Flex-N-Gate Exteriors Europe
EEPUM.90001 – Supplier Requirements Manual

Document Owner: Charlène Romain

1.0 PURPOSE

The purpose of this manual is to define the Quality Requirements between Flex-n-Gate Exteriors Europe and its Suppliers.

2.0 SCOPE

This manual applies to all Flex-N-Gate Exteriors Europe (FNG EE) facilities, its employees and its suppliers.

3.0 RESPONSIBILITIES

3.1 Production Buyer ensures that the supplier has received this Quality Requirements Manual which is linked to the Quality Assurance Agreement (EEPUF.90013).

4.0 DEFINITIONS

4.1 8D: 8 Disciplines (problem solving methodology)

4.2 3MR: 3 Months Rolling

4.3 6MR: 6 Months Rolling

4.4 AIAG: Automotive Industry Action Group

4.5 AMR: Approved Material Reference

4.6 ANOVA: Analysis Of VAriance

4.7 APQP: Advanced Product Quality Planning

4.8 ASQ: Advanced Supplier Quality

4.9 BOM: Bill Of Material

4.10 BOP: Bought Out Part

4.11 CAD: Computer-Aided Design

4.12 COP: Carry Over Part

4.13 CSR: Customer Specific Requirements

4.14 CSR (RSE): Corporate Social Responsibility (Responsabilité Sociétale des Entreprises)

4.15 DVP : Design Verification Plan

4.16 ECR: Engineering Changer Request

4.17 ELV: End of Life Vehicule

4.18 ePPAP: Web portal for PPAP documentation interface with supplier

4.19 FIFO: First In First Out
4.20 FMEA: Failure Modes and Effects Analysis
4.21 FNG: Flex N Gate
4.22 FNG EE: Flex N Gate Exterior Europe
4.23 FOT: First Off Tools
4.24 IATF: International Automotive Task Force
4.25 IMDS: International Material Data System
4.26 IS: Initial Samples
4.27 KCC: Key Control Characteristics
4.28 KPC: Key Product Characteristics
4.29 KPI: Key Performance Indicator
4.30 LON: Letter Of Nomination
4.31 LPDS: Logistics Parts Data Sheet
4.32 MMOG/LE: Materials Management Operational Guidelines / Logistical Evaluation
4.33 MPT: Mass Production Trial
4.34 MSA: Measurement System Analysis
4.35 OEM: Original Equipment Manufacturer
4.36 PFMEA: Process Failure Modes and Effects Analysis
4.37 PLM: Program Lifecycle Management
4.38 PPAP: Production Part Approval Process
4.39 PPM: Part Per Millions
4.40 PSW: Part Submission Warrant
4.41 PVP: Part Validation Plan
4.42 QAA: Quality Assurance Agreement
4.43 QP: Quality Problem
4.44 QVR: Quality Validation Review
4.45 R&D: Research and Development
4.46 REACH: Registration, Evaluation, Authorization and Restriction of Chemicals
4.47 RFQ: Request For Quotation
4.48 RPN: Risk Priority Number
4.49 R&R: Repeatability and Reproducibility

4.50 S4: Severity 4

4.51 S/R: Safety/Regulation

4.52 SC: Special Characteristics (also Key Characteristics)

4.53 SLI: Single List of Issues

4.54 SOP: Start Of Production

4.55 SOW: Statement Of Work

4.56 SPC: Statistical Process Control

4.57 SQA: Supplier Quality Assurance

4.58 SRM : Supplier Requirement Manual

4.59 SSR: Supplier Service Rate

4.60 SUP: Supplier

4.61 TLC: Tool Lending Contract

4.62 WIP: Work In Progress

5.0 GENERAL RULES

All printed documents are considered not controlled. Controlled documents are available in Flex-N-Gate's Corporate Document Control Systems.

6.0 RELATED DOCUMENTS

6.1 EEPUF.90013 – Quality Assurance Agreement Form

6.2 EELGM.90001 – Supplier Logistic Manual

6.3 EEPUF.90027 – Capacity Input Sheet form

6.4 EELGF.90001 – Supplier Logistic Agreement Form

6.5 EEQAF.90002 – Production Part Approval Process (PPAP) Form

6.6 EEPUF.90012 – Quality Commitment Form

6.7 CENF.00011 – Engineering Change Checklist

6.8 EEPUF.90023 – Tools Loan Agreement Form

6.9 EEPUF.90003 – Corporate Social Responsibility Questionnaire

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7.0 CHANGE HISTORY

No.	Reason for Change	Changed By	Rev.	Date
1.	Initial Document Release Replaces AEE-C-SPG-4030 – Supplier Requirements Manual	Sébastien Gamard	1	October, 22th 2020
2.	Coding change. Replace APUM.90001, BHPUM.90001, MYPUM.90001, MZPUM.90001, MBPUM.90001, IGPUM.90001, OFPUM.90001, VLPUM.90001 R&R requirements updated chapter 19.3 and PPAP items	Sébastien Gamard	2	July, 5th 2021
3.	Update document	Charlène Romain	3	August, 30th 2022

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Flex N Gate is focused on delivering zero defects products to all our customers any time any day, delivering on time and supplying the service level our customers deserve.
Quality starts at the early stages of development and doesn't result only from operational excellence. We can only achieve these goals with a best in class supply chain, who is sharing the same objectives and applies strictly & daily a continuous improvement approach.
This Supplier Requirements Manual has been prepared by the Flex N Gate Purchasing team and aims at sharing our specific Flex N Gate expectations & requirements in development, production and spare parts phases in addition to the customer requirements applicable in the frame of an existing contract. We count on all our suppliers to apply it strictly in order to ensure the best conditions for a successful cooperation on a long term.

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1. INTRODUCTION

To communicate with suppliers, FNG EE has developed a web portal called "ePPAP Supplier portal"
https://flexngate.eppap.com/

This web portal is a simple and secure way to share information.
It does not replace the standard communication (written, face to face, or by phone), but it allows to access information and data in real time in a standardized way.

In the supplier private secure environment, several applications are accessible:

- Supplier Quality Data: certificates and quality data.
- Scorecard : performance indicators (Quality, Logistics)
- Access to supplier APQP deliverable management
- CSR

If supplier cannot access to web portal, please contact your FNG buyer.

2. GENERAL SUPPLIER REQUIREMENTS

The requirements as detailed in the manual define basic requirements and are supplemental to specific requirements as defined by the OEM Customer and program APQP team. Suppliers are to recognize all program Customer Specific Requirements & Corporate Social Responsibility, including but not limited to the following: Stellantis, IVECO, Renault, BMW, Volkswagen (PBS, Formel Q and VDA 6.3 & VDA 6.2).

