PROCESS CONTROL PLAN

MOLDING & PMC

SMART CARD

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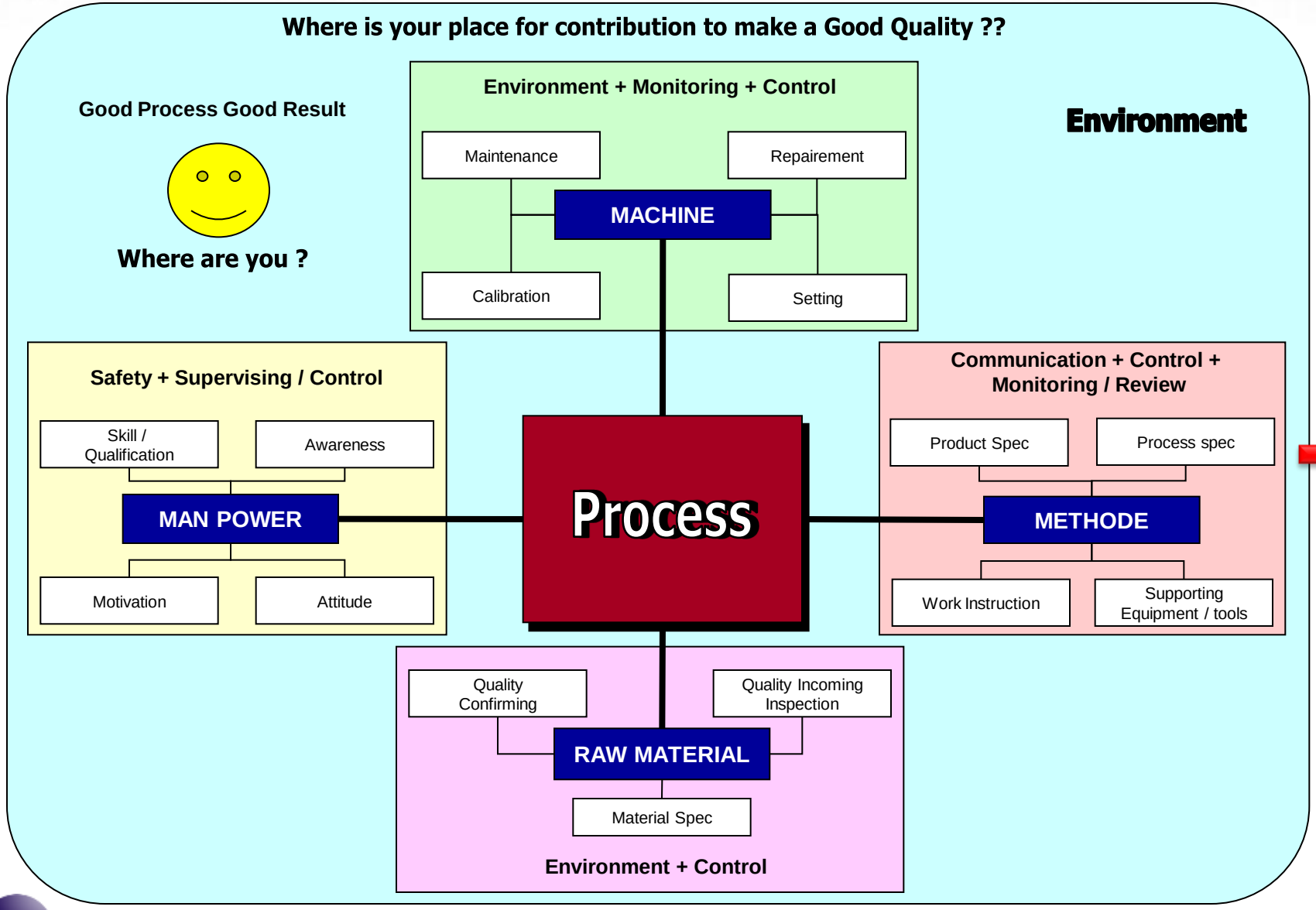
Production Training

Good Process + Good Attitude → Good Quality + Good Output



PENGERTIAN

- Proses Control Plan adalah Sistem pengontrolan pada suatu proses yang dilakukan oleh proses Control, Operator dan Leader atau Supervisor.
- Manufacturing specification adalah Batasan atau spesifikasi suatu produk yang diperbolehkan dari hasil suatu proses.

