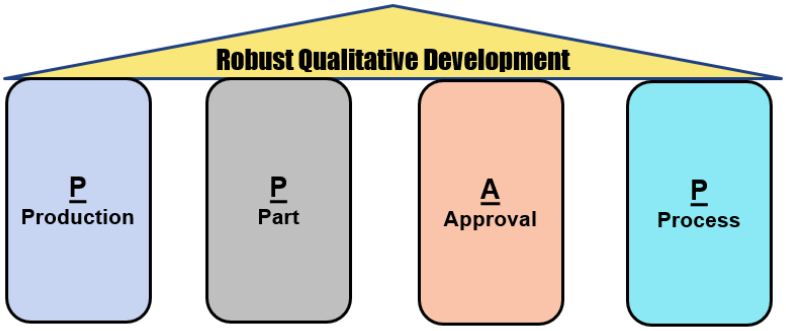

HSPPAP - HYVA SUPPLIER PRODUCTION PART APPROVAL PROCESS

Policy & Procedure – Hyva's BU Components

This document provide detail guidelines on supplier production part approval process

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Contents

VISION

- Partner with suppliers to drive flawless execution of projects and deliver products/parts that surpass customer expectations.

MISSION

- To assure systematic approach of approving a new development part/product for mass production
- To assure existence of control mechanism for validating the product and connected Processes to deliver first time right product as per design requirements

VALUE

- Employ robust and focus process of verifying and approving part/product for mass production
- Specific responsible functions and approval stages are defined for each crucial step
- Capturing required key steps of part/product development and validation

SCOPE

- It is applicable for below cases related to Hyva' s BU Components Suppliers. However, in future if other BUs' (Recycling & Cranes) found interest then can be extended: -
- A new part or product (previously not supplied to Hyva).
- Correction of a discrepancy on a previously submitted part/product
- Product/Part modified by an engineering change to design records, specifications, or materials
- Addition of a new process/change to the existing approved process (Like 4M1E (Man, Machine, Material, Method, Environment), Manufacturing Process, Inspection & Testing process, etc.)
- Change in Supplier/Sub-Supplier and connected manufacturing location

CONNECTED DOCUMENTS

All mentioned documents as per HSPPAP product category wise documents requirement

Five Phases of Hyva Supplier Production Part Approval Process

Initial Go-Ahead

P1

- Initiate the PPAP process by placing the request and connected pre-requisites internally (Project Team/R&D – Procurement – SQ) and externally (Supplier).
- Perform Manufacturing Feasibility Analysis with the supplier to Go-Ahead with the Development Activities.

Requirements Definition, Submission, and Sign-off

P2

- In-advance & In-detail Overall Hyva' s Requirements connected to development, validation, testing, and approving are defined, discussed, submitted, and signed-off.
- Requirements includes - Hyva Input Requirement/Special Characteristics Sign-Off/Design Validation Requirement & Planning/ Fixture Tooling Gauges/PPAP Submission Level & Connected Documents Requirements).

Proto Documents & Samples Development & Submission AND Way Forward Improvements

P3

- Supplier develop & submit Proto Documents (PFD, PFMEA, Control Plan, PIST) and Proto Samples to Hyva
- Proto samples inspection & trial done at Hyva. Connected correction & Improvement points communicated to supplier
- Supplier submit way forward action plan to Hyva

Pre-Launch Documents & Samples Development & Submission AND Way Forward Improvements

P4

- Supplier develop & submit Pre-Launch Documents (PFD, PFMEA, Control Plan, PIST) and Pre-Launch Samples to Hyva
- Prelaunch samples inspection & trial done at Hyva. Connected correction & Improvement points communicated to supplier
- Supplier submit way forward action plan to Hyva

Perform & Approve PPAP AND Final Go-Ahead for Mass Production

P5

- Completion & Approval of Design Validation, Fixture Tooling Gauges, and Process Validation
- First level Internally (Supplier) and Final Level Externally(Supplier + Hyva) PPAP is performed and PSW signed-off & Approved by Hyva
- Hyva furnish Go-Ahead to Supplier for start supplying Mass Production Parts

Introduction

The HSPPAP is a framework of requirements used in the Hyva' s supply chain to establish confidence in suppliers and their manufacturing processes. PPAP was developed by the AIAG and has been adopted with advancement by Hyva to develop & approve qualitative & quantitative bought out parts

DEFINITION OF TERMS

HSPPAP: Hyva Supplier Production Part Approval Process
VAVE: Value Analysis/Value Engineering
SQ: Supplier Quality
PPAP: Production Part Approval Process
HIR: Hyva Input Requirement
DVR&P: Design Validation Requirements & Planning
FTG: Fixture, tooling, and Gauges
AIAG: Automotive Industry Action Group
PFMEA: Process Failure Mode Effects Analysis
PFD: Process Flow Diagram
PIST: Percentage Inspection Points Satisfying Tolerance
PIPC: Percentage Indices Process Capable
PTR: Production Trial Run
FTR: Fitment Trial Run
SC/CC: Significant Characteristics/ Critical Characteristics
R@R: Run at Rate

DEFINE TEAM

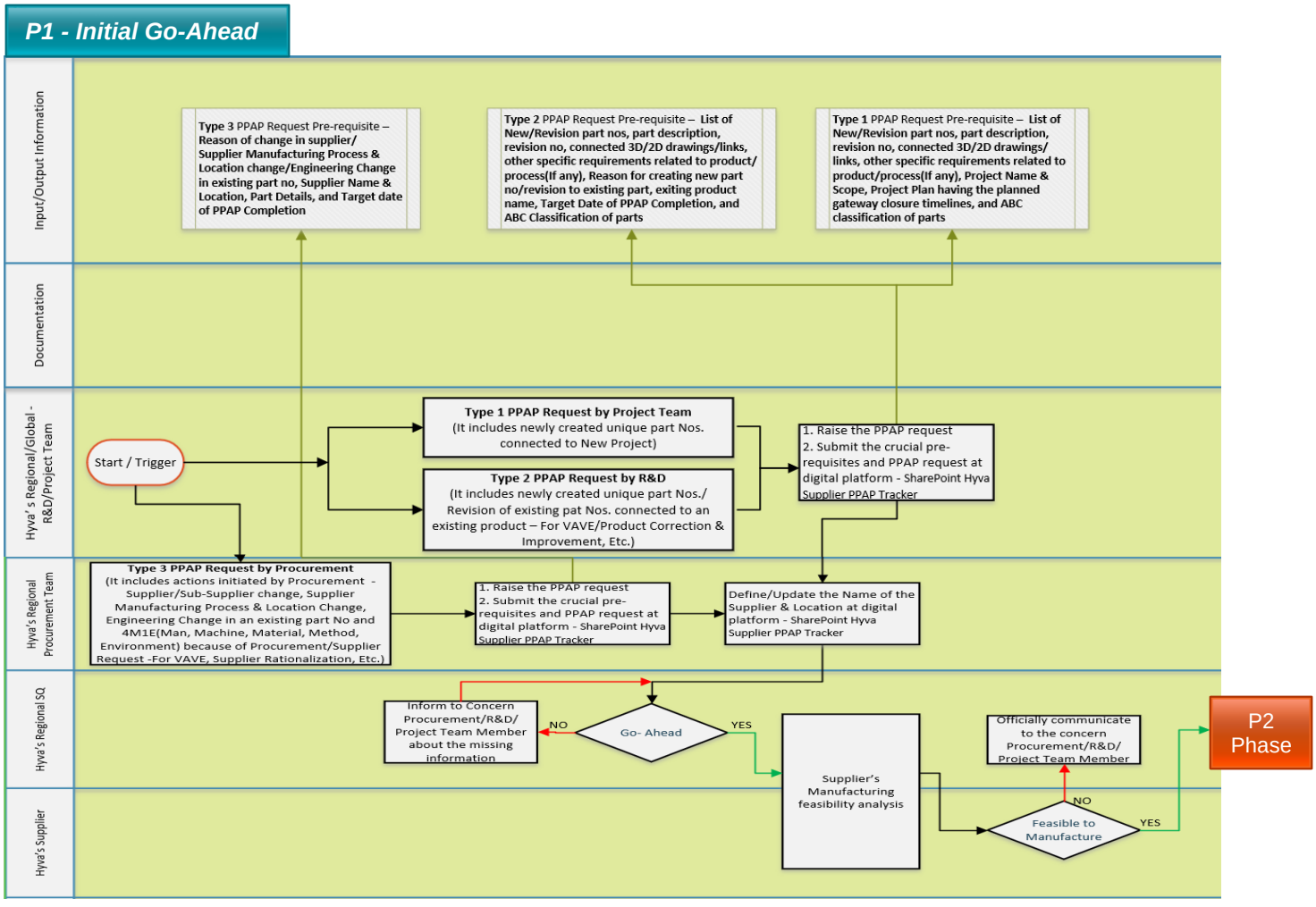
Activity	Hyva's Regional SQ	Hyva's Regional/ Global Procurement Team	Hyva's Regional/ Global R&D Team	Hyva's Regional Project Team	Supplier	Hyva's Regional Quality Head/Director
Type 1 PPAP Request		I		R&A		
Type 2 PPAP Request		I	R&A			
Type 3 PPAP Request	I	R&A	I			
1. First Level communication with the nominated vendor 2. Provide the Pre-requisite information	I	R&A			I	
Supplier's Manufacturing Feasibility Analysis	A	I			R	
Finalize the special characteristics (SC/CC) list	R&A		R&C		R&C	
Define and Communicate HIR, PPAP Submission Level, and connected documents requirements to supplier	R&A	I			I	
Need to submit the sign-off/official agreement of HIR, PPAP submission Level, and connected documents requirements	A				R	
DVR&P Report Submission	I	I	R&A	A	I	
DVR&P Acceptance & Sign-off	I&C	I&C	A	I	R	
FTG Identification, Approval, and Sign-Off with Supplier and concern Purchase Buyer	R&A	R			R	
Develop & Submit Proto Level-PFD, PFMEA, and Control Plan	I	I			R&A	
Review, suggest (if any correction), and Approve Proto Level-PFD, PFMEA, and Control Plan	R&A				I	C
Produce & Submit Proto Samples along with PIST Report	I&C	I			R&A	
Submission of Proto Samples Feedback	R&A	I	I&C	I	I	
Submit way forward Improvement/Correction Action Plan & Details	I				R&A	
Develop & Submit Prelaunch Level-PFD, PFMEA, and Control Plan	I	I			R&A	
Review, suggest (if any correction), and Approve Prelaunch Level-PFD, PFMEA, and Control Plan	R&A				I	C
Produce & Submit Prelaunch Samples along with PIST Report	I&C	I			R&A	
Submission of Prelaunch Samples Feedback	R&A	I	I&C	I	I	