2.1 Required certifications

The supplier must have, at a minimum, a valid ISO 9001 latest version certification from an accredited third-party certification body. If not a formal written deviation from the OEM is required. Supplier takes the commitment to develop and improve its quality management system, with the ultimate objective of becoming IATF 16949 certified. The supplier undertakes to provide FNG with their quality certificates and maintain them.
When an OEM's imposed or directed supplier does not comply with FNG quality management system requirements, then a formal written deviation from the OEM is required.

2.2 Supplier obligations

Each supplier shall undertake to:

- Comply with all regulations and customer & automotive requirements, applicable to its activities and products delivered to FNG: legal, governmental, environmental, health and safety, automotive, such as, and with no limitation: European Directive on End of Life Vehicles (ELV) and its appendix, REACH, Conflict Mineral, use of Automotive Industry (AIAG, VDA) standard tools & procedures (APQP, PPAP, 8D, FMEA, MSA and SPC).

- Provide CSR (RSE) questionnaire or CSR (RSE) third party assessment (e.g. Ecovadis)
- Ensure compliance with Conflict Minerals reporting, please contact : FLEXConflictMinerals@flexngate.com
- Comply with all procedures set forth in the Supplier Requirement Manual
- Comply with all environmental laws and regulations
- Ensure the health and safety of their policyholders, employees and contractors
- Take preventive quality actions in accordance with Advanced Product Quality Planning provisions (here after "APQP elements")
- Comply with PPAP (Production Part Approval Process) as described in APQP item N°30, attached to the present document as ***Appendix 1***
- Cascade SRM requirements to their sub suppliers.
- Put in place a containment plan for all early production phases and/or after each serial problem, until the convergence criteria, as defined jointly are met.
- Comply with all procedures for inspection, records, documentation, labelling, marking, packaging and traceability as described in Supplier Logistic Manual.

2.3 Customer Specific Requirements

The supplier shall comply with the customer specific requirements described in OEM guidelines. The customer requirements can also be found on IATF website or customer portal (Volvo for example): http://www.iatfglobaloversight.org/

2.4 Corporate Social Responsibility

The supplier shall comply with the Corporate Social Responsibility requirements described in OEM guidelines. The Corporate Social Responsibility questionnaire can also be found on ePPAP website.

3. SUPPLIER APQP AND PPAP

Suppliers are required to generate an Advanced Product Quality Plan in accordance with the requirements described in this document (see ***Appendix 2***).
For quality planning suppliers shall reference the following IATF 16949 core tools: PPAP, FMEA, APQP, MSA and SPC.

The communication and validation of the deliverables is done using "ePPAP Supplier Portal", the web portal, https://flexngate.eppap.com/.

3.1 Raw material

The supplier must provide material documentation data for entry in one of the below systems:

- IMDS (International Materials Data System for German, Asia, American OEM's & Renault)
- MACSI (PSA) = specification n° PSA B20 0250
- Toyota COV method: TSZ0001G Toyota Engineering Standard: control method for substances of environmental concern.

FNG ensures that recycled material supplier has full traceability of material from their respective source (regrinders, moulders, material-producers) until material leaves their facility. All in-house traceability is assured by scanning.
FNG requires that the suppliers secure all their own recycled material suppliers have every batch of material fulfills specification regarding content (IR-spectroscopy, DSC-analyses, X-Ray) and material properties according to agreed test methods.
These requirements are monitored by sending the questionnaire (see ***Appendix 3***) to recycled material supplier.
For the plastic material choice, the supplier will provide all technical justifications in case of a proposal based on a material not part of the Approved Material Reference (AMR) list.

3.2 Packaging and Logistics

The supplier shall preserve the product during internal processing and delivery in order to maintain conformity to requirements. As applicable, preservation shall include identification, handling, packaging, storage and protection. Preservation shall also apply to the constituent parts of a product (IATF 16949 Item 7.5.5).
To achieve these requirements, the supplier shall follow the Supplier Logistic Manual (EELGM.90001).

If safety stock is required at the supplier facility, part quantities may be validated by FNG. In addition, safety stock must be set up to conform to industry standard FIFO practices.

For the BOP packaging, the supplier is responsible for the development, the investments, the cleanliness and the maintenance. The requirements are: recycling packaging, recycling protection and "bar code" for identification. Other requirements may be specified by FNG according to the needs of the FNG delivery plant and customer.

Global Materials Management Operational Guidelines/Logistical Evaluation (MMOG/LE) is a supplier self-assessment and continuous improvement tool with a correlating training course that improves materials management efficiency and accuracy while reducing costs from errors and waste.
MMOG/LE, also known as just MMOG, is the global standards for supply chain management processes that provide industry best practices. It is intended to establish a common definition of materials practices to facilitate effective communication between trading partners.
https://www.aiag.org/supply-chain-management/materials-management/global-materials-management-operations-guidelines

For each delivery to FNG plant, the labelling must contain the following information:

- Project
- Designation & part number
- Injection trial number
- Date of production
- Supplier name
- FNG address
- Quantity per container
- Regulation/Security stamp
- Batch number

3.3 APQP Elements

All suppliers are required to produce Advanced Quality plans to support the development of new products and/or services, in accordance with the guidelines in the Advanced Product Quality Planning and Control Plan (APQP) as detailed below.

