## Sintered NdFeB Production Control Plan

Serial Production						Main r	responsible person/Tel:	Date(orig.)											
No. of part/latest change level 3						Core t	eam:		Customer engineering										
part (	art description : Sintered NdFeB Magnet Φ4.4×6 N35SH					Suppli	er/plant approval/date:		Drawing number:										
Part proc		Marillan Bartan		Charac	teristics			Methods			number:	Position							
ess	ess Operatio	Machine Device, Jig, Tools For	No	Product	Process	Speci al	Product/Process Specification/	Evaluation/Measu	San	nple	Control Method	Reaction Plan							
num ber		Mfg.	No.	Product		featu	Tolerance	rement Technique	Size	Freq									
10	Raw material inspectio n					С	Raw material chemical composition sheet 1	ARL 3460 Spectroscope	1~2 pcs	Each lot	Chemical composition original record(ZY-8.2.4- 01)	Return							
20	Raw material pretreatm ent	Shot blasting machine,Separatin g machine					No rust in each piece which length below 450mm	Displacement restrictor\By visual	100%	Each lot	Self-inspection, mutual inspection, and Patrolling inspection(WI/P E-001/03)	Rework							
30	Raw material proportio ning						(Smelting) Production & Proportioning sheet	Alytical balance, Platform scale	100%	Each Stove	Smelting room production record()	Rework							
				Melt color			The color should be reddish-brown	By visual	100%	Each Stove	Smelting room production record and operation rules(WI/QM.03- 47)	Rework or Reject							
	Smelting	casting Strip stove			Vacuum degree		Stove(600kgs)<10Pa	Compound Vacuum Gauge	intermitte nt	Each Stove		Rework or Reject							
40			е		Smelting Power		500~550kw	Wattmeter	Continuo us	Each Stove		Rework or Reject							
					Temperatur e		1430~1480℃	Thermometer	Continuo us	Each Stove		Rework							
							Refining time		7∼15min	Clock	Continuo us	Each Stove		Rework or Reject					
50	Strip inspectio n			Strip			comparison table of Strip apperance	By visual	intermitte nt	Each Bucket	Inspection table for Strip(ZY- 8.2.4-02)	Rework or Reject							
60	Hydrogen Decrepiti on	Hydrogen Decrepition Machine			Oxygen Content		≤800PPm	Oxygen content Analyzer	Continuo us	Each lot		Degrade or Reject							
70	Jet	Jet mill machine		Oxygen content			≤200PPm	IRO-1 Oxygen content Analyzer	Continuo us	Each lot	lat mallin m	Move singly,Deg rade Move							
70	milling	Jet mili maciline		Particle		С	2.5µm∼6.5µm	Laser Particle Sizer	20-30g	Each lot	Jet miling operation instruction(WI/P D.GC-03)	singly,Deg rade,Rew ork							
	Mixing	Stainless steel barrel										Time,		>40min	calculagraph	100%	Each lot		Move singly,Re
80									weight		<300Kg	Weighing machine,	100%	Each lot		Move singly,Re			
					proportion		Production order	Weighing machine,	100%	Each lot		Move singly,Re							
	Moulding	mould selection  Moulding machine	mould selection	mould selection		Mould size			60.7 <sup>±0.05</sup> *59.6± 0.05*38.6 <sup>±0.05</sup>	0.02mm Vernier Caliper	100%	Each lot		Redesign. Fix mould/Se ect					
				Press Dimension			60.7 <sup>±0.05</sup> *59.6 <sup>±0.05</sup> *38.6 ±0.05	0.02mm Vernier Caliper	intermitte nt	Each lot	- : -	Rework							
90			oulding machine	Dosage of powder			560±4g	0.1g Balance	intermitte nt	Each lot		Rework							
					Orientation current		Moulding instruction	Current Meter	Continuo us	Each lot		Degrade, Reject							
						Oxygen content of Powder weighing box		Oxygen content≤ 0.5%	Oxygen content Analyzer	Continuo us	Each lot	operation instruction(WIPD .GC-04)							
	Isostatic	Isostatic pressing	pressing		Pressure		100~200MPa	Pressure Meter	Continuo us	Each lot		Rework							
100	press	machine			Time Oxygen		58	calculagraph	100%	Each lot	-	Rework							