Proses Condition Table adalah Batasan atau spesifikasi kondisi mesin yang diperbolehkan pada saat proses .

PROCESS CONTROL PLAN

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
1		Room Temperature		spec : 23±3°C	Self Temperature	1 point	1x/ day **every 9:00 am (+/- 10 min)**	PC
2		Humidity		(50 ± 10)% R.H	Hygrometer / Humidity re-corder (A)	1 point	1x/ day **every 9:00 am (+/- 10 min)**	PC
3		Room Dust Level		≤ 352000 counts	Dust Counter (B)	1 point	1 time/month	PC

PROCESS CONTROL PLAN

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
4		Mold die set temperature setting		180±5ºC	1. machine display 2. Digital Termometer	1. 2 points /machine 2. 6 Points /machine	1. Every Lot (MC Display) 2. Every Start up and After Conversion Setup (Digital Termometer)	1. Operator 2. BM
5		Mold Parameter Setting		According to Mold Parameter table	machine Display	All machine	1x/shift or after conversion set up.	Operator
6		Mold Cavity Cleanliness		No remained foreign material	Naked eyes	All Machine	Every starting new lot and idle time >1 hour	Operator
7		Plunger pot tip Cleanliness		No remained foreign material	Naked eyes	All machine	If idle time >3 days machine no process material / monthly	BM
8		Bottom degater cleanliness		No remained foreign material	naked eyes	All machine	Every starting new lot	Operator
9		Lead frame Tape alignment	*	No mis-aligned Lead frame Tape position to Rail track	naked eyes	All machine	Every new lot set up	1. Operator 2. Prod.Leader
11	Total Module Thickness		*	530 um max **(Contact Type)** 330 um max **(Contactless)**	Micrometer	2 pcs/lot	Every lot	Operator
14	Mold and contact area Appearance			Refer to Smartcard Reject Criteria for Mold (Doc. No. PO8Hb8-001) Acc =0 Rej = 1	Magnifier (5x)	1 shot/checking period, top and bottom side	Every starting new lot	PC
						1 shot/checking period, top and bottom side	Every 10 shots	Operator
18		Cure Temperature Setting		130 ± 5ºC	machine Display	All machine	Every Lot (MC Display)	Operator
19		Cure Duration / Time		4.5 - 6 hours	machine Display	All machine	Every Lot (MC Display)	Operator

PROCESS CONTROL PLAN

MOLDING

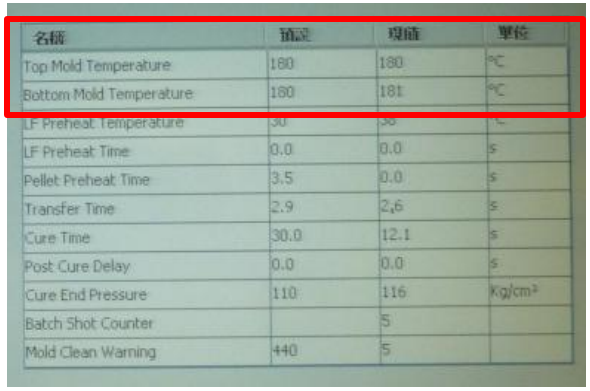
1.Mold Die Set Temperature Setting

Adalah Standar temperatur Die Set yang diperlukan untuk membantu proses pengeringan awal Compound Pada proses Molding

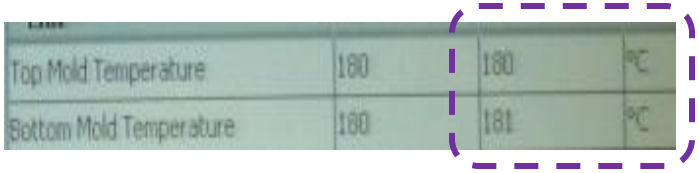
A.Control Plan

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
4		Mold die set temperature setting		180±5ºC	1. machine display 2. Digital Termometer	1. 2 points /machine 2. 6 Points /machine	1. Every Lot (MC Display) 2. Every Start up and After Conversion Setup (Digital Termometer)	1. Operator 2. BM