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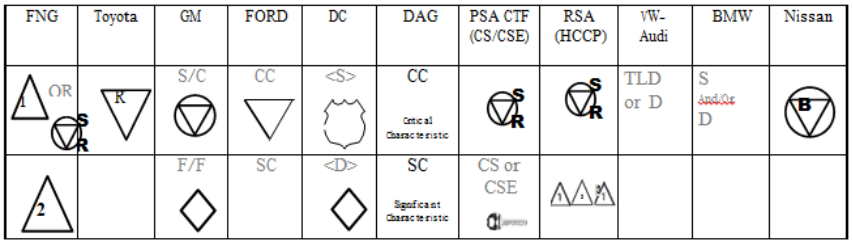
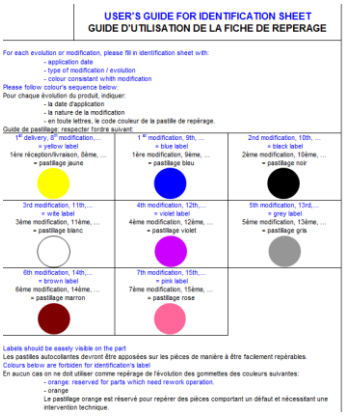
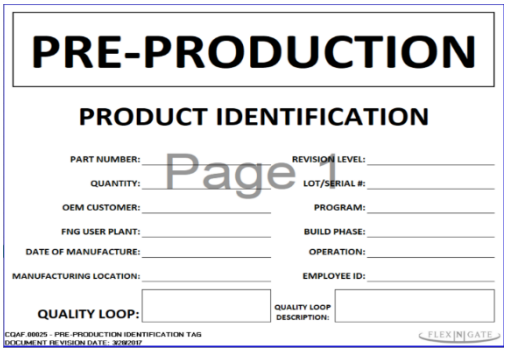
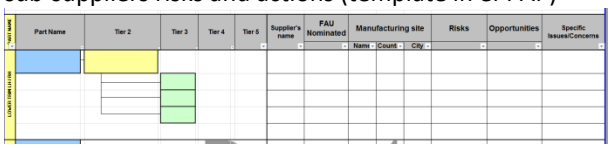
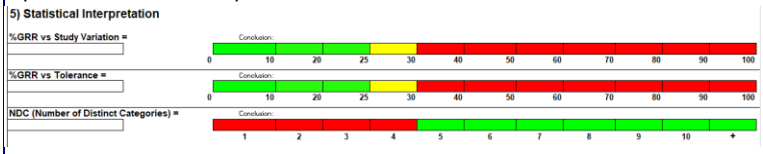
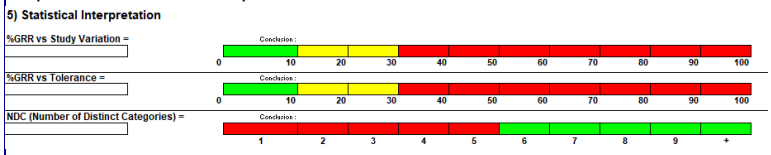
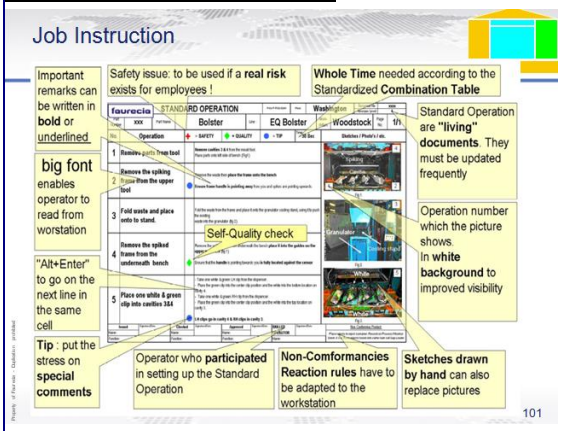
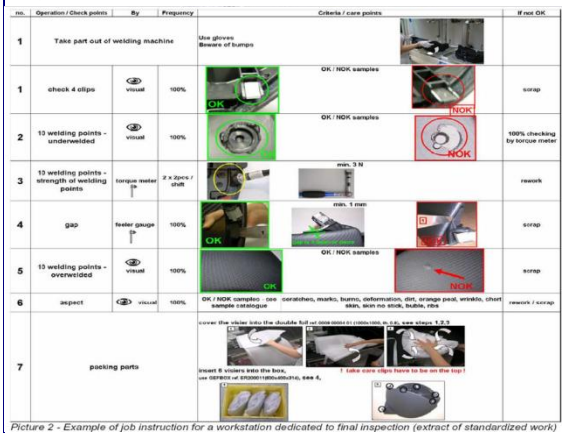
	APQP ELEMENTS	DEFINITION	FNG	SUP
1	**Program Steering Committee**	Within FNG, the program team reviews key program information and timing	X	
2	**Confidentiality Agreement – QAA**	Enable both FNG and Supplier to ensure confidentiality when required Existence of Quality Assurance Agreement is checked; need for update identified	X	X
3	**Special Characteristics** **Key Characteristics** **KPC / KCC**	A Key Characteristic is a product characteristic (material, dimension, performance) or a process parameter whose variation can affect: - compliance with the regulations (environment safety and REACH); - compliance with safety requirements for the user of a vehicle or a product; - the satisfaction of the final customer through quality reliability or durability of a Fit, Form and Function ; - The possibility of using the product by downstream customer (mountability, workability). - Process FMEA with special characteristics at RPN 32 or less (or mistake proofing) Key Characteristics should be declined on the control plan and deployed until supply chain of the supplier. They are identified based on the Drawings, the Process flow diagrams, the Control plans in Early Production Containment and other engineering documents  They are identified on tools, documentation and packaging by the symbol and are subject to capability of six sigma from a stable process.	X	X
4	**Technical Input Requirements**	Start of the **RFQ**	X	
5	**Technical Reviews**	Meeting attended by potential suppliers to assess the supplier proposition based on below Risk assessment items and resulting in Feasibility Commitment.		X