Submit way forward Improvement/Correction Action Plan & Details	I				R&A	
Supplier Perform internal PTR & PPAP and submit internally approved PPAP documents to Hyva	I	I			R&A	
Supplier Perform external PTR with Hyva & jointly generate production PIST, PIPC, R@R report, and review PPAP documents as per required submission level	R&A	I			R	C
Perform FTR (Fitment Trial) of PTR produced parts at Hyva	R&A	I	I		R	C
PPAP & PSW Approve/Interim Approve/Reject and submit the sign off PSW copy	R&A	I			I	I

R: Responsible - A: Accountable - C:Consulted - I:Informed

Note : All above functions/teams belongs to BU Components

PROCEDURE



1.1 **Three Types** of PPAP request gets triggered from three different functions – Type 1 from Project Team, Type 2 from R&D/Engineering, and Type 3 from Procurement Team

1.2 With each request submission, it is mandatory to submit the below pre-defined pre-requisites: -
Type 1 - List of New/Revision part number, part description, revision no, ABC classification of parts, connected 3D/2D drawings/links, other specific requirements related to product/process (If any), Project Name & Scope, and Project Plan having the planned gateway closure timelines
Type 2 - List of New/Revision part nos, part description, revision no, ABC classification of parts, connected 3D/2D drawings/links, other specific requirements related to product/process (If any),

Reason for creating new part no/revision to existing part, exiting product name, and Target Date of PPAP Completion

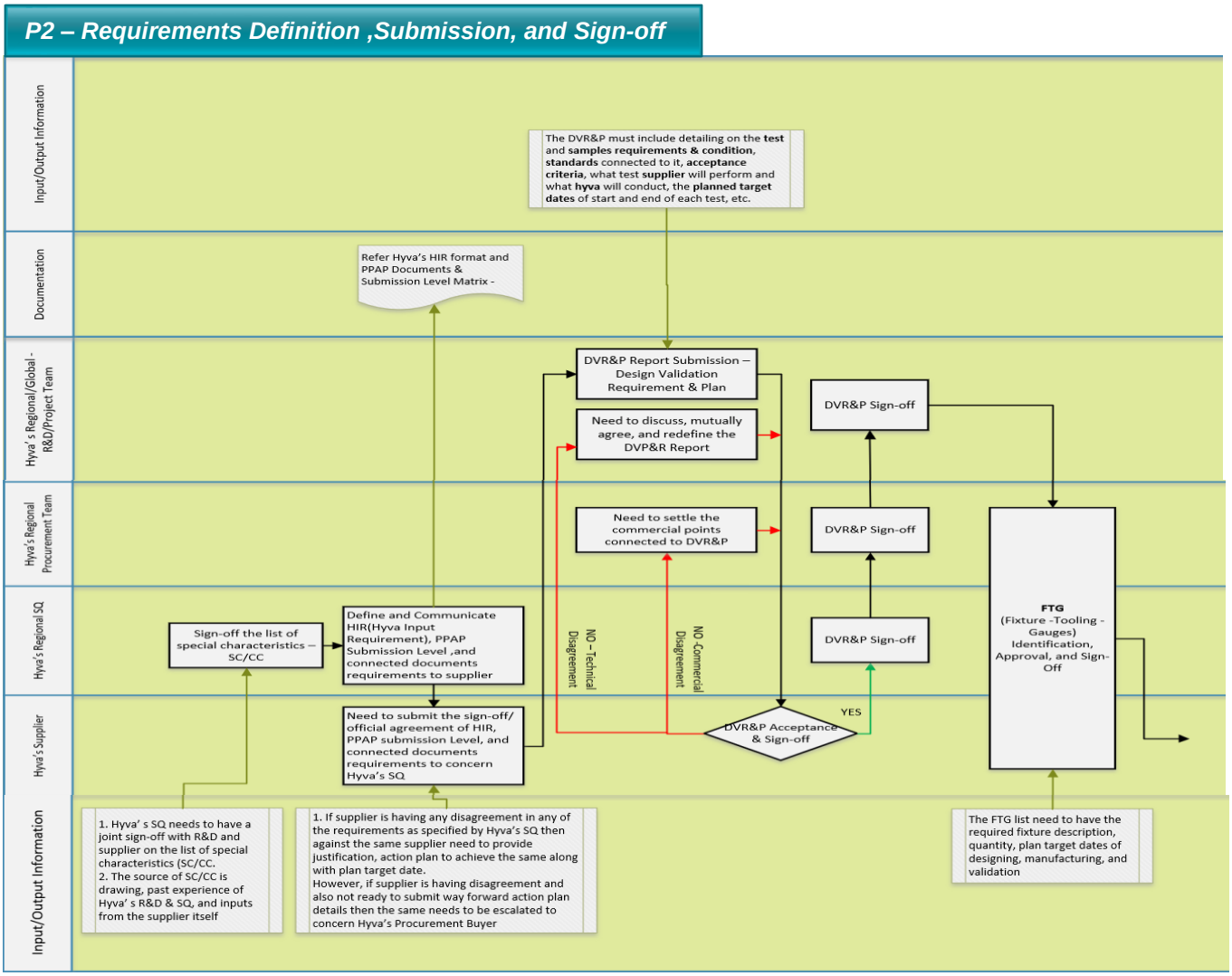
Type 3 - Reason of change in supplier/ Supplier Manufacturing Process & Location change/Engineering Change in existing part no, Production from new or modified tool, Tooling refurbished/rearranged/transferred, Supplier Name & Location, Target date of PPAP Completion, and Part details (Number, Description, Revision, ABC Classification)

1.3 For each type of PPAP request concern team member from concern function (Project Team/R&D/Procurement) need to furnish the pre-defined pre-requisite information & PPAP request to concern Hyva' s SQ person through digital SharePoint platform – Hyva PPAP Tracking

1.4 For each type of PPAP request, concern procurement buyer needs to define the name of the concern supplier & its manufacturing location at digital SharePoint platform – Hyva PPAP Tracking

1.5 Before going ahead, the concerned SQ person needs to ensure that all required information has been provided by the concerned request raiser/function. If not, then the initial submitted request needs to be rejected by SQ and communicate to request raiser along with defining the reason for rejection/ missing information.

1.6 Once everything is fine with the request submission process, the concerned SQ needs to reach out to the concerned supplier for **manufacturing feasibility analysis**. If manufacturing is feasible to the supplier, then go ahead with the subsequent process nor communicate to the concern Procurement/R&D/Project Team Member on the same.



2.1 Hyva' s SQ needs to have a joint sign-off with R&D and supplier on the **list of special characteristics** (SC/CC). The source of SC/CC is drawing, past experience of Hyva' s R&D & SQ, and inputs from the supplier itself

2.2 Hyva' s CFT - Cross functional team members (SQ/R&D/Procurement) need to define their individual connected requirements in **HIR** and submit to Supplier. Suppliers need to read & agree on all items & requirements. The HIR needs to be jointly signed-off by Hyva' s CFT and supplier's authorized person.

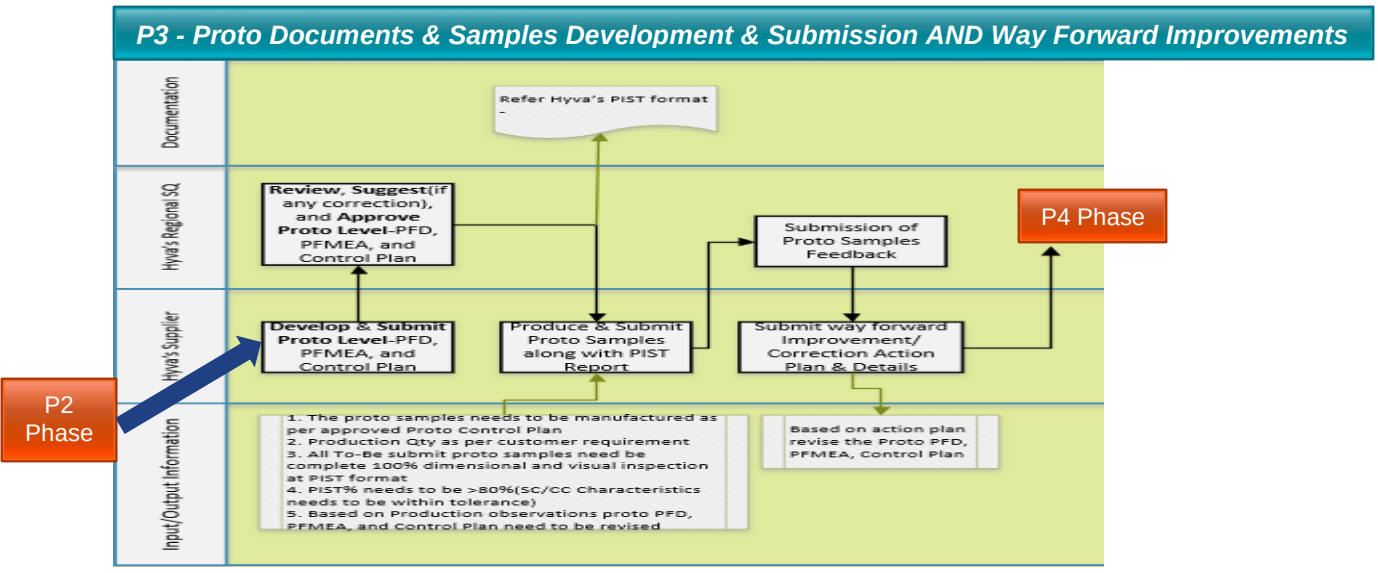
2.3 If there is a disagreement against any specific requirements as defined in **HIR**, then the supplier needs to provide justification and an action plan along with a target date by when the same will get met by the supplier. Any kind of disagreement/conflict needs to be jointly discussed and concluded. Concerned SQ need to escalate to concern buyer in case the supplier is not ready to submit any way forward action plan against a disagreement

2.4 Hyva' s R&D/Project Team needs to develop the **DVR&P** and submit the same to the supplier. Supplier needs to read all the requirements & timelines and provide the signed-off agreement. Supplier might be having disagreement against any design validation test requirements/timelines, in that scenario the same needs to be escalated to the concern function at Hyva (For Technical Disagreement need to reach out to the concern engineering person, whereas for commercial disagreement supplier needs to connect to the concern procurement buyer)

2.5 The DVR&P must include detailing on the test and samples requirements & condition, standards connected to it, acceptance criteria, what test supplier will perform and what hyva will conduct, the planned target dates of start and end of each test, etc.