B.Machine Display



名稱	設定	現值	單位
Top Mold Temperature	180	180	℃
Bottom Mold Temperature	180	181	℃
LF Preheat Temperature	30	30	℃
LF Preheat Time	0.0	0.0	s
Pellet Preheat Time	3.5	0.0	s
Transfer Time	2.9	2.6	s
Cure Time	30.0	12.1	s
Post Cure Delay	0.0	0.0	s
Cure End Pressure	110	116	Kg/cm²
Batch Shot Counter		5	
Mold Clean Warning	440	5	



Top Mold Temperature	180	180	℃
Bottom Mold Temperature	180	181	℃

Sample check :
2 points / machine

Frekuensi :
Every Lot (MC Display)

Pic :
operator

PROCESS CONTROL PLAN

MOLDING

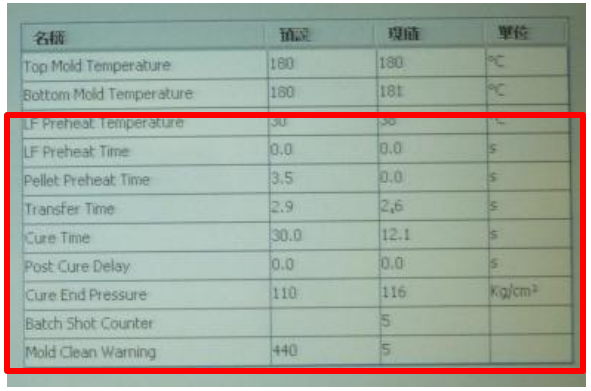
2. Mold Parameter Setting

Pada proses Molding ,Operator mencatat Parameter Molding yang ada di Display monitor mesin Molding

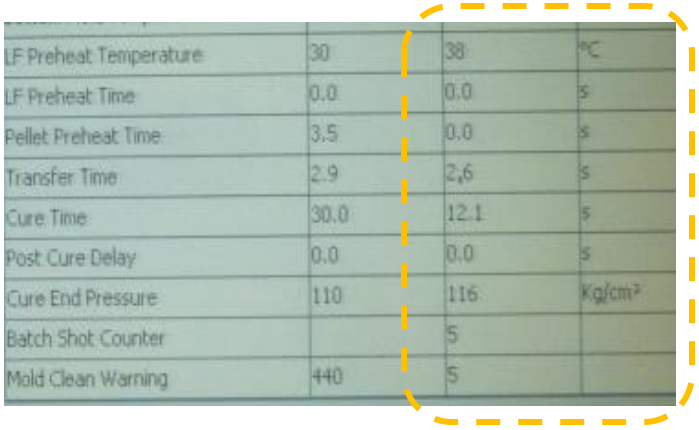
A.Control Plan

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
5		Mold Parameter Setting		According to Mold Parameter table	machine Display	All machine	1x/shift or after conversion set up.	Operator

B.Machine Display



名稱	設定	現值	單位
Top Mold Temperature	180	180	℃
Bottom Mold Temperature	180	181	℃
LF Preheat Temperature	30	30	℃
LF Preheat Time	0.0	0.0	s
Pellet Preheat Time	3.5	0.0	s
Transfer Time	2.9	2.6	s
Cure Time	30.0	12.1	s
Post Cure Delay	0.0	0.0	s
Cure End Pressure	110	116	Kg/cm²
Batch Shot Counter		5	
Mold Clean Warning	440	5	



LF Preheat Temperature	30	38	℃
LF Preheat Time	0.0	0.0	s
Pellet Preheat Time	3.5	0.0	s
Transfer Time	2.9	2.6	s
Cure Time	30.0	12.1	s
Post Cure Delay	0.0	0.0	s
Cure End Pressure	110	116	Kg/cm²
Batch Shot Counter		5	
Mold Clean Warning	440	5	