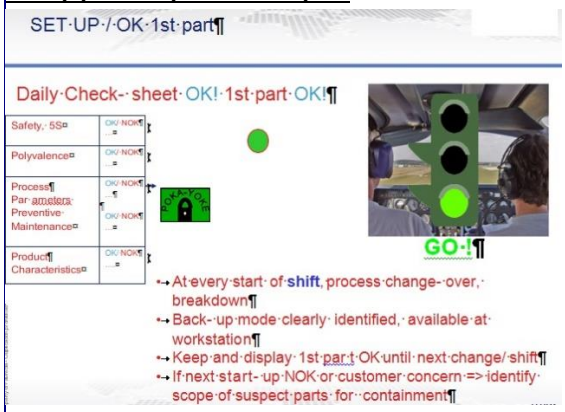
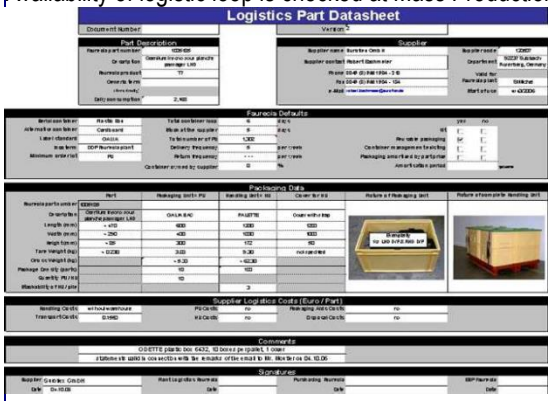
	APQP ELEMENTS	DEFINITION	FNG	SUP
6	**Risk Assessment**	Done by FNG in 2 phases of the Program • **Product & Process** ➢ Product carry-over; full new development ➢ Process technology timing ➢ Design responsibility ➢ Program timing ➢ Volume and ramp up ➢ Safety and legal impact ➢ Customer expectations ➢ Part design ➢ Mandated supplier • **Supplier** ➢ Supplier facility; technology and workforce (existing, new..) ➢ Performance ➢ Production capacity ➢ Assessment logistics; Distance ➢ Communication ➢ Cost productivity ➢ R&D capacity	X	
7	**Master Schedule**	Planning describing tasks and milestones to be able to create a product responding to the program objectives. The supplier must build a master schedule based on FNG and End Customer milestones for : **Production preparation** • Process planning ; layout • Preparation of facilities and equipment procurement • Sub-supplier ; selection; procurement • Quality standards and gauges (Control plan, work standards & instructions, Boundary samples, early Containment) • Packaging and transportation • Training • Trials • Manufacturing support systems (handling, control , Poka-yoke) **Tool progress** • Design, Machining • Assembly Try out • Tuning • Tool ready OK for graining	X	X
8	**Feasibility Commitment** **Capacity**	As part of its Offer, the Supplier must confirm and provide evidences that the product can be produced according to the quality, planning and cost requirements, with demonstration of its ability to follow the targets (estimations, return on experience, feedback on similar products, related action plans). • Remarks and comments are accepted • Update may be done at drawing freeze Capacity information must also be given. EEPUF.90027 - Capacity input sheet Form has to be completed.		X

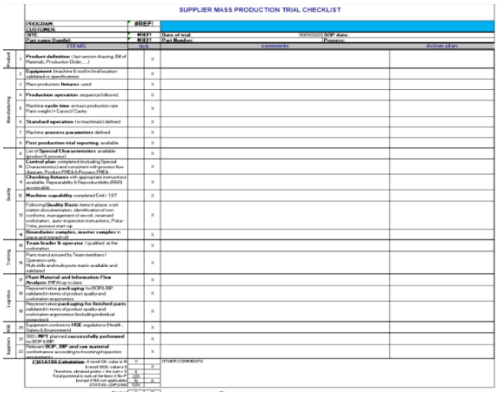
	APQP ELEMENTS	DEFINITION	FNG	SUP
9	**Sourcing committee**	Internal FNG decision making based on Costs, Risks, Feasibility and past performance Supplier Development actions need to be identified at this step.	X	
10	**Sourcing Decision / Contract / SOW**	Purchasing/development contract Decision and communication to supplier. (LON Letter of Nomination, TLC Tool Lending Contract) In case of a Mandated Supplier or sub-supplier, a SOW (3 or 4 Parties Statement of Work; OEM , FNG, Supplier , Sub-Supplier) must be part of this element.	X	
11	**Program Review / Kickoff**	FNG-Supplier meeting(s) and program review scheduled according to PLM milestones. Defines the Project tracking The Supplier plan will be tracked during further project reviews when the following topics will be covered: - Quality - Costs - Master Schedule, Planning Milestones and Deadlines - Product – Process - Team (including Supplier Resources) The detailed agenda and the report have to be proposed by the Supplier before the review. The Supplier review report will be sent to FNG within one week.	X	X
12	**Design FMEA**	Failure modes and effects analysis. To establish an action plan for product improvements. Only required when a supplier has design accountability…	X	X
13	**Design Review**	Design Review (could be done during SLI meeting) product details including functional requirements, assembly and manufacturing. Defines characteristics (KPC,KCC) needing particular controls and capability measurements.	X	X

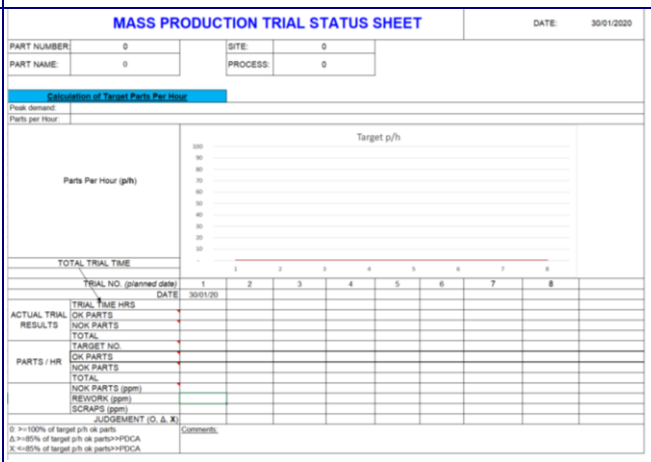
	APQP ELEMENTS	DEFINITION	FNG	SUP
14	**Pre-Production & Prototype Builds**	**Requirements for delivery to Pilot Plant:** - Prototypes Control plan to be defined - Product identification (with engineering revision level) - Packaging + identification with pre-production sheet in yellow - Inspection report  		X
15	**Design Verification Plan (DVP)**	Definition of the Tests required to verify that the product meets requirements and targets These tests are conducted either by FNG or by the Supplier if required with some OEM contribution.	X	X
16	**Drawings and specifications freeze**	1. **Drawings released** by Expert/designer with FNG engineering approval or by FNG with Supplier Manufacturer approval 2. **Drawing approved** with Feasibility Commitment update leading to Tool launch – the supplier should sign the drawing for approval 3. **Labelling:** the supplier should apply the "pastillage" **Data Formats:** The following 3D formats are permissible: CATIA V5 (R19 for RSA & R22 for PSA) Native (Solids). The following 2D formats are permissible: CATIA V5 (R19 for RSA & R22 for PSA) Native Drawings: to be defined in the kick off meeting.	X	X
17.1	**Process Flow Chart**	1°) **Representation of** Supplier entire **manufacturing process flow**		X