2.6 Jointly Hyva' s procurement buyer, Hyva' s SQ, and the supplier needs to identify the **FTGs'** required, agree, and have a sign-off. Supplier needs to submit the FTG plan. FTG plan must include required FTG description, quantity, and plan target dates of designing & manufacturing & validation

Note: - For parts where supplier is responsible for design, in that case supplier will be defining the design validation requirements (meeting Hyva' s Requirements) and preparing the Design Validation plan with an OK agreement sign-off with Hyva' s R&D, SQ, and Procurement. All output design reports will be accepted only after having concern Hyva' s R&D approval.



3.1 The supplier needs to develop & submit **proto-Level**-PFD, PFMEA, and Control Plan to Hyva' s SQ for way forward review and approval

3.2 After receiving the suggestions for improvement/ correction or approval the supplier need to produce **proto level samples** & **PIST Report** and submit the same to Hyva for way forward approval

3.3 Supplier needs to **focus** on the below points during manufacturing of proto samples: -

a) The proto samples need to be manufactured as per approved **proto–control plan**
b) Production Qty as per customer requirement
c) All To-Be submitting proto samples need be complete **100%** dimensional and visual inspection at PIST format
d) **PIST%** needs to be **>80%** (**SC/CC** Characteristics needs to be within tolerance)
e) Based on Production observations proto-PFD, PFMEA, and Control Plan need to be revised

3.4 Hyva' s SQ needs to communicate the received proto samples feedback from R&D to the supplier. Accordingly, supplier need to define & submit corrective actions/revise the proto documents – PFD, PFMEA, and Control Plan (If required)

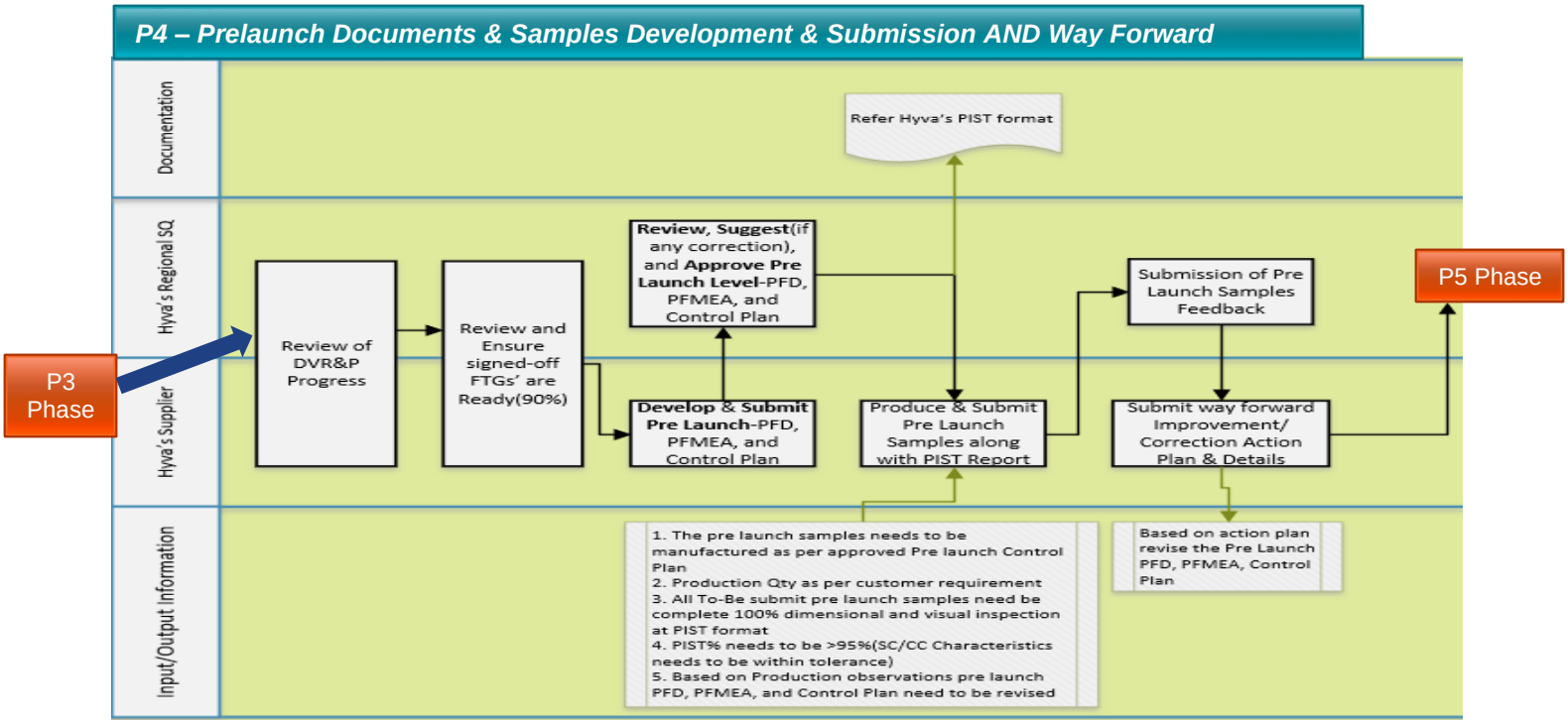
3.5 However, where R&D is directly responsible for the proto development from supplier their R&D will be having a direct TO and FRO communication with the supplier for points related to proto part/product development and approval. In such a case SQE needs to be kept at loop in all kinds of communication which R&D will be having with the supplier.

Note: -

a) Hyva' s SQ need to communicate the Proto samples lot Invoice Number and supplier's Proto PIST Report to regional plant quality manager & incoming inspector before the lot reaches Hyva

b) Suppliers need to attach identification stickers on the proto sample's box/pallets. Identification sticker needs to have the Project Name, Part Number, Part Description, and Proto samples wording.

c) The entire proto phase requirements can be phased out by the responsible SQE with an approval from the quality head/director based on the connected project needs.



4.1 The supplier needs to develop & submit **prelaunch-Level**-PFD, PFMEA, and Control Plan to Hyva' s SQ for way forward review and approval

4.2 After receiving the suggestions for improvement/ correction or approval the supplier need to produce **prelaunch level samples** & **PIST Report** and submit the same to Hyva for way forward approval

4.3 Supplier needs to **focus** on the below points during manufacturing of prelaunch samples: -

a) The prelaunch samples need to be manufactured as per approved **prelaunch control Plan**
b) Production Qty as per customer requirement

c) All To-Be submitting prelaunch samples need be complete **100%** dimensional and visual inspection at PIST format

d) **PIST%** needs to be **>95%** (**SC/CC** Characteristics needs to be within tolerance)

e) Based on Production observations prelaunch-PFD, PFMEA, and Control Plan need to be revised

4.4 Hyva' s SQ needs to submit the received prelaunch samples feedback to the supplier. Accordingly, supplier need to define & submit corrective actions/revise the prelaunch documents – PFD, PFMEA, and Control Plan (If required)

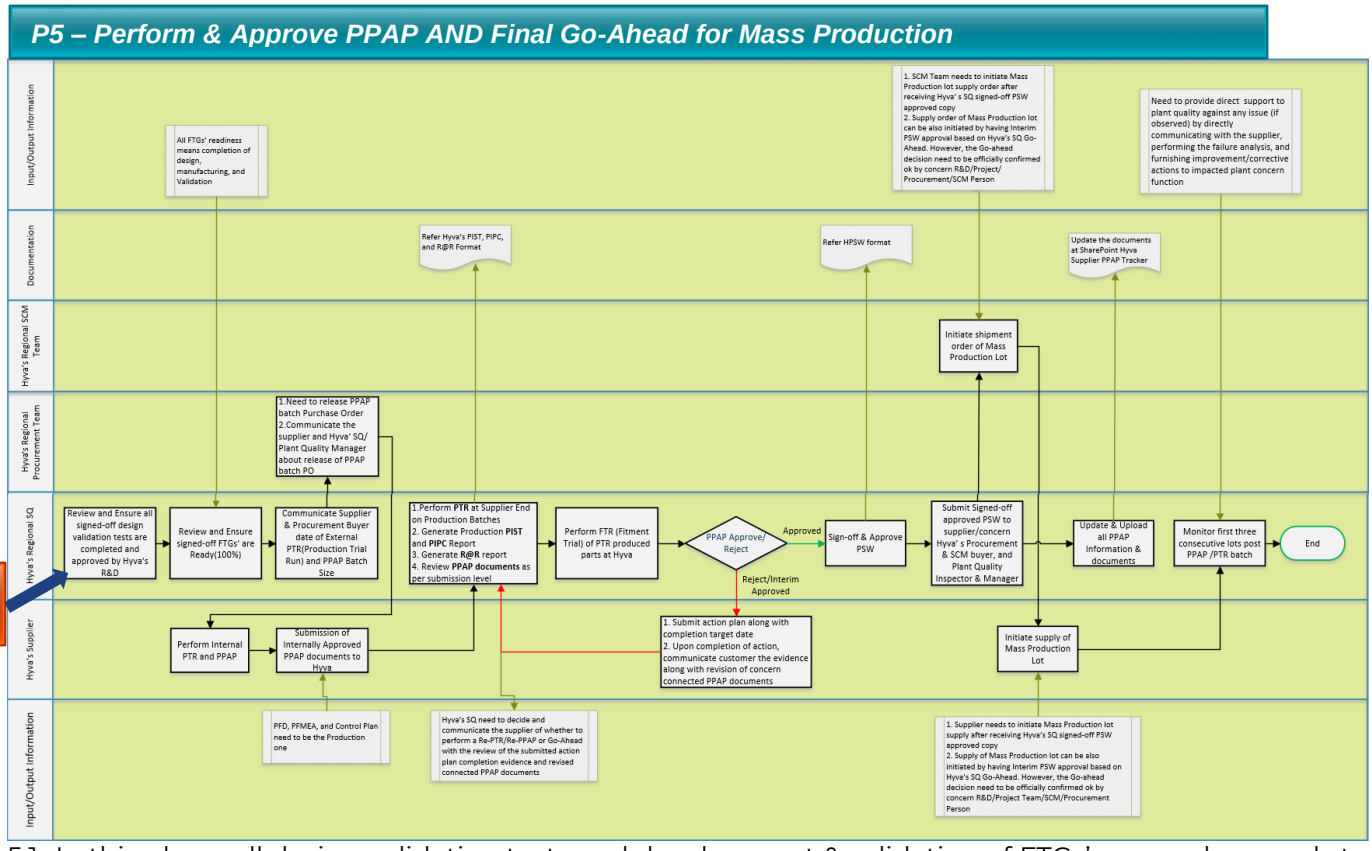
4.5 Hyva' s SQ needs to jointly review the **DVR&P progress** with the supplier. Need to ensure that things are moving as scheduled. If observed anything is getting delayed, then the same needs to be escalated to the concern person to move the things at required speed

4.6 Hyva' s SQ needs to jointly review the **FTG development progress** with the supplier. Need to ensure that things are moving as scheduled. If observed anything is getting delayed, then the same needs to be escalated to the concerned person to move the things at required speed. The FTGs readiness during this phase needs to be **90% and above**.

