. 8D)
Input for lessons learned
Data for review FMEA
No repeat failures
Start of optimization processes e.g. generic standards
Consider preventive action on similar products and processes
Close concern
Warranty Cost Evaluation Process

General remarks

- Time is always crucial
- Lessons learned is a separate process (not included here)
- Escalation process is not covered
- Data collection is an ongoing process

Note

- This document focuses on the significant/major steps
- Inputs and outputs shown on the process diagrams are indicative only and not intended to be comprehensive

References

- AIAG/OESA Consumer-Centric Warranty Management CQI-14
- VDA Failure Analysis Process
- CLEPA Warranty Information Standard and Early Detection Matrix
- ISO 9000 (family of standards for quality management system)
- IATF 16949

For more information, please contact: **m.hauke@clepa.be**

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Quality assurance agreements

Written by the CLEPA Warranty expert group

Contents

The QAA as an instrument to achieving agreeable relationships

This paper is a statement on what automotive suppliers consider as the most efficient way of managing Quality Assurance Agreements. CLEPA considers that Quality Assurance Agreements primarily should be used as an instrument to improve the relationships between the supplier and the customer. This paper has been drafted to provide a basis for fruitful discussions and agreeable relationships between the Original Equipment Manufacturers, Tier1s and suppliers throughout the automotive industry.

This paper is not binding and it does not make any recommendations regarding the use of specific Agreements, Terms or Conditions. These terms must be negotiated individually and independently between each CLEPA member and its customers and suppliers.

This paper offers an example of which elements may be included in a Quality Assurance Agreement. The exact clauses in each individual case may be matched to the specific needs of Customer and Supplier.

Objective of the agreement

A Quality Assurance Agreement (QAA) constitutes the contractual definition of technical and organisational structures and conditions which need to be agreed between Customer and Supplier in the interests of achieving the agreed and desired quality objectives and targets. The QAA should describe the essential requirements for the contracting parties' management system in respect of quality assurance.

The requirements for the production process and product approval procedures are defined herein. Both contracting parties should be committed to a zero-defect target.

1. General points of agreement

1.1. Area of application

In the event that individual clauses contained in this agreement conflict with other prior-ranking agreements, for example, development or purchase contracts, the said individual clauses in this document shall not be applicable.

This agreement and any alterations or amendments thereto must be made in writing.

2. Supplier's quality management system

The Supplier undertakes to permanently deploy a quality management system in accordance with IATF 16949, or as a minimum, a system which fulfils the requirements contained in the ISO 9001 standard. Other regulations, for example, those defined by the following organisations:

- VDA (German Association of the Automotive Industry)
- AIAG (Automotive Industry Action Group)
- EAQF (Evaluation d'Aptitude Qualité Fournisseur)
- AVSQ (Anfina Valuatione Sistemi Qualita)

Shall be integral to the contract only when agreed in writing.

2.1. Quality management systems of subcontractors

The Customer may request documented proofs from the Supplier as evidence that the Supplier has satisfied itself as to the effectiveness of the quality management systems deployed by its subcontractors and/or taken other suitable steps to safeguard the quality of outsourced components.

2.2. Audit (on supplier's premises)

The Customer shall be entitled to establish by way of an audit whether the quality assurance measures put in place by the Supplier to warrant that the Customer's requirements will be fulfilled. The audit may be conducted in the form of a system, process or product audit and must be agreed upon in good time before its planned implementation. Consideration should be given to system audits by approved certification companies. Reasonable restrictions on the part of the Supplier in the interests of safeguarding trade secrets shall be accepted.

Should quality problems occur which are occasioned by performances and/or supplies by subcontractors the Supplier shall be obliged to facilitate an audit on the premises of the subcontractor concerned

3. Documentation and information

The obligation to retain the requirements and evidentiary documentation subject to special archiving shall extend in line with general automotive standards. [1] The supplier must allow the customer to inspect these documents on request. Should it become evident that agreements which have been reached (for example regarding quality characteristics and features, deadlines, quantities to be delivered) cannot be complied with, the supplier shall be obliged to notify the customer. In the case of detecting a quality problem within the suppliers' production, the supplier should inform the customer. All changes to products and the production process must be documented in a product history and treated in accordance with industry-standards regarding the product.