	APQP ELEMENTS	DEFINITION	FNG	SUP
17.2	**Sub-supplier management**	2°) **Sub-Suppliers Management** ; Supply chain representation with description of sub-suppliers risks and actions (template in ePPAP) 		X
18	**Process FMEA (could be reverse FMEA)**	Potential Failure modes and effects analysis of the process. For PPAP approval no SC must exceed Severity x 2 x 2. In case of Customer needs, PFMEA reverse will be applied by the supplier.		X
19.1	**Facilities**	Following key items are tracked: 1. **Facilities** preparation and **Equipment** procurement (with special focus on Supplier new location; Milestones and Special Check list to be deployed)		X
19.2	**Tools**	2. **Tooling Launch** 3. **First Off tool** (results/dimensional report) : all parts deliveries must be accompanied by a control report of the delivered parts (fully measure or specific measure decided with FNG)	X	X
19.3	**Gages : all measurement / testing equipment**	4. **Gage launch** – FNG validate the gauge studies before realization 5. **Gage available for FOT** **R&R Requirements :** to be decided during the kick off - Renault Group – using Renault Group Norm v01 E41.36.110.R Repeatability : 1 part 5 measures - IT/16 Reproducibility : 5 parts 5 measures 2 operators : IT/12 - Stellantis group –using ANOVA method for PSA Group v01 Repeatability & Reproducibility : 5 parts 3 measures 2 operators  - Other Customers – method for MSA v01 Repeatability & Reproducibility : 10 parts 3 measures 3 operators 		X

	APQP ELEMENTS	DEFINITION	FNG	SUP
19.3	Gages : all measurement / testing equipment	For PSW: Element 30.8 : for all measurement system used for the critical or high impact characteristics mentioned on the control plan: Gage R&R, Calibration records, work instruction Element 30.16: for checking aids used by production (tools used to inspect, test or measure parts) upload calibration records and work instruction. In case of IATF certified, upload of calibration record is not needed, just on demand, it shall be available on site.		X
20	**Control Plan**	List of planned tasks (Operator, Maintenance, Lab, …) to ensure Product conformity => process parameters and product Key Characteristics 3 Levels : 1. Prototype 2. Pre-Production 3. Production **Work instructions – example :**  **Inspection – example :**  *Picture 2 - Example of job instruction for a workstation dedicated to final inspection (extract of standardized work)*		X

	APQP ELEMENTS	DEFINITION	FNG	SUP
20	**Control Plan**	**Set up / OK 1st part – example :** 		X
21	**Packaging & Logistic**	Packaging is defined in the **LPDS Logistics Parts Data Sheet** at 1st Off tool and validated before MPT should be approved before run at rate at supplier plant. Availability of logistic loop is checked at Mass Production Trial 	X	X
22	**Training Plan**	Supplier workforce trained on: • Working instructions; Machine and Tool operation • Quality care points ; Master samples, photo book and quality surface; Control path • Reaction to NOK • WIP handling and Packaging 4 levels Polyvalence followed per person and per workstation: **I** : Beginner : Respect Standard **L** : Confirmed : Does not pass a defect **U** : Expert : Reach the cycle time of the Standard **O** : Trainer : Able to train other operator up to level 4		X

	APQP ELEMENTS	DEFINITION	FNG	SUP
22	Supplier Launch Support Team	Multidisciplinary launch support team at Supplier location must be formalized. Selected suppliers may be required to provide FNG on-site representation.		X
23	Appearance Approval	3 steps : 1. **OK for graining** 2. **1st grained parts** 3. **Design approval** ; Graining/ Color / Aspect /, (gloss, and brightness,..) by End Customer Existence of **Boundaries samples & Defects library** (photo book) signed-off.	X	X
24	Pre PPAP Check	Early check availability (before Run at Rate) of some key documents required in the PPAP file (if needed, at discretion of the ASQ).		X
24	Supplier / Launch readiness	Supplier readiness includes **Production Trials** at full capacity, to check that manufacturing process is capable of producing components that meet quality performance and quantity requirements before SOP, Specific QVR Quality Validation Review may be held at Supplier location.	X	X
25	Trial Run@Rate MPT (Mass Production Trial)	MPT: Mass Production trial, run with presence of ASQ, with goal to check the full capacity and with a check list per workstation, (specific tools and equipment's 100% in place). The "Mass Production Trial": • produces parts for final Production Part Approval • These parts have to be validated through the Production Validation Plan (PVP) • Therefore MPT timing is before production validation at the latest SOP –(3 months + PVP lead time) or before FNG internal MPT • date must be defined at supplier kick off must be carried out at the supplier production location. 	X	X

	APQP ELEMENTS	DEFINITION	FNG	SUP
25	**Trial Run@Rate MPT (Mass Production Trial)**		X	X
26	**Process Audit (Supplier)**	Audit performed by the supplier to qualify his product/process, before the run at rate done by ASQ FNG.		X
27	**Process Capability Study**	Machine, Short Term & Long Term Capability studies performed on KPC & KCC. Capability targets to be reached are, according to how characteristics are shown on drawing: S/R characteristic: 1.67 Other Key characteristic (KPC, KCC): 1.33 For other characteristics shown on the drawing, conformity must be assured all along the product cycle life. In particular: PPAP, engineering change, production transfer and process change. Capability target values are the same *regardless of the programme phase*. However, the type of capability study to be carried out differs, as shown in the following table: Programme phase / Type of Capability Study / Minimum Sample size (1) / Reaction rules according to capability study result: Below target(1) / Above target(1) Before & during 1st Production Trial: Machine Capability: 30 parts in a row Mass & Extended Mass Production Trial: Short-term Capability: 25 samples of 2 parts: Improve process capability (2) / OK Serial Life: Long-term capability: 50 parts at random: 100% inspection mandatory(3) / Use SPC(4) (1) minimum required (2) 100% inspection mandatory for pre-series too (3) Mandatory for S/R and strongly recommended for special characteristics (4) Strongly recommended for special characteristics - not required for other characteristics	X	X
28	**Production Validation Plan**	Testing based on off-tool, off final process parts which may include: - Raw material Evaluation/certification - Performance tests - Reliability, Durability tests - Functional tests - Other The testing must include environmental ageing, dimensional wear and material fatigue.	X	X