Note: -

a) Hyva' s SQ need to communicate the Prelaunch samples lot Invoice Number and supplier's Prelaunch PIST Report to regional plant quality manager & incoming inspector before the lot reaches Hyva

b) Suppliers need to attach identification stickers on the prelaunch sample's box/pallets. Identification sticker needs to have the Project Name, Part Number, Part Description, and Prelaunch samples wording.



5.1 In this phase all design validation tests and development & validation of FTGs' as per plan needs to be completed and approved by Hyva

5.2 Hyva' s SQ needs to communicate with the supplier the external PPAP/PTR date and the PPAP batch size

5.3 Hyva' s procurement buyer needs to release PPAP batch Purchase Order (PO). Communicate the supplier and Hyva' s SQ/ Plant Quality Manager about release of PPAP batch PO

5.4 To have proactive involvement of Plant Quality Team (who after PPAP is going to handle the newly developed part/product till the lifecycle), the regional SQE needs to pre-intimate & pre-confirm plant quality involvement when actual PTR (Production Trail Run) and PPAP is getting performed

5.5 The Hyva' s SQ needs to perform **PTR** (Production Trail Run) on production batches at supplier end, generate **PIST** (the report must include 100%-dimensional, material, performance, and visual characteristics as per design/agreement) and **PIPC** (the report must include 100% special and safety characteristics as per design/agreement) reports, and review PPAP documents as per requested submission level. Production batch PIST% and PIPC% need to be **100%**

5.6 The Hyva' s SQ along with the supplier needs to generate the sign-off **R@R** (Run at Rate) report during the PTR

5.7 However, before Hyva' s **external PTR/PPAP**, the supplier needs to perform **internal PPAP/PTR** and submit Hyva the internally **approved** PPAP documents

5.8 Jointly supplier and Hyva needs to perform **FTR** (Fitment Trial Run) at Hyva' s production line with the produced production ready batches during Hyva' s PTR at supplier end

5.9 Hyva' s SQ need to decide and communicate the supplier of whether to perform a Re-PTR/Re-PPAP or Go-Ahead with the review of the submitted action plan completion evidence and revised connected PPAP documents

5.10 After completion of all the above steps Hyva' s SQ needs to go-ahead with the approval/interim approval/rejection of the PSW/PPAP. In case of Interim approval/rejection of the PSW/PPAP, supplier need to submit action plan along with completion target date. Upon completion of action, communicate Hyva the evidence along with revision of concern connected PPAP documents

5.10 Hyva' s SQ need to submit the approved copy of the PSW to supplier and concern Hyva' s Procurement & SCM buyer, and plant quality manager & inspector

5.11 **SCM Team/Buyer needs to initiate Mass Production lot supply order only after receiving Hyva' s SQ signed-off PSW approved copy**

5.12 The concern SQE approving the PPAP/PSW need to monitor the first three consecutive lot post PPAP /PTR batch. Need to provide direct support to plant quality against any issue (if observed) by directly communicating with the supplier, performing the failure analysis, and furnishing improvement/corrective actions to impacted plant concern function

Note: -

a) Supply of Mass Production lot can also be initiated by having Interim PSW approval based on Hyva' s SQ Go-Ahead. However, the Go-ahead decision need to be officially confirmed ok by concern R&D, Project Team, and Procurement Person
b) Supplier needs to initiate Mass Production lot supply after receiving Hyva' s SQ signed-off PSW approved copy
c) Proactively Hyva' s concern procurement buyer needs to inform supplier the mass production batch purchase order number
d) Hyva' s SQ need to communicate the Production samples lot Invoice Number and supplier's Production PIST Report to regional plant quality manager & incoming inspector before the lot reaches Hyva
e) Suppliers need to attach identification stickers on the production sample's box/pallets. Identification sticker needs to have the Project Name, Part Number, Part Description, and Production samples wording

IMPORTANT REMARKS

- *For **distributors**, it is their responsibility to receive and approve PPAP from the original manufacturer and then submit to Hyva along with their own PSW making sure that there is a cross reference among part numbers: manufacturer, distributor and Hyva. Any deviations from this requirement need to be **approved by Hyva** in writing **prior** to first shipment of parts/material*

- *Hyva expects that suppliers and distributors, manage and approve their own suppliers base and maintain **evidence** of compliance*

- *Regardless of the submission level, PPAP shall be **maintained** at least for the length of time the part is **active** plus one calendar year*

- *PPAP is also applicable for standard **catalogue** purchased parts, components/off the shelf, i.e., electronic, mechanical and/or other component categories*
- *Supplier must **submit** PPAP in **English**, unless otherwise is specified by Hyva Supplier Quality Engineer and/or Supplier Quality Manager, representative*

- *The PSW is reviewed by the Hyva Supplier Quality Engineer and/or Supplier Quality Manager representative, as follows:*
  a) ***Approval**: Indicates the part meets all specifications and requirements, and the supplier is authorized to ship production quantities.*

  b) ***Interim Approval**: Permits shipment of material for production requirements on a limited time or piece quantity basis, when supplier has clearly defined the root cause of the nonconformities preventing production approval and has prepared an interim approval action plan agreed upon by Hyva.*
  ***Note 1:** For those parts with disposition "Interim Approval", supplier should issue another PSW once the non- conformities have been corrected.*
  ***Note 2:** PPAP re-submission is required to obtain a status of approved.*
  ***Note 3:** Parts with a status of interim approval are not considered fully "Approved"*

  c) ***Rejected:** Prevents production quantities from being shipped because the submission, the production lot from which it was taken, and the accompanying documentation does not meet Hyva requirements. In such cases, the submission and/or process, as appropriate, shall be corrected to meet Hyva requirements. The re-submission shall be approved before mass production quantities is shipped*

- *As required, the Hyva Supplier Quality Engineer and/or Supplier Quality Manager representative will determine if **annual PPAP re-qualification** is applicable or not (based on Customer Specific Requirements or other requisites). The PPAP re-qualification documentation will be defined by concern Hyva SQ at that very time, based on the future business requirements*

PRODUCT CATEGORY WISE PPAP REQUIREMENTS

			Class A & B Parts		Class C Parts
Sr	HSPPAP - List Of Documents	Remarks	Good Volume (>30)	No Good Volume (<30)	Any Volume
1	Design Record		√	√	√
2	Engineering Change Documents		√	√	√
3	Customer Engineering Approval		√	√	√
4	Design FMEA (DFMEA)	If supplier is Responsible for Design	√	√	x
5	Hyva Input Requirement (HIR)		√	√	x
6	Process Flow Diagram		√	√	x
7	Process FMEA (PFMEA)		√	√	x
8	Control Plan		√	√	x
9	DVP&R – Design Validation Plan & Reports		√	√	x
10	FTG List & Status – Fixture, Tooling, and Gauges		√	√	x
11	Material Performance Test Results		√	√	√
12	Percentage Inspection Points Satisfying Tolerance (PIST)	(Total number of characteristics within specifications) x (100) (Total number of characteristics specified on drawing)	√	√	√ (Mass Production Level)
13	Qualified Laboratory Documents		√	√	√

Note – The above volume refers to the PPAP/PTR batch volume

			Class A & B Parts		Class C Parts
Sr	HPPAP - List Of Documents	Remarks	Good Volume (>30)	No Good Volume (<30)	Any Volume
14	Initial Process Study (SPC)		√	x	x
15	Percentage Indices Process Capable (PIPC)	(Total number of SC&CC characteristics having Cp,Cpk/Pp,Ppk more than 1.67) x (100) (Total number of SC&CC characteristics specified on drawing and /or officially agreed)	√	x	x
16	Measurement System Analysis (MSA)	1. For volume >30, MSA study is required for both Variable and Attribute measuring instruments and gauges 2. For Volume <30, MSA study is required for Variable measuring instrument and gauges	√	√	x
17	Appearance Approval Report (AAR)	If Applicable	√	√	x
18	Bulk material requirement checklist	If Applicable	√	√	√
19	Sample Product		√	√	x
20	Master Sample		√	√	x
21	Checking Aids		√	√	x
22	Packaging Sign-off		√	√	x
23	Run at Rate (R@R)		√	x	x
24	Hyva Part Submission Warrant (HPSW)		√	√	√

PRODUCT CATEGORY WISE PPAP SUBMISSION LEVELS

	Class A & B Parts		Class C Parts	Physical PPAP not possible at Vendor End (Class A + Class B)	
HSPPAP Submission Levels	Good Volume (>30)	No Good Volume (<30)	Any Volume	Good Volume (>30)	No Good Volume (<30)
Level 1					
Level 2			√		
Level 3				√	√
Level 4		√			
Level 5	√				

Note: -

1. For Level 5 - PSW + PTR at supplier end + Physically review all PPAP requirements as per "*Product CATEGORY WISE PPAP Requirements*"
2. For Level 4 - PSW + PTR at supplier end + Physically review all PPAP requirements as per "*Product CATEGORY WISE PPAP Requirements*"
3. For Level 3 – PSW + Virtually review all documents as per "*Product CATEGORY WISE PPAP Requirements*"
4. For Level 2 - PSW + Review all PPAP requirements as per "*Product CATEGORY WISE PPAP Requirements*"

Note –

The above volume refers to the PPAP/PTR batch volume

Kindly also find the SharePoint link - PPAP Requirements at micro level of various product category wise requirments which was developed by ex-global quality director(Marco Valentini). To that added/replaced the new requirements.