Sample check :
All machine

Frekuensi :
1 kali per shift atau After Convert set up

Pic :
operator

PROCESS CONTROL PLAN

MOLDING

3. MOLD CAVITY CLEANLINESS

Pada proses Molding,Cleaning Dies dilakukan untuk membersihkan Dies dari FM atau kotoran yang menepel Pada dies molding

A.Control Plan

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
6		Mold Cavity Cleanliness		No remained foreign material	Naked eyes	All Machine	Every starting new lot and idle time >1 hour	Operator

B.Mold Cavity

Sample check :
All Machine

Frekuensi :
Setiap awal Lot baru dan
Mesin berhenti lebih dari 1 jam

Pic :
operator

PROCESS CONTROL PLAN

MOLDING

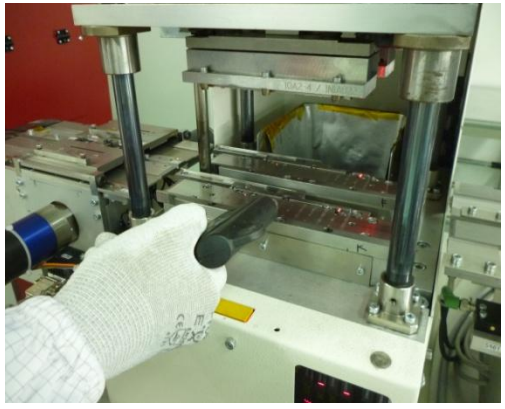
4. BOTTOM DEGETER CLEANLINESS

Proses pembersihan jalur produk pada area Degeter bagian bawah

A.Control Plan

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
8		Bottom degater cleanliness		No remained foreign material	naked eyes	All machine	Every starting new lot	Operator

B.Parameter Display & Standar



Menggunakan Bemcot & Alkohol

Sample check :
All Machine

Frekuensi :
Setiap awal lot baru

Pic :
operator

PROCESS CONTROL PLAN

MOLDING

5. LEAD FRAME TAPE ALIGNMENT

Memastikan posisi loading dan orientasi LF di mesin Molding

A.Control Plan

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
9		Lead frame Tape alignment	*	No mis-aligned Lead frame Tape position to Rail track	naked eyes	All machine	Every new lot set up	1. Operator 2. Prod.Leader

B.Parameter Display & Standar

Sample check :
All Machine

Frekuensi :
Setiap awal lot baru set up

Pic :
operator

PROCESS CONTROL PLAN

MOLDING

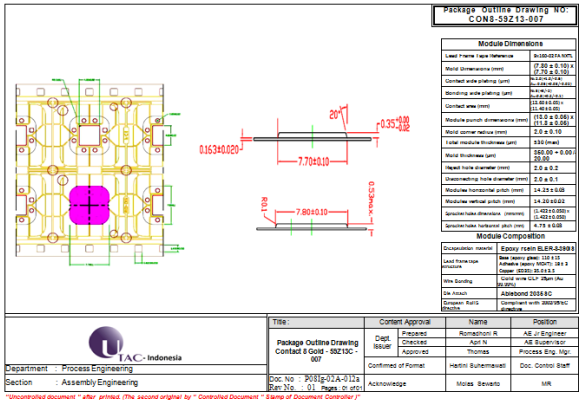
6. TOTAL MODULE THICKNESS

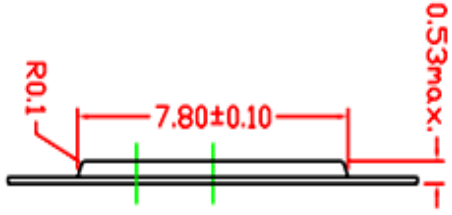
Proses pengecekkan thickness produk pada saat proses molding

A.Control Plan

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
11	Total Module Thickness		*	530 um max **(Contact Type)** 330 um max **(Contactless)**	Micrometer	2 pcs/lot	Every lot	Operator