	APQP ELEMENTS	DEFINITION	FNG	SUP
29	**Early Containment Plan**	Enhanced Control Plan, including a Temporary Quality wall on critical parts; or reinforced inspection in other cases, or pending pre-production safe launch Early Production Containment requires either : • a Pre-Launch Control Plan which is a significant enhancement to the supplier's production control plan which will raise the confidence level to ensure that all products shipped initially will meet FNG's expectations. • The pre-launch control plan will also serve to validate the production control plan and should take into consideration all known critical conditions of the part as well as potential areas of concerns identified during the Production Part Approval Process. A Temporary Quality Wall is an additional inspection operation, implemented for 100% of parts after final inspection, to prevent non-conforming parts from going to the Customer. Preventively, a quality wall shall be put in place whenever a customer quality risk is identified. Implementing a preventive quality wall is mandatory in case of a start and significant transfer of production. The quality wall can be removed as soon as it does not detect defects anymore. Removal decision must be validated by FNG Supplier Quality (SQA). The best way to quickly remove a quality wall is to remove check items one by one as soon as one defect is proven to be always detected by the line.		X
30	**PPAP Production Parts Approval Process**	All suppliers are required to obtain full approval from the FNG receiving facility per the below requirements based on of the AIAG Production Part Approval Process (PPAP) Manual. Approval based on the Initial Samples and associated documents integrating the below items(retention at supplier versus submission to FNG can be discussed, however Control Plan and FMEA abstract are mandatory parts of the Submission package). All sample submissions are to be Level 3 (per AIAG) unless otherwise specified, and • PPAP Initial Submission Level is 3 for all new parts; this constitutes full compliance with PPAP Checklist. • This requirement also applies for all PPAP activity comprising: Supplier and/or Tool relocation, in-sourcing, out-sourcing and/or re-sourcing. • In the case of ECRs affecting parts for which Full PPAP Approval has been achieved, the required submission level is 2. • In the case of Periodic Requalification, the required submission level is 4 (refer also to note below in §5). • In the case of components developed/supplied by an Expert and/or Co-Designer supplier (typically Black-Box components), the Initial PPAP Submission Level is 5. After each ECRs in series, supplier have to submit a new PSW if drawing has been updated or new index.		X

<table>
<tr><th></th><th>APQP ELEMENTS</th><th>DEFINITION</th><th>FNG</th><th>SUP</th></tr>
<tr><td>30</td><td>PPAP Production Parts Approval Process</td><td>PPAP SUBMISSIONS OVER 1 YEAR OLD
Whenever FNG is required to submit PPAP to their customer, all suppliers PPAP documentation must be no more than one year old. At that time, all PPAPs over one year old are to be updated upon request by FNG, regardless of the supplier’s business relationship with FNG’s customer.

Unless something else is agreed in the form of a formal Contractual Agreement between Flex N Gate and its Customers, the responsibility to conduct APQP and PPAP activities throughout the entire life of the product, resides exclusively at the Customer, especially for S/R components.

PSW STATUS
<table><tr><td>Full Approved (by only SQA)</td><td>Saleable cars Milestone</td></tr><tr><td>Interim Approved (approved with deviation by ASQ)</td><td>- For all parts approved with deviation status, ASQ has to present action plan to insure full PPAP status before saleable car milestone
- All parts match with design
- Interim Approved status allows deliveries without specific supplier derogation form</td></tr><tr><td>Rejected</td><td></td></tr></table>
Part submission Warrant (PSW) document is a cover sheet to document and give the approval status of each part. This PSW is registered into ePPAP portal.</td><td></td><td>X</td></tr>
<tr><td>31</td><td>Transition to series & Lessons learned</td><td>Review the SLI and
End of APQP
Transfer to series production – ASQ to SQA with APQP production parts transition record</td><td>X</td><td></td></tr>
</table>

3.4 Identification, marking and traceability

Each component must be marked to permit the material identification regarding their recycling. This marking must be visible after the final assembly. The material type mark must be in accordance with FNG and OEM requirements.
The marking has to be in accordance with the relevant individual traceability requirements.
Components have to mention:

- Part reference
- Customer logotype
- FNG logotype
- Date indicator
- Material
- Part index
- Cavity number

Batch identification shall permit traceability back to the specific supplier raw material batch numbers, as well as the manufacturing, inspection and test records. The traceability shall ensure within 24 hours, all evidence associated with a suspicious batch can be produced.

4. SUPPLIER QUALITY MANAGEMENT IN SERIAL PRODUCTION

4.1 Incoming inspection

Before initial PPAP, all parts are subject to an incoming inspection conducted by the SQA based on defined quality and/or logistics criteria. FNG reserves the right to not perform any incoming inspection on parts under quality assurance status. In this case, FNG check will be limited mainly to logistics criteria and externally noticeable transport damages.

4.2 Definition of non-conformity

An incorrect part is a component, assembly, part, collection of parts or materials identified in the Series Phase as not meeting the quality level approved at the PPAP and/or at any other subsequent agreement with the customer. They include parts with packaging and labelling issues. Missed or late deliveries are also considered and recorded as non-conformities.
Problems caused by FNG personnel or FNG designated carriers are not to be taken into account. The same rule applies for problems caused by FNG designed packaging under the condition that a formal document has been sent by the supplier to the FNG denying any responsibility in case of problem due to this packaging. If not, the FNG designed packaging is supposed to be accepted by the supplier.

How to count parts in a packaging unit? For big containers, the packaging unit is usually the same as the handling unit; for small boxes, the packaging unit is the small box and not the handling unit.

If an incorrect part is found by the customer in a packaging unit, we count just one part in the Packaging unit.

If other packaging units are then doubtful:

- We count all parts in the packaging unit when the packaging unit is sorted by FNG
- We count only the incorrect parts when this activity is organized by the supplier in FNG premises.
- We do not count any part if the supplier replaces the packaging unit by a new one under 48

hours.
- Those rules apply also to mislabeled packaging units
- In case the parts did not request rework as such but a temporary production set up, we count only the parts used to allow for this set up.

4 levels of "perturbation of flow" are stated according to the disturbance generated by the failure:

~ S1 Disturbance of the supply flow
~ S2 Disturbance of the production flow
~ S3 Stoppage of FNG production line – Warranty return
~ S4 Claim from FNG customer
~ S4/SR Claim from FNG customer related to a S/R characteristic

4.3 Management of the non-conformity

When purchased material does not meet standards (e.g. quality, engineering change level, adherence to test specifications, etc.), or last qualified PPAP, a quality claim (QP) is raised by FNG based on the PLM system and send by email to the supplier.
The supplier is requested to:

- Submit to FNG an 8D report to document the problem and prevent its reoccurrence (the 8D report can be either the format proposed by FNG or supplier's 8D own format)
- Send the 8D file by email to the SQA

D1	Problem description:	What is the problem?
D2	Risks on similar products and processes	I have same problem elsewhere?
D3	Containment actions **(<24h)**	How to contain?
D4	Root cause for non-detection	Why sent?
D5	Root cause for occurrence	Why made?
D6	Corrective action plan	**(<10days)**
D7	Effectiveness	
D8	Lessons learned	**(<60 days)** What did we learn? How to capitalize and transversalize?