HSPPAP DOCUMENTS BRIEF DESCRIPTION & CONNECTED GUIDELINES

Design Records

- The organization shall have the design record for the saleable product/part, including design records for components or details of the saleable product/part. Where the design record is in electronic format, e.g., CAD/CAM math data, the organization shall produce a hard copy (e.g., pictorial, geometric dimensioning & tolerancing [GD&T] sheets, drawing) to identify measurements taken.

- For any saleable product, part or component, there will only be one design record, regardless of who has design-responsibility. The design record may reference other documents making them part of the design record

- For parts identified as catalog parts, the design record may consist only of a functional specification or a reference to a recognized industry standard

Engineering Change Documents

- Any authorized engineering change documents
  - Changes not yet incorporated in the design record but incorporated in the product, part or tooling
  - MOM, E-mail with supporting sketch

- Design approval - In case the supplier requires certain changes in Hyva drawing / Standards, approval from Product Development / Engineering is required.

- The organization shall have any authorized engineering change documents for those changes not yet recorded in the design record but incorporated in the product, part or tooling

Customer Engineering Approval

- Customer Engineering Approval is required when:
  - Changes required by Supplier on Hyva part drawing as per Customer Input Requirements
  - Supplier Request for Engineering Approval
  - Changes required by Supplier who are design responsible for certain Design or Process change

DFMEA - Design Failure Mode & Effects Analysis

- A Design FMEA is an analytical technique utilized by the design responsible to assure that to extent possible, potential Failure Modes and their associated Causes or mechanism of failure have been considered and addressed prior to releasing the part to production

- DFMEA analyze the functions of a system, subsystem, or component of interest as defined by the boundary shown on the Block/Boundary Diagram

- Severity, Occurrence and Detection ratings are used when performing FMEA activities. These rating scales must be compliant with the AIAG & VDA guidelines for FMEA (latest edition)

- **Action Priority** (AP) is based on combinations of Severity, Occurrence and Detection ratings to prioritize actions for risk reductions.
  - Priority High (H): Highest priority for review and action.
    The team **need** to either identify and appropriate action to improve Prevention and/or Detection Controls or justify and document why current controls are adequate.
  - Priority Medium (M): Medium priority for review and action.
    The team **should** identify appropriate actions to improve prevention and/or detection controls, or, at the discretion of the company, justify and document why control are adequate.
  - Priority Low (L): Low priority for review and action.
    The team **could** identify actions to improve prevention or detection controls.

- It is always recommended to develop DFMEA as per the latest AIAG & VDA 1st Edition guidelines. However, if the supplier in existing condition is not using the same then it is ok to develop DFEMA as per AIAG 4th Edition (Earlier Edition).

- Supplier's R&D and Quality person need to jointly approve and submit the DFMEA to Hyva.

- Hyva' s SQ should jointly review with Hyva' s R&D and provide the final approval to supplier's submitted DFMEA document.

Note - DFMEA is only required when the part is designed by the supplier. Otherwise, the Design FMEA is the responsibility of Hyva.

Hyva Input Requirements

- HIR is Hyva' s specific requirements to its suppliers – Performance, Functional, Quality & Reliability Targets, Packaging, Identification Method/Locations, Material safety data sheet (Mention only specific requirements related to handling, storage, transportation, etc.), Requirements from sub-suppliers, any other requirements.

- Hyva' s SQ needs to jointly discuss internally with concern department team members(R&D/Procurement/SCM) for specific requirements which are connected to them (Ex – Functional test requirements with R&D, Packaging requirements with R&D, etc.)

- Hyva' s SQ needs to prepare the HIR report jointly with discussion with internal cross functional team members (R&D/Procurement/SCM)

- Suppliers need to review each of the Hyva' s requirements internally with their concern cross functional team members and provide their way forward agreement. Against any no agreement, supplier need to submit action plan along with target dates

- Below HIR format (BUCHIR/GSQ/009) to be referred for HIR report submission to Hyva: -

HIR - Hyva Input Requirements

Date: _____

Supplier Name: **Part Number:**

Supplier Location: **Part Name:**

Project Name: **Part Revision No:**

Requirement Description	Requirement Specification	Supplier's Agreement	Supplier's Remarks	Hyva's Remarks
Part / Product / Design Validation Targets				
Functional Validation Tests:- 1. 2. 3. 4.	1. 2. 3. 4.	☐ Yes ☐ No ☐ Not Applicable		
Performance Validation Tests:- 1. 2. 3. 4.	1. 2. 3. 4.	☐ Yes ☐ No ☐ Not Applicable		
Reliability/Durability Validation Tests:- 1. 2. 3. 4.	1. 2. 3. 4.	☐ Yes ☐ No ☐ Not Applicable		
Quality Targets				
Warranty Target		☐ Yes ☐ No ☐ Not Applicable		
PPM at Hyva		☐ Yes ☐ No ☐ Not Applicable		
PPM at Supplier's End		☐ Yes ☐ No ☐ Not Applicable		
PIST% at Proto, Prelaunch, and Production		☐ Yes ☐ No ☐ Not Applicable		
PIPC% at Production		☐ Yes ☐ No ☐ Not Applicable		
Specific Quality Controls (Ex. End Of Line Testing, etc.)		☐ Yes ☐ No ☐ Not Applicable		
Reliability Targets including Useful Life		☐ Yes ☐ No ☐ Not Applicable		
Fitment Trial		☐ Yes ☐ No ☐ Not Applicable		
Specific Part/ Product Quality Tests & Frequency (Ex. - Millipore, Salt Spray, Ultra sonic, Destructive, Non-Destructive, etc.)		☐ Yes ☐ No ☐ Not Applicable		
Appearance		☐ Yes ☐ No ☐ Not Applicable		
Packaging Requirements		☐ Yes ☐ No ☐ Not Applicable		
PPAP Submission Level & Documents Requirements		☐ Yes ☐ No ☐ Not Applicable		
Sub-Supplier PSW		☐ Yes ☐ No ☐ Not Applicable		
Process Capability Requirements		☐ Yes ☐ No ☐ Not Applicable		
Inspection requirement (To be submitted during sample submission and PTR) - (Ex. PIST, etc.)		☐ Yes ☐ No ☐ Not Applicable		
Other Crucial Targets				
Regulatory & Environment		☐ Yes ☐ No ☐ Not Applicable		
Safety & Ergonomic		☐ Yes ☐ No ☐ Not Applicable		
Identification/Method/Location		☐ Yes ☐ No ☐ Not Applicable		
Part / Product Traceability		☐ Yes ☐ No ☐ Not Applicable		
Supply Chain Agreement (Bin Quantity)		☐ Yes ☐ No ☐ Not Applicable		
Shelf life (if applicable)		☑ Yes ☐ No ☐ Not Applicable		
Capacity Planning Volume		☐ Yes ☐ No ☐ Not Applicable		
Material Safety Data Sheet (Mentioned any specific requirement for handling, storage, transportation etc.)		☐ Yes ☐ No ☐ Not Applicable		
Development methodology		☐ Yes ☐ No ☐ Not Applicable		
PTR/PPAP Batch Quantity Requirement (Qty & Date)		☐ Yes ☐ No ☐ Not Applicable		
Any Other Requirement		☐ Yes ☐ No ☐ Not Applicable		

Hyva' s Supplier Quality/Plant Quality	Hyva' s R&D	Hyva' s Procurement	Supplier's Authorize Member	Supplier's Authorize Member
Signature : Name : Date :	Signature : Name : Date :	Signature : Name : Date :	Signature : Name : Date :	Signature : Name : Date :

Process Flow Diagram

- The Process Flow Diagram depicts the flow of materials through the process.
- The Process Flow Diagram must follow the process from receipt of raw material and receiving inspection, through any warehousing and shipping steps, and include any "Dock Audits" and Final Inspections. The PFD shall comprehend all potential paths that a part can take in the process, including inspection, containment, rework, scrap, material shipped to sub-contractors and the returning of the material back to the supplier's plant.
- The Primary process steps must match both the Control plan and the PFMEA.
- Three Levels (Proto/Prelaunch/Production) PFD needs to be developed
- Hyva' s SQ need to provide the final approval of supplier submitted PFD

PFMEA - Process Failure Mode & Effects Analysis

- It can be described as a systematized group of activities intended to: -
  - Recognize and evaluate the potential failure of a product/process and its effects
  - Identify actions which could eliminate or reduce the chance of the potential failure
  - Document the process
- The process FMEA analyze processes by considering the potential failure mode which may result from process variation to stablish priority of actions for prevention and as needed, improve controls, the overall purpose is to analyze processes and take action prior to production start, to avoid unwanted defects related to manufacturing and assembly and the consequences of those defects.
- It is a technique of reducing or avoiding 'RISK'
- It is "Before-the-event" action and NOT an "After-the-fact" exercise
- FMEA is a Living document
- Pre-requisites for PFMEA are – PFD, DFMEA, Drawings & Design Records, Internal & External Customer nonconformance (i.e., known failure modes based on historical data), and Quality & Reliability History
- It is always recommended to develop PFMEA as per the latest AIAG & VDA 1st Edition guidelines. However, if the supplier in existing condition is not using the same then it is ok to develop PFEMA as per AIAG 4th Edition (Earlier Edition).
- In case PFMEA is developed as per AIAG 4th Edition then kindly note the below points when defining the way forward corrective actions: -
  - Team must undertake efforts to reduce risk through corrective actions, special attention should be given when severity is high
  - ***The use of RPN threshold is NOT a recommended practice for determining the need of actions***
  - In the example below, if arbitrary threshold of 100 is followed, then action would be required to take on the characteristic B with RPN 112.

However, the priority should be to work on A with the higher severity of although its RPN is 90 which is lower and below the threshold

Item	Severity	Occurrence	Detection	RPN
A	9	2	5	90
B	7	4	4	112

- Following **action prioritizing** criteria is applicable
  1) Severity: 9-10
  2) Criticality (S x O) above 36 (6 x 6)
  3) RPN: Highest RPN Rating

- ❑ Severity, Occurrence and Detection ratings are used when performing FMEA activities. These rating scales must be compliant with the AIAG & VDA guidelines for FMEA (latest edition)

Action Priority (AP) is based on combinations of Severity, Occurrence and Detection ratings to prioritize actions for risk reductions.

- Priority High (H): Highest priority for review and action.
  The team **need** to either identify and appropriate action to improve Prevention and/or Detection Controls or justify and document why current controls are adequate.
- Priority Medium (M): Medium priority for review and action.
  The team **should** identify appropriate actions to improve prevention and/or detection controls, or, at the discretion of the company, justify and document why control are adequate.
- Priority Low (L): Low priority for review and action.
  The team **could** identify actions to improve prevention or detection controls.