B.Downholder clean





Proses Spesifikasi :
1.Contact Type : 530 um max
2.Contactless : 330 um max

Sample check :
2 pcs / Lot

Frekuensi :
Setiap Lot

Pic :
operator

PROCESS CONTROL PLAN

MOLDING

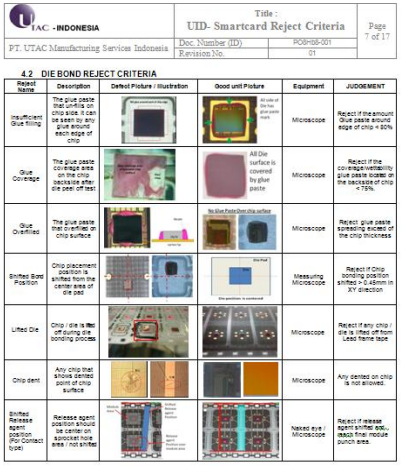
7.MOLD AND CONTACT AREA APPEARANCE

Proses pengecekkan produk pada area mold dan area contact saat proses molding

A.Control Plan

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
14	Mold and contact area Appearance			Refer to Smartcard Reject Criteria for Mold (Doc. No. PO8Hb8-001) Acc =0 Rej = 1	Magnifier (5x)	1 shot/checking period, top and bottom side	Every starting new lot	PC
						1 shot/checking period, top and bottom side	Every 10 shots	Operator

B. Reject Criteria Molding



UAC - INDONESIA

Title : UID- Smartcard Reject Criteria

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PT. UTAC Manufacturing Services Indonesia

Doc. Number (ID) PO8Hb8-001

Revision No. 01

4.2 DIE BOND REJECT CRITERIA

Reject Name	Description	Defect Picture / Illustration	Good unit Picture	Equipment	JUDGEMENT
Insufficient Glue Filling	The glue paste that unfills on chip side. It can be seen by any glue around each edge of chip			Microscope	Reject if the amount Glue paste around edge of chip < 80%
Glue Coverage	The glue paste coverage area on the chip backside after die peel off test		All Die surface is covered by glue paste	Microscope	Reject if the coverage/wettability glue paste located on the backside of chip < 75%
Glue Overfilled	The glue paste that overfilled on chip surface			Microscope	Reject glue paste spreading exceed of the chip thickness
Shifted Bond Position	Chip placement position is shifted from the center area of die pad			Measuring Microscope	Reject if Chip bonding position shifted > 0.48mm in XY direction
Lifted Die	Chip / die is lifted off during die bonding process			Microscope	Reject if any chip / die is lifted off from Lead frame tape
Chip dent	Any chip that shows dented point of chip surface			Microscope	Any dented on chip is not allowed.
Shifted Release agent position (For Contact type)	Release agent position should be center on sprocket hole area / not shifted			Naked eye / Microscope	Reject if release agent shifted exc... leads final module punch area.

Visual Magnifier

Sample check :
1 shot / checking period top and bottom

Frekuensi :
Setiap awal lot baru

Pic :
operator

PROCESS CONTROL PLAN

PMC

8. CURE TEMPERATURE SETTING

Proses pengecekkan parameter temperatur mesin PMC

A.Control Plan

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
18		Cure Temperature Setting		130 ± 5ºC	machine Display	All machine	Every Lot (MC Display)	Operator

B.Machine PMC

Sample check :
All machine

Frekuensi :
Setiap Lot (Display mesin)

Pic :
operator

PROCESS CONTROL PLAN

PMC

9. CURE TEMPERATURE SETTING

Proses pengecekkan parameter waktu proses mesin PMC

A.Control Plan

Characteristics			Special Char. Class	Methods				Pic
N0	Product	Process		Product/ Process Specification/Tolerance	Evaluation/ Measurement Technique	Sample		
						Size	Freq	
19		Cure Duration / Time		4.5 - 6 hours	machine Display	All machine	Every Lot (MC Display)	Operator

B.Machine PMC

Sample check :
All machine

Frekuensi :
Setiap Lot (Display mesin)

Pic :
operator