If the supplier does not react or answer in the timeframe specified, FNG reserves the right to take all necessary actions to secure deliveries and quality to customer.

4.4 Supplier performance evaluation

Evaluation of supplier performance is done according to following indicators:

- NOK batch quantity ("Refused") which is used to calculate the received ppm

- Quantity of "incorrect parts" after sorting , or after supplier reaction, leading to official Supplier PPM

$$PPM = \frac{*\text{Number of incorrect parts}}{*\text{Number of delivered / received parts}} \times 1{,}000{,}000$$

  Note that this measurement is an invitation to the supplier to react promptly by organizing the sort and/or replacement

- Number of Complaints (QP) ; with emphasis on number of S4 & S/R related complaints

- Claim Severity level = The disturbance generated by the failure as defined before (S1, S2, S3, S4 and S/R)

- Supplier Service Rate ; the indicator which measures supplier delivery performance is the SSR :

$$SSR = \frac{\text{Nb of lines delivered in the wrong quantity or at the wrong time}}{\text{Total Nb of lines ordered}} \times 1{,}000{,}000$$

  FNG measures the supplier's delivery performance by recording at receiving that Delivery Time and Quantity are compliant with the instruction given named MANIFEST.

4.5 Supplier indicators and targets

The Quality Commitment Form (EEPUF.90012) defines supplier targets (PPM, S4, SSR and Warranty return) between FNG and supplier. The supplier signed this document at award stage.

Without specific agreement with FNG Buyer, the targets set by default are:

- 15 PPM (monthly – 6MR)
- 0 S4 (monthly – 3MR)
- 100% SSR (monthly – 6 MR)
- 0 Warranty return (year)

The supplier performance is available on ePPAP website as "eScorecard". Supplier can access to the figures / data at any time.

5. WARRANTY MANAGEMENT

FNG Customers assert increasing importance on product performance and expenses attributed after vehicle sale. With increasing consumer awareness to vehicle performance and reliability, OEM customers extend warranty coverages. It is vital for FNG and their supply base to focus on durable and persisting quality of their products.

5.1 Warranty cost responsibility

OEM customers have stipulated that warranty costs will be shared with their supply base and FNG stipulates the same expectation. All applied OEM warranty system processes, procedures, agreements and requirements will transmit through to the FNG supply base in the same accordance. When a supplier's component is implicated in warranty, recall or campaign of any kind, the supplier will be held responsible for root cause analysis, appeal or rebuttal of claim, and must be prepared to accept all associated costs. As such, suppliers are expected to participate in warranty activities.

5.2 Improvement and corrective action process, regardless if component is returned

General responsibility and costs for which a supplier is accountable works in conjunction with the Flex-N-Gate Purchase Order and Standard Codes and Terms of Supply as found on our web portal ePPAP https://flexngate.eppap.com/.

6. COST MANAGEMENT

In the event the product do not conform to the foregoing warranty and/or the supplier, is in breach of the agreement and/or contract, FNG may, without prejudice to FNG's right to claim for damages, charge the supplier with, and the supplier undertakes to bear, all and any repair or replacement costs including but not limited to:

- The administrative costs:
  The basic administrative costs are fixed at a lump sum per complaint (one complaint per event see amount in ***Appendix 4***. This amount covers the costs of supervision and analysis of non-conformity.
  A multiplication factor between 2 to 10 of this lump sum may be applied, with prior written notice by FNG, in case of repetitive defects, as follows: x2 for first reoccurrence & S4; x4 for second reoccurrence in < 3 months, x10 for safety.
- The operating costs of protective measures taken by FNG:
  The "per hour cost" (see ***Appendix 4***) if FNG's personnel carry out additional temporary incoming inspection, sorting, destruction or reworking activities.
  Any hour started shall be charged as a full hour.
- The costs incurred in the downstream operation stage:
  If the non-conformity is detected during the manufacturing or processing stage, FNG at its sole discretion shall charge supplier with, and supplier undertakes to bear, all and any costs and/or

expenses incurred by FNG in relation to and/or in connection with such non conformity, such as, but not limited to the costs for:

- Substitute deliveries,
- Rejects of completed and/or semi-finished products
- Machine downtime (costs incurred as a consequence of)
- Staff costs associated therewith
- Transportation costs
- Packaging and handling costs

- Third party claims and costs and other additional costs, such as, but not limited to:
  - Claims charged to FNG by the customer.
  - Costs of an expert(s), where such expert was been employed, in particular to determine defects or to determine which possibilities exist to remedy such defects.
  - Damages to FNG property or to property of customer. Logistic costs (transportations, repackaging, trip to customer, travels,)
  - Cost of any tests and/or controls relating to any renewed or replaced product.

FNG undertakes to make available to the supplier the documentary evidence of such costs.

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APPENDIX 1 – PPAP ITEMS

ITEM	INPUTS
1	**Design Records**: (drawings): index & appropriate part number and name correct
2	**Engineering Change Documents**
3	**Customer Engineering Approval** Waivers if applicable; Component Review Team **Key Characteristics**: List including all Safety & Regulations characteristics, functional characteristics (and aspect if important for customers)
4	**Design FMEA**
5	**Process flow diagram** BOM; (critical) **Sub-Supplier** PSW; Supply chain description (Tier 3 & +)
6	**Process FMEA** (or Reverse PFMEA if applicable)
7	**Control plan** and final inspection "Work Instructions"
8	**Measurement System Analysis** gage R&R, calibration records, work instruction
9	**Dimensional Results & Fitting** Dimensional results; Assembly (Fit) and Process ability test; Recommended code of Practice, manipulation, storage
10	**Material Compliance** to Regulations & Restrictive substance report (IMDS, REACH, …), Safety and Regulation data sheet Materials, Substances, and Recyclability data submission Copy of the acceptance note or print out of the 'Recipient Data' from IMDS as evidence of submission. Data from their respective sub-suppliers. & **Performance Test Results** DVP & Report; Product Validation Test results (material, performance, Optic, Acoustic, reliability,...)
11	**Process capability**
12	**Laboratory scope and accreditation**
13	**Appearance approval** report (Style, Visual) & Border samples existence
14	Sample **Parts** (IS, Initial Samples): production part status sheet; part photo; Marking (with shipping label and sample part label); Packaging (description and acceptance);Tool Identification (photo of the plate)
15	Master / Border Sample (+ photo book when required)
16	**Checking aids/ Gages** Testing/Measurement equipment calibration record Approval form Gage work instruction
17	**Compliance** to Customer & FNG **Specific requirements**: Run@Rate, MPT, Commitments (Capacity, Quality, Feasibility, S/R;…), Early containment plan Training plan of operators
18	**Cover sheet** = "**PSW**" Part Submission **Warrant** reason for submission index & appropriate part number and name correct; correct weight provided; supplier signature of an authorized official responsible for the submission **SLI** (Single list of (open) Issues)