- ❑ Hyva recommends suppliers to develop continuous improvement activities for the top Action Priority identified.

- ❑ Three Levels (Proto/Prelaunch/Production) PFMEA needs to be developed

- ❑ Hyva' s SQ need to provide the final approval of supplier submitted PFMEA

Control Plan

- ❑ Control plans are written descriptions of the operations, processes, materials, equipment, methodologies, and CTQs for controlling variations in key product or process characteristics integral to the manufacturing process

- ❑ It must include: -
  All Operations listed on the process flow diagram
  Machine Jig or Tooling
  Product and Process Characteristics
  Designated Special Characteristics -SC/CC
  Specification or Tolerances
  Gauging or Evaluation Techniques
  Sample Size and Frequency
  Control Methods
  Reaction instructions at each stage of the process

- ❑ The supplier shall have a Control Plan that defines all controls used for process control and complies with the Hyva' s specifications
- ❑ The process flow diagram, design record/specification, and PFMEA provide inputs to the Control Plan
- ❑ The Process Flow, Process FMEA and Control Plan manufacturing steps should match
- ❑ The control plan cannot be excessively dependent on visual inspection and should target prevention techniques wherever possible
- ❑ All Special / Safety Characteristics must be identified in the control plan
- ❑ Special Controls needs to be defined against Special/Safety Characteristics
- ❑ Three Levels (Proto/Prelaunch/Production) Control Plan needs to be developed
- ❑ Control Plan is a Living document
- ❑ Hyva' s SQ need to provide the final approval of supplier submitted Control Plan

DVP&R – Design Validation Plan & Reports

- ❑ Definition of the Tests required to verify that the product meets requirements and targets
- ❑ These tests are conducted either by Hyva (if Manufacturer or sub-contractor) or by the Supplier (Expert or Designer), with some OEM contribution.
- ❑ It includes all kind of design validation tests performed either by Hyva or by supplier against a part/product as per plan & requirements (Agreed by Hyva' s R&D and Supplier) and output result reports (Accepted only after having Hyva' s R&D approval)
- ❑ Suppliers need to submit the DVP along with the output result reports at the time of PPAP approval
- ❑ All design validation reports need to be primarily approved by Hyva' s R&D (In both case – Hyva responsible for design and Supplier responsible for design)
- ❑ After having Hyva' s R&D approval of design validation reports, Hyva' s SQ need to provide the secondary approval

Note: -
All defined and required design validation tests completion and approval are required for PPAP/PSW approval

FTG List & Status – Fixture, Tooling, and Gauges

- ❑ The FTG list needs to have a the individual FTG description, connected operation name, quantities, Plan and Actual dates of designing, manufacturing, and validation
- ❑ Supplier needs to prepare the FTG list with joint discussion, agreement, and approval with Hyva' s concern SQ and Procurement Buyer.

- ❑ Suppliers need to submit the FTG list & connected completion status at the time of PPAP approval
- ❑ Hyva' s SQ need to verify all developed & validated FTGs' before providing their final approval

Note: -
All defined and required FTGs' completion and approval are required for PPAP/PSW approval

Material Performance Test Results

- ❑ Material Certifications include any material certifications / material test results relating to the part and the base materials from the supplier's internal lab or outside contracted lab
- ❑ If there are material specifications noted on the design record/specification, supplier must provide data that shows conformance to those specifications in the PPAP package.
- ❑ For products with customer-developed material specifications and a customer-approved subcontractor list, the supplier shall procure materials and/or services (e.g., painting, plating, heat- treating) from subcontractors on that list.
- ❑ Test Results (Performance, Reliability, Durability) include any performance or reliability, or durability tests as prescribed in the design record, including drawings and functional and validation specifications.
- ❑ The organization shall perform tests for all parts and product materials when chemical, physical, or metallurgical requirements are specified by the design record or Control Plan.
- ❑ The report should be on the letterhead of the laboratory with the date of testing mentioned in it.
- ❑ Blanket statement of conformance is not acceptable
- ❑ Material performance test results needs to be approved by Hyva' s SQ

PIST - Percentage Inspection Points Satisfying Tolerance

- ❑ It is a document which includes the output measured results related to dimensional, material, performance, and visual characteristics of a part/product
- ❑ PIST report aids in understanding in a single report the percentage of characteristics satisfying tolerance
- ❑ PIST report needs to be generated at three crucial stages of development – Proto, Prelaunch, and Production.
- ❑ PIST also provide a section to define the root cause and actions details against each observed NOT OK characteristic
- ❑ Supplier submitted PIST reports needs to be approved by Hyva' s SQ

- Below PIST format (BUCPIST/GSQ/AA) to be referred for PIST report submission to Hyva: -

Percentage Inspection Points Satisfying Tolerance (PIST)

Format No :BUCPIST/GSQ/AA
Rev No :AA
Revision Date :16-11-2023

Supplier Name :					*Supplier Location :*					*Inspection Date :*			
Component Name :					*Part No. :*					*Drawing Rev No :*			
Sr.No	*Characteristic (Dimensional + Material + Performance + Visual)*	*<CC>/ <SC>*	*Specification*	*Evaluation Method*	*Samples*					*Ok*	*Not Ok*	*Remarks if Any*	
					1	*2*	*3*	*4*	*5*				
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
Percentage Inspection Points Satisfying Tolerance (PIST).													

Corrective Actions for Not Ok Charcteristics

Sr.	*Characteristic (Dimensional + Material + Performance + Visual)*	*Root Cause*	*Actions*	*Target Date*	*Status*
1					
2					

Inspected By *Checked By* *Approved* ☐ *Interim Approved* ☐ *Not -Approved* ☐

- PIST calculation formula: -

$$\text{PIST} = \frac{\text{Total number of characteristics within specifications}}{\text{Total number of characteristics specified on drawing}} = \frac{0}{0} \times 100 = 0\%$$

Note: -

a) For Proto Build – PIST% needs to be >80% (SC/CC Characteristics needs to be within tolerance)
b) For Pre-Launch Build – PIST% needs to be >95% (SC/CC Characteristics needs to be within tolerance)
c) For Production Build – PIST % needs to be = 100%

Qualified Laboratory Documents

- Inspection & testing needs to be performed by qualified lab as defined by Customer requirements (e.g., an accredited laboratory)
- Qualified lab (internal or external) to have laboratory scope & documentation that the lab is qualified for the type of measurement or tests conducted
- When External lab is used, the organization shall submit test results on laboratory letterhead or in lab report format.
- Name of lab, date of test, standard used to run the test shall be identified on the report.

Initial Process Study – SPC (Statistical Process Control & Capability)

- Capability or performance shall be determined to be acceptable prior to submission for all special characteristics designated by Hyva or supplier.
- Where no special characteristics have been identified, Hyva reserves the right to require demonstration of initial process capability on other characteristics.
- The purpose of this requirement is to determine if the production process is likely to produce product that will meet the customer's requirements
- The initial process study is focused on variables not attribute data. Assembly errors, test failures, surface defects are examples of attribute data, which is important to understand, but is not covered in this initial study. To understand the performance of characteristics monitored by attribute data will require more data collected over time. Unless approved by the authorized Hyva' s representative, attribute data are not acceptable for PPAP submissions.
- The standard requirement for capability study is 25 subgroups containing at least 100 readings and sampled consecutively from a production run that are sampled randomly unless otherwise specified by Hyva. However, deviation to a minimum of 6 subgroups containing at least 30 readings is accepted only when the volume is low.
- Hyva' s SQ need to provide the final approval of supplier submitted SPC reports
- The supplier shall use the following as acceptance criteria for evaluating initial process study results for processes that appear stable:-

Results	**Interpretation**
Cp,Cpk/Pp,Ppk **> 1.67**	The process currently meets the acceptance Criteria
1.33 <= Cp,Cpk/Pp,Ppk **<=1.67**	Interim Approved and way forward corrective action submission is required
Cp,Cpk/Pp,Ppk **< 1.33**	Not Accepted/ Approved

Note: -
The SPC study needs to be performed as per AIAG's 2nd Edition. However, in future based on releases of further new editions, the supplier needs to start following the latest released edition.

PIPC – Percentage Indices Process Capable

- It is a document which includes the output measured SPC results related to special characteristics of a part/product
- PIPC report aids in understanding in a single report the percentage of Indices of special characteristics greater than 1.67
- PIPC report needs to be generated for production batch lots
- PIPC also provide a section to define the root cause and actions details against each observed NOT OK characteristic

- Hyva' s SQ need to provide the final approval of supplier submitted PIPC report
- Below PIPC format (BUCPIPC/GSQ/AA) to be referred for PIPC report submission to Hyva: -

Percentage Indices Process Capable (PIPC)

Format No :BUCPIPC/GSQ/AA
Rev No :AA
Revision Date :16-11-2023

Supplier Name :			Supplier Location :				Inspection Date :	
Part/Product Name :			Part No. :				Drawing Rev No :	
Sr.No	Characteristic	<CC>/ <SC>	Specification	Evaluation Method	Cp,Cpk/Pp.Ppk (>1.67)	Ok	Not Ok	Remarks if Any
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
Percentage Indices Process Capable (PIPC).								

Corrective Actions for Not Ok Charcteristics

Sr.	Characteristic	Root Cause	Actions	Target Date	Status
1					
2					

Inspected By Checked By ☐ Approved ☐ Interim Approved ☐ Not -Approved

- PIPC calculation formula: -

$$\text{PIPC} = \frac{\text{Total number of SC\&CC characteristics having Cp, Cpk / Pp, Ppk more than 1.67}}{\text{Total number of SC\&CC characteristics specified on drawing and /or officially agreed}} = \frac{0}{0} \times 100 = 0\%$$

Note: -
For Production Build – PIPC % needs to be = 100%

MSA – Measurement System Analysis - GR&R(Gauge Repetability & Reproducibility)

- Measurement System Analysis (MSA) is an experimental and mathematical method of determining how much the variation within the measurement process contributes to overall process variability
- MSA is a requirement for qualification and supplier should submit the same
- All measuring equipment and gauges needs to be calibrated
- A GR&R must be submitted for devices measuring data on CTQs and for each measurement device mentioned on the control plan
- The minimum requirement for Gage R&R is:
  - A Gage R&R study using Total Tolerance samples.
  - % R&R below 10% is acceptable.
  - % R&R between 10% and 30% is marginally acceptable, need an action plan to address and improve the method of measurement.