4. Development and planning

The Customer must ensure that the technical specification is made available to the Supplier at an early date and in full, including all relevant documents such as for example drawings, parts lists and Computer Aided Design (CAD) data. The Supplier shall check the technical specification including all technical documents for completeness and consistency. Any defects detected must be notified to the customer and eliminated by mutual agreement. At the development stage, the contracting parties must deploy suitable preventive methods of quality planning. Regarding prototypes and pre-production parts, manufacturing and testing conditions must be coordinated between customer and supplier and documented. For the agreed product and process features the supplier must analyse and document the suitability of the production facilities employed. If the defined capability values are not achieved a 100% inspection must be initialised. Before the start-up of series production, a process and product approval procedure pursuant to VDA /AIAG or similar customer requirements must be conducted and released by customer.

5. Series production

In the event of process disturbances or quality deviations on the part of either the customer or the supplier, the causes must be analysed. Steps must be taken to bring improvements and the effectiveness of these measures investigated must be shown. If in exceptional cases it is necessary for products to be supplied which do not conform to specifications, special approval must be obtained in advance from the customer. Likewise, the customer must be notified forthwith of deviations detected.

The supplier undertakes pursuant to a risk assessment to safeguard the traceability of products supplied. If a deviation is detected, the level of traceability must be such as to

[1] See for example VDA Volume 1 (e-Book Volume 1 - Doc. Info and Retention) https://webshop.vda.de/QMC/de/e-volume-1-doc-info-and-retention

ensure that the quantities of parts/products affected can be limited. The customer will furnish the supplier with the necessary data required to facilitate traceability.

The supplier shall ensure that goods are supplied using suitable transport facilities approved by the customer in order to avoid damage or quality impairments. Parts must be free of any kind of contamination.

6. Tests and inspections

The supplier shall carry out tests and inspections as planned in order to fulfil the agreed targets and specifications.

To be in compliance with agreed features in series production, the supplier must employ suitable methods (for example statistical process control or manual control chart systems) to demonstrate process capability over the entire production period.

6.1. Material receiving inspection

Following receipt of goods, the customer will confirm the quantity and identity of products sourced from the supplier and check for externally visible damage.

In other respects, the customer is exempted from the immediate duty to inspect and report complaints.

The customer must report defects in delivered supplies to the supplier forthwith as soon as these are detected during the normal course of business. In this case, the supplier waives the right of delayed notification of defects.

Unless otherwise agreed, parts which are the subject of the complaint will be made available to the supplier for analysis. In case of dispute, an investigation must be undertaken jointly by customer and supplier.

In the event that supplies contain defects, the supplier must immediately take remedial action. (Replacement supplies, sorting or reworking).

7. Liability

The agreement of quality targets and measures shall not affect the liability of the supplier for warranty and compensation claims by the customer as a result of defects in supplies. This quality assurance agreement does not constitute grounds for defect liability claims or compensation claims on other legal grounds.

8. Term of the agreement

Example of the termination of the agreement:

"This quality assurance agreement is not limited in time. It may, however, be terminated by either party in writing at three months' notice. Upon this agreement coming to an end, ongoing individual supply contracts shall nevertheless remain in force until such time as they have been executed in full. "

For more information, please contact: **m.hauke@clepa.be**

About CLEPA

CLEPA, the European Association of Automotive Suppliers, represents over 3,000 companies supplying state-of-the-art components and innovative technologies for safe, smart, and sustainable mobility.

CLEPA brings together over 120 global suppliers of car parts, systems, and modules and more than 20 national trade associations and European sector associations. CLEPA is the voice of the EU automotive supplier industry linking the sector to policy makers.

The automotive sector accounts for **30% of R&D** in the EU, making it the number one investor.

European automotive suppliers invest over **30 billion euros** yearly in research and development.

Automotive suppliers register over **39,000 new patents** each year.

Automotive suppliers in Europe generate **1.7 million** direct jobs.

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