APPENDIX 2 – APQP Elements vs Part type

Minimum Requirements Items for: Bought Out Parts, Carry Over Parts, Raw-Materials & Mandated Supplier

APQP Elements Items to be documented by FNG are shown in boldtype)	BOP					COP	Raw material					Mandated		Comments:
	Expert	Designer	Manufacturer LOW Risk	Manufacturer HIGH Risk	Sub-contractor		SMC (Sheet Moulding Compound	Granulate	Paint	Glass bonding	Foam	APQP element	Responsable (F or S or C (OEM) :	
1. Program Steering Committee	x	x		x			x						C	
2. Confidentiality Agreement	x	x	x	x	x		x						C	
3. Special Characteristics	x	x		x			x			x	x		C	
4. Technical Input Requirement	x	x		x			x			x	x		C	
5. Technical Reviews	x	x		x			x						C	
6. Risk Assessment (0 & 1)	x	x	x	x	x	x	x		x	x	x		C	
7. Master Schedule	x	x		x			x			x	x			
8. Feasibility Commitment	x	x	x	x	x	x	x			x	x		C	COP: Check capacity and tooling status
9. Sourcing Committee	x	x	x	x	x		x						C	
10. Sourcing decision / Contracts/SOW	x	x	x	x	x		x		X			X	C	Mandated: SOW performed by Program Manager signed
11. Program review/Kickoff	x	x	x	x	x		x			x	x			
12. Design FMEA	x													
13. Design Review	x													
14. Pre production and Prototype Builds (if required)														
15. Design Verification Plan	x	x		x			x							
16. Drawings & Specifications Freeze	x	x		x		x	x				x	x	F	COP : Measurement report in according to drawing
17. Process Flow Chart	x	x		x			x							
18. Process FMEA	x	x		x			x							
19. Facilities, Tools & Gauging	x	x		x			x				x			Foam : control report
20. Control Plan & testing	x	x		x			x	x						Raw material : Get Material Certificate
21. Packaging/ Storage	x	x		x		x	x	x	x	x	x	x	F	
22. Training Plan	x	x		x			x	x						
23. Appearance Approval / Boundary Samples	x	x	x	x	x		x		x					
25. Trial Run @ Rate/Process Audit	x	x	x	x	x	x	x	x						COP : Check capacity and tooling status
26. Process Audit	x	x	x	x	x		x							
27. Process Capability Study	x	x	x	x	x		x	x						
28. Production validation plan	x	x	x	x	x		x				x			IMDS: required for mandated suppliers
29. Early production containment plan	x	x	x	x	x		x	x						
30. PPAP (minimum level)	3	3	3	3	3	2	3	2	2	2	2	4	C	COP : Update PPAP for relevant plant Mandated : Managed by PQL
31. Transition to Series & Lessons Learned	x	x	x	x	x		x							

APPENDIX 3 – Mandatory Recycling Material Checkpoints

Mandatory Recycling Material Checkpoints

Supplier name	
Contact name	
Contact mail & tel	

		Answer : Y/N	Comments
1	The Organization requires the recycled material supplier to have Material analyse- and test-data stored properly and steadily available on request.		
2	The Organization requires that recycled material suppliers secure that only qualified employees define and adjust recipe of materials, additives and fillers.		
3	The Organization requires the recycled material supplier to have Injection Moulding machines to produce test-samples within their facility.		
4	The Organization requires the recycled material supplier to have an ISO 17025 certified in-house lab with test-equipment for X-ray, IR-spectroscopy, DSC-analyses, MFI, Flow-spiral, VICAT, Tensile-strength, Notched and unnotched impact-test, Filler-content.		
5	The Organization requires that recycled material suppliers secure that only qualified employees analyse test material and test-samples.		
6	The Organization requires that recycled material suppliers secure that only qualified employees test odour.		
7	The Organization requires that all recycled material suppliers secure that there is no foreign content in the material (foreign content: metal or other then intended polymers). Any Deviation from this is specifically approved by the Organization.		
8	The Organization requires that every batch of sourced recycled material are proven to be free of hazardous or regulated substances.		
9	The Organization requires that all recycled material suppliers demonstrate to have sufficient capacity over time.		
10	The Organization requires that all recycled material suppliers supply a material certificate, stating that the material is within spec and containing specific properties like Density, MFI, Filler-content , Recycled-content and other properties that are relevant to the respective material for every batch that is delivered.		
11	The Organization ensures that recycled material supplier has full traceability of material from their respective source (regrinders, moulders, material-producers) until material leaves their facility. All in-house traceability is assured by scanning.		
12	The Organization requires that all recycled material suppliers secure that all recycled material suppliers haves that every batch of material fulfils specification regarding content (IR-spectroscopy, DSC-analyses, X-Ray) and material properties according to agreed test methods.		

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APPENDIX 4 – Repair and Replacement Costs; Costs of Non-Quality

Event / cost type	Unit cost Standard
Administrative costs	150 Euro per complaint (*one complaint per event*[1])
Operating costs of protective measures; sorting, destruction of parts	33 Euro / hour
Costs incurred in the downstream operation stage or Third Party claims	
Rejects of completed and/or semi-finished products	Real costs
Retrofit of sub-assemblies or vehicles	
Machine downtime	@ standard machine rate
Staff costs associated	55 Euro / hour
Lost production time	Based on direct+ indirect labour of the stopped line
Transportation costs	Based on real costs + 10% handling charge
(Re) packaging & handling costs	55 Euro / hour if internal Based on real COSTS IF external
Travels and extra- trip to customer	Based on real costs + 10% handling charge
Claims charged by the customer	Based on real costs + 10% handling charge
Costs of an expert[2]	Based on real costs + 10% handling charge

[1] "Per event" may be replaced by "per event in a given time period (day or week) in case of part specific repetitive issues, under condition of a specific definition agreed between the Parties.
A multiplication factor between 2 to 10 of this lump sum may be applied, with prior written notice by FNG, in case of repetitive defects within this family of parts.

[2] Providing that the Supplier has been formally informed about his nomination