- Gages with R&R at 30% or more cannot be used.
- Number of distinct data categories (ndc) >= 5.

- ❑ For visual devices and Go/ No-Go measuring equipment, the Attribute Gage Study shall be performed by the Gage repeatability and reproducibility report (Attribute hypothesis test method)

- ❑ Any equipment or gauge that is not meeting the %R&R should not be used and must have a plan to fix it or replace it.

- ❑ Variable gauge studies should utilize 10 parts, 3 operators and 3 trials

- ❑ Attribute gauge studies should utilize 50 parts, 3 operators, 3 trials.

- ❑ Hyva' s SQ need to provide the final approval of supplier submitted MSA reports

Note: -
The MSA study needs to be performed as per AIAG's 4th Edition. However, in future based on releases of further new editions, the supplier needs to start following the latest released edition.

Appearance Approval Report (AAR)

- ❑ A separate Appearance Approval Report (AAR) shall be completed for each part or series of parts if the product/part has appearance requirements.

- ❑ AAR typically applies only for parts with color, grain, or surface appearance requirements.

- ❑ It is not uncommon for projects that have no defined appearance requirements to develop them throughout the course of development. This could be as simple as a paint or color application that has developed into an appearance issue based on Hyva' s feedback or Hyva' s customer feedback. Whenever appearance related issues arise that have no defined specification it is in the best interest of both the supplier and Hyva to utilize this element and clearly define what is acceptable and what is not acceptable. When non-conformances arise appearance issues can be readily resolved when there is clear definition of acceptance

- ❑ Hyva' s SQ and R&D jointly need to provide the final approval of supplier submitted AAR reports

Master Sample

- ❑ The organization shall retain a master sample for the same period as the production part approval records.

- ❑ The purpose of the master sample is to assist in defining the production standard, especially where data is ambiguous or in insufficient detail to fully replicate the part to its original approved state
- ❑ Master Sample is mandatory for pressed components, appearance items & attribute characteristics like textures, fabric, etc. (Where expectations cannot be explicitly stated on drawing/ design record).

- ❑ Supplier should retain the master sample as long as part is active or until a new master sample is produced for the same Hyva part number and Hyva' s approval is taken

- When part size, sheer volume of parts, etc. make storage of a master sample difficult, the sample retention requirements may be waived by the customer
- Hyva' s SQ need to provide the final approval of supplier submitted master sample

Checking Aids

- Checking aids (fixtures, gages, models, templates etc.) are specific to the part being submitted, used in inspecting or testing. For this item, supplier shall verify that all aspects of the checking aid agree with part dimensional requirements.
- Hyva' s SQ need to provide the final approval of supplier submitted checking aids

Packaging Sign-Off

- Purpose is approving the packaging method and material for supplied product
- Make sure the package meets all facility related requirements, prevent of shipping and handling defects, and addresses any Hazmat related concern
- The selected packaging design needs to be validated in terms of reliability and durability. Validation reports needs to be submitted to Hyva for sign-off approval
- Hyva' s R&D will be the prime responsible function to define the packaging requirements with an agreement sign-off from Hyva' s SCM & Procurement.
- Final output actual Packaging needs to be approved by Hyva' s R&D
- During PPAP approval, Hyva' s SQ needs to ensure that the stated packaging requirements are met in actual and R&D' s acceptance approval is available on the same.

R@R - Run at Rate

- Run at Rate is performed to evaluate the Supplier Capacity Commitment on series production condition.
- It needs to be performed during PTR on production ready batches
- Need to verify that in a shift how many committed OK good parts/products are getting produced within how much committed operating time.
- During R@R, if required committed OK good parts/products are not getting manufactured then supplier need to submit an action plan along with closure target date. After closure of the submitted action plan, re – R&R needs to be performed
- For parts/products (Class A& B) where volume is low, technically R@R is not required. However, based on criticality and complexity of the part/product and connected manufacturing processes, R@R could be asked & performed by Hyva Supplier Quality Engineer and/or Supplier Quality Manager, representative
- LCR – Lean Capacity Rate mean the normal weekly number of Parts that can be constantly manufactured by Supplier (without overtime or additional shifts)

- Hyva' s SQ needs to approve the R@R report. After approving, the same needs to be submitted to supply chain management buyer for their acceptance approval
- Performing R@R supports in **Identifying bottlenecks, ensuring equipment efficiency, Improved product quality, and better planning and scheduling**
- Below R@R format (BUCRAR/GSQ/008) to be referred for R@R report submission to Hyva: -

Hyva - SUPPLY CHAIN MANAGEMENT

RUN @ RATE

Section 1: FUNDAMENTAL INFORMATION

Key Information	
Part Name	
Supplier Name	
Plant Location (Country, City, etc..)	
Supplier Code	
Supplier Contact Name	
Supplier Contact Phone #	
Supplier Contact Email	
Customer or Supplier Monitored	
Hyva Representative Name	
Total # of Part #'s in family or group	
Are all parts PPAP "Saleable" or "Full"	
Less Finish Part Number (if applicable)	
Does Mfg plan exceed 300 days/year or 6days/wk?	
Was a copy of the Process Flow Diagram provided?	
Scheduled Date of Run at Rate	

Part Number/Name/Revision	Daily LCR	Daily Contracted	
		Capacity	Hours
	60	180	21

Run @ Rate Goal	Daily LCR	Daily Contracted	
		Capacity	Hours
	60	180	21

Run @ Rate Exemption	
Complete this section if exempting parts from Run@Rate	
Exempting?	
Reason	

Section 2: CAPABILITY / REQUIREMENT / CONSTRAINT IDENTIFICATION

Capability															Requirement		Constraint	
Operation List each separate/ discrete operation	Operators Number of operators	Shifts Total Shifts per Day (3 max)	Hours Hours per Shift (hours)	Duplicate Number of duplicate machines or operations (1 minimum)	Gross Minutes Total Minutes Available per day (minutes / day)	Lunch Scheduled Breaks, Lunch, Mtgs etc. (minutes / day)	Changeovers Changeovers or Tool Changes (minutes / day)	Maintenance Planned Maintenance (minutes / day)	Other Time allocated for other components - Hyva & Non-Hyva (minutes / day)	Unplanned Downtime Estimated Unscheduled Downtime (minutes / day)	Net Minutes Net Minutes Available per day for Run at Rate Parts (minutes / day)	Cycle Time Cycle Time Estimate (seconds)	Parts Per Cycle Parts Per Cycle (ie # Cavities) (1 set)	Rejection Rate Rejection Rate Percentage (%)	Capability # of good parts capable of being produce on the operation in one day	Downstream Rejection Sum all down stream operations Rejection rate %	Requirement # of good parts required to be produced at this operation to allow the final operation to produce the contracted	Utilization Requirement / Capability	Constraint Operation Select Constraint & Final operation
A	1	3	7	1	1260	60	10	15	420	10	745	22.80	1	0.50%	1951	0.5%	350	18%	Final
B	1	3	7	1	1260	60	10	15	420	10	745	84.00	1	0.50%	529	0.5%	60	11%	Final
C	1	3	7	1	1260	60	10	15	420	10	745	68.40	1	0.50%	650	0.5%	60	9%	Final
D	1	3	7	1	1260	60	10	15	420	10	745	180.00	1	0.50%	247	0.5%	60	24%	Final
E	1	3	7	1	1260	60	10	15	420	10	745	111.00	1	0.50%	401	0.5%	60	15%	Final
F	1	3	7	1	1260	60	10	15	420	10	745	196.80	1	0.50%	226	0.5%	60	27%	Final
G	1	3	7	1	1260	60	10	15	420	10	745	240.00	1	0.50%	185	0.5%	60	32%	Final
H	1	3	7	1	1260	60	10	15	420	10	745	230.00	1	0.50%	193	0.5%	60	31%	Final
I	1	3	7	1	1260	60	10	15	420	10	745	105.00	1	0.50%	424	0.5%	60	14%	Final

Section 3: RESULTS

Constraint Operation	
Exact Start Time (xx:xx)	
Exact End Time (xx:xx)	
Total Hours	0.00
Less OBSERVED Planned Downtime in Minutes	
Time for Breaks/Lunch/Meetings (Mins)	
Tool Changes & Changeovers (Mins)	
Time for "Planned" Maintenance (Mins)	
Other Customers Time (Mins)	
Observed Production Time - HOURS	0.00

Hour Starting	Hourly Good Parts	Hourly Rejection Parts	Un-Planned Downtime Minutes
6 A.M.			
7 A.M.			
8 A.M.			
9 A.M.			
10 A.M.			
11 A.M.			
12 P.M.			
1 P.M.			
2 P.M.			
3 P.M.			
4 P.M.			
5 P.M.			
6 P.M.			
7 P.M.			
8 P.M.			
9 P.M.			
10 P.M.			
11 P.M.			
12 A.M.			
1 A.M.			
2 A.M.			
3 A.M.			
4 A.M.			
5 A.M.			
TOTAL	0	0	0
	Projected Daily Good Parts		
	Required Good Parts		

Final Operation	
Exact Start Time (xx:xx)	8.0 AM
Exact End Time (xx:xx)	3.0 PM
Total Hours	7.00
Less OBSERVED Planned Downtime in Minutes	
Time for Breaks/Lunch/Meetings (Mins)	30
Tool Changes & Changeovers (Mins)	20
Time for "Planned" Maintenance (Mins)	10
Other Customers Time (Mins)	10
Observed Production Time - HOURS	5.83

Hour Starting	Hourly Good Parts	Hourly Rejection Parts	Un-Planned Downtime Minutes
6 A.M.			
7 A.M.	8	0	0
8 A.M.	2	0	30
9 A.M.	8	0	0
10 A.M.	8	0	0
11 A.M.	8	0	0
12 P.M.	8	0	0
1 P.M.	4	0	0
2 P.M.	8	0	0
3 P.M.	8	0	0
4 P.M.			
5 P.M.			
6 P.M.			
7 P.M.			
8 P.M.			
9 P.M.			
10 P.M.			
11 P.M.			
12 A.M.			
1 A.M.			
2 A.M.			
3 A.M.			
4 A.M.			
5 A.M.			
TOTAL	62	0	30
	Projected Daily Good Parts		180
	Required Good Parts		60

Comments:

Additional Questions - Yes/No (If "No" please comment.)	
	Is the supplier staying within the 300 days / year and 6 days / week manufacturing plan?
	Were all scheduled change-overs, breaks, lunches, and maintenance performed and found to be consistent with forecasts?
	Have the times allocated to other components been reviewed and found to be reasonable?
	Was unscheduled downtime within forecasted daily expectations?
	Did the parts produced during the Run at Rate meet PPAP requirements?
	Was the line staffed by the operators who will work during normal production?
	Did the Tier 1 have all subcontractors confirm in writing their ability to meet capacity, quality and delivery requirements?

Run @ Rate Result	
	Result (Pass /Fail)
	Date Run @ Rate was Performed
	Reschedule or Follow Up Date

Hyva SQ Head Signature	Hyva SCM Buyer Signature

Hyva SQE Signature	Supplier Name & Signature

HPSW – Hyva Part Submission Warrant

- Below HPSW format (BUCHPSW/GSQ/007) to be referred for PSW submission to Hyva: -

Hyva Part Submission Warrant

Part A

Supplier Name :	Supplier Part Number :	Part Name :
Supplier Location :	Hyva' s Part Number :	Project Name :
Drawing Number :	Drawing Revision & Date :	PPAP Type : ☐ New / ☐ Re-PPAP
Purchase Order / P.O. Amendment No.:		Dated:
Does safety & Govt. regulation is affected? ☐ Yes ☐ No	Checking Aid No.:	Dated:
Part weight (Kg):	Checking Aid Engineering Level: (If the device is specially made for the partes) being verified, and is not available as a catalog item elsewhere, it is a "checking aid.")	
Parts supplied to	☐ Hyva India ☐ Hyva Brazil ☐ Hyva China ☐ Hyva EMEA ☐ Hyva Global	
Part Category	☐ Class A ☐ Class B ☐ Class C	PIST %: PIPC %:

Has customer required substances of concern information been reported: ☐ Yes ☐ No ☐ Not Applicable

Submitted by IMDS or other customer format: ☐ Yes ☐ No ☐ Not Applicable

Are polymeric parts identified with appropriate ISO marking codes: ☐ Yes ☐ No ☐ Not Applicable

☐ Initial Submission/ New Product ☐ Engineering Change(s) / Product Modification by ECN ☐ Tooling Transfer, Replacement, Refurbishment or additional ☐ Correction of Discrepancy- Previously submitted part ☐ Production from new or modified tools	☐ Tooling Inactive for more than 1 year ☐ Production from Refurbishment or Rearrangement of tooling or From Tooling / Equipment transferred ☐ Change to Optional construction or material ☐ Change in part processing	☐ Process change ☐ Sub supplier or material source change ☐ Parts produced at additional / new location Change in Inspection & Test Method ☐ Location Change ☐ Alternate Source ☐ Other - please specify

PPAP Submission Level	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Declaration: (To be filled by the Supplier's Authorized Person)

We hereby confirm that the samples represented by this warrant are from a batch__ nos. of parts and are manufactured at normal production rate (_Nos./ _ hrs.) using production tooling and process settings as mentioned in Process Flow Diagram and Control Plan. All the results submitted meets all requirements of Hyva' s as specified.
The parts manufactured, and all the documents submitted are as per the applicable HSPPAP Guidelines.

Name: Designation: Phone No.:

Signature: Date: e-mail:

(To be Filled by Hyva)

Production Trial Run Date & Details:

The PTR results meet all the drawing & other specification requirements of Hyva: ☐ Yes ☐ No

HSPPAP Approved By (To be filled by Hyva)

SQE Name: Signature: Date: Place:

SQ Head Name: Signature: Date: Place:

Approval Type: ☐ Fully Approved ☐ Interim Approved ☐ Rejected

Justification for Interim Approval / Rejected:

Interim Approval for _____ No. of Parts & Interim Period From (date): To(date):

Final HSPPAP Approval (To be filled by Hyva / Applicable if earlier HSPPAP was Interim Approved/ Rejected)

SQE Name: Signature: Date: Place:

SQ Head Name: Signature: Date: Place:

PART B - HSPPAP Applicability Matrix

Sr. No.	Requirements	Status	Remarks
1	Design Record	❒Yes ❒No ❒Not Applicable	
2	Engineering Change Documents	❒Yes ❒No ❒Not Applicable	
3	Customer Engineering Approval	❒Yes ❒No ❒Not Applicable	
4	Design FMEA (DFMEA)	❒Yes ❒No ❒Not Applicable	
5	Hyva Input Requirement (HIR)	❒Yes ❒No ❒Not Applicable	
6	Process Flow Diagram	❒Yes ❒No ❒Not Applicable	
7	Process FMEA (PFMEA)	❒Yes ❒No ❒Not Applicable	
8	Control Plan	❒Yes ❒No ❒Not Applicable	
9	DVP&R – Design Validation Plan & Reports	❒Yes ❒No ❒Not Applicable	
10	FTG List & Status – Fixture, Tooling, and Gauges	❒Yes ❒No ❒Not Applicable	
11	Material Performance Test Results	❒Yes ❒No ❒Not Applicable	
12	Percentage Inspection Points Satisfying Tolerance (PIST)	❒Yes ❒No ❒Not Applicable	
13	Qualified Laboratory Documents	❒Yes ❒No ❒Not Applicable	
14	Initial Process Study (SPC)	❒Yes ❒No ❒Not Applicable	
15	Percentage Indices Process Capable (PIPC)	❒Yes ❒No ❒Not Applicable	
16	Measurement System Analysis (MSA)	❒Yes ❒No ❒Not Applicable	
17	Appearance Approval Report (AAR)	❒Yes ❒No ❒Not Applicable	
18	Bulk material requirement checklist	❒Yes ❒No ❒Not Applicable	
19	Sample Product	❒Yes ❒No ❒Not Applicable	
20	Master Sample	❒Yes ❒No ❒Not Applicable	
21	Checking Aids	❒Yes ❒No ❒Not Applicable	
22	Packaging Sign-off	❒Yes ❒No ❒Not Applicable	
23	Run at Rate (R@R)	❒Yes ❒No ❒Not Applicable	
24	Hyva Part Submission Warrant (HPSW)	❒Yes ❒No ❒Not Applicable	

Approved Status: ☐ Approved ☐ Not Approved

Reason for Not Approved: -

Supplier Name & Designation: Hyva' s SQE Name:

Signature: Signature:

Note – For proprietary Suppliers and parts (Class A & B), where supplier does not want to submit few of the above documents (Like - PFD, PFMEA, Control Plan) to Hyva, there below actions needs to be taken by Hyva' s SQ: -

1. During the PTR need to ensure that PFD, PFMEA, and Control Plan, etc. are in place meeting the fundamental requirements as defined in this policy.
2. The Control Plan needs to be connected to PFD and PFMEA and covers each process as per PFD. All controls as defined in the control plan against each process are matching to the actual process run
3. Hyva' SQ in the Part B section of HPSW needs to clearly define in remarks column against each document (which are available at supplier end but not going for submission) his /her actual observations and way forward improvements if any as recommended to the supplier

DELIVERABLES

1.1 Quality Assurred First Time Right Part/Product

1.2 On-Time Availability of Mass Production Approved Parts supporting timely launch of Project
1.3 Availability of required connected crucial development steps and focussed actions on them

1.4 Documented Evidence of Part Validation

KPI

1.1 Efficiency – On-Time PPAP approval & closure.

Efficy. =	No of Parts PPAP Approved/Closed within Specified Target Date	**0**	**X 100**	=	**0%**
	Total Number of Parts PPAP Request Received	**0**			

1.2 Effectiveness – First Time Right of PPAP Approved Parts

Effect. =	No of Parts Passed Incoming Inspection at Hyva	**0**	**X 100**	=	**0%**
	Total Number of PPAP approved parts received at Hyva (1st Mass Production Lot after PPAP approval)	**0**			

DEVIATION AGAINST ABOVE MENTIONED PROCESSES

1.1 Any kind of deviation in any of the above mentioned process flow and procedure needs an approval from Global Quality Team
1.2 Global Quality Team member need to discuss with Global Quality Director before furnishing the final approval
1.3 If concern supplier quality engineer/plant quality manager requires a deviation because of business needs in product category wise PPAP documents requirements & PPAP submission level requirements then he/she need to reach out to concern regional Quality Head/Director for way forward approval.
1.4 The deviation request and approval needs to be documented by the rasier who requested for deviation
1.5 Any deviation on PPAP documents & submission levels requirements needs to follow deviation request, assessment by the concern connected regional core multifunctional team and regional SQE and have approvals from concern function regional HOD(Head of the Department). However, if deviation is not accepted, no way to further start even PPAP process neither order to that supplier.

DOCUMENTS ARCHIVING

1.1 Concern Hyva's procurement buyer and supplier quality engineer/manager need to update all required crucial inputs related to the PPAP and upload all PPAP connected documents at sharepoint Hyva PPAP Tracking List, location link - Hyva PPAP Tracking

1.2 At above mentioned sharepoint link for Type 1 & Type 2 PPAP requests, request raiser from **Hyva's Project/ R&D Team** needs to update the first level information at columns starting from "ID" to "Gateway-G5/Phase-P3 Closure Plan Target Date". After updating the above information, the unique ID need to be share to conern Hyva's SQ which will act as a digital PPAP request genration & submission.

1.3 For Type 1 & Type 2 PPAP requests, concern procurment buyer needs to update the name of the concern supplier & its manufacturing location against each request/ID at above mentioned Sharepoint link.

1.4 At above mentioned sharepoint link for Type 3 PPAP requests, request raiser from **Hyva's Procurement Team** needs to update the first level information at columns starting from "ID" to "Supplier Location". After updating the above information, the unique ID need to be share to conern Hyva's SQ which will act as a digital PPAP request genration & submission.

1.5 For PPAP request of parts which are not connected to a NPD/SPD/3PD Project, for those cases procurement buyer needs to define the target date of PPAP completion required against Gateway-G5/Phase-P3 Closure Plan Target Date column

1.6 At above mentioned sharepoint link, **Hyva's supplier quality engineer/manager** needs to update crucial actions information at columns starting from "Supplier Qulaity Engineer Name" to "Remarks"

1.7 Hyva's SQ need to upload PPAP connected documents against each ID/PPAP Request

Revision History:

Version	Date	Description of changes	Updated By
AC	21-11-2023	PPAP Process Flow & Connected Procedure Policy connected – Vision, Mission, Value, Scope Addition of new connected documents, deliverables, KPIs, deviation request section, and documents archiving	Debjit Chatterjee

Version	Date	Approval By Process Owner	Title
AC	21-11-2023	Davide Zanotti	Global Quality Director