110	Oil bag stripping	Oil stripping box			content of box		Oxygen content≤ 0.1PPM	Oxygen content Analyzer	Continuous	Each lot		Degrade, Reject							

Part			Characteristics									
proc ess	Name Operatio n Descripti	Mfg.		1	Process	Speci	11000001100000		Sample		Control Method	Reaction Plan
num ber			No.	Product	Process	al featu	Specification/ Tolerance	Evaluation/Measu rement Technique	Size	Freq		
501	Sintering	Vacuum sintering furnace			before heating	ras	<del>rumao: &lt;4.2~10</del> <sup>2</sup> Pa	instrument		Continu s	Vaccum sintering	Mark/Adj
					Sintering temperatu re	*	Homemade furnac: 1030-1135 (°C)	Temperature control unit	100%			ust/re- sinter/de grade/ scrap/rea ction
120					Maintain temperatu	*	Homemade furnace: 500~940	Temperature control unit		operation instruction (WIPD.GC-05)		
					Maintain time(1)		Time:0.5h~4.5h	Time control unit	100%	Continu s		Mark/Adj ust/re-
					Maintain temperatu	*	Homemade furnace: 480-640	Temperature control unit	100%	Continu s		sinter/de Mark/Adj ust/re- sinter/de
					Maintain time(2)		Time2h~4h	Time control unit	100%	Continu s		Mark/Adj ust/re-
	Rough magnet inspectio n			Apperance		М	No Oxidation on surface,No Crack,No distortion	By visual	100%	Each stove		Move singly,Deg
130		Rough magnet inspection		Dimension		М	51 <sup>±0.05</sup> *51 <sup>±0.05</sup> *27.2 <sup>±</sup>	Digital Vernier Caliper	GB2828 Normal II AQL=0.6	Each stove	Rough magnet inspection instruciton(ZY-	Move singly,Deg rade
		inspection		Property			N35SH Br:11.7~12.2KGs; Hcb:>11.0KOe; Hcj:>20.0KOe; (BH)max:33~36MGOe	Property inspection equipment	>5 pcs	Each stove	8.2.4-06)	Move singly,Deg rade,resin tering
150	Wire Cutting	Wire Cutting machine					Ф4.70±0.02mm	0.01mm Micrometers	GB2828 Normal II AQL=0.6 5	Each lot	Grinding inspection record	Rework/R eject, Adjust the machine
				Appearanc e			No Burr,No Dirt, No Damage,No Oxidation,No Accumulation	By visual	100%	Each lot	By visual	Isolate/Re work/Reje ct
				Tolerance			Ф4.50 <sup>0/-0.15</sup> mm	0.001mm Micrometers	GB2828 Normal	Each lot	Inspection record	Rework/R eject
160	Centerles s grinding	Centerless grinding machine		Appearanc e			No Burr,No Dirt, No Damage,No Oxidation,No Accumulation	By visual	100%	Each lot	By visual	Isolate/Re work/Reje ct
170	Cutting	Cutting machine		Tolerance			6.00 <sup>+0.0/0.5</sup> mm	0.01mm Micrometers	GB2828 Normal II AQL=0.6 5	Each lot	Grinding inspection record	Rework/R eject, Adjust the machine
				Appearanc e			No Burr,No Dirt, No Damage,No Oxidation,No Accumulation	By visual & statistic	100%	Each lot	By visual	Isolate/Re work/Reje ct
	Machinin g Inspectio n			Tolerance			Ф 4.50 <sup>0/0.15</sup> *6.00 <sup>+0.5/0</sup> (mm )	0.01mm micrometers;R Gauge	GB2828 Normal II AOI =0.6	Each lot	Unplating magnet inspection instruction(ZY-8.2.4-08)	Rework/R eject
180				Appearanc e			No broken edges Crack	By visual	100%	Each lot		Isolate/Re work/Reje ct
				Weak magnetic			Do not Attract three staple	By visual	1-10pcs	Each lot		Isolate/Re work
		Roller burnishing machine		Grinding stone Put in grinding Put in magneti	Burnishing		14×14 Griding stuff 38~50 (Kg) 20~30(Kg)	Visual inspection  Box  Electronic balance	100%	Each lot	NdFeB chamfer working instruction, transfer technics card	Rework
				Abrading time  Edge-breaking			8~12 (h) R≦ 0.2	Time relay Projection	100% 5PCS	Each lot	NdFeB chamfer working	Rework
		Pre-handling slot	Acid lotion concentration			2~5(%)	Replacing	100%	Each lot	instruction transf Working		
			e-handling slot  Activation tim  Clean time	Acid washing time	Pre-	<u> </u>	30~90(s)	Clock 100%	100%		instruction of plating	Adjust
				Activation time  Clean time  of	handling		10~30(s)	Clock	100%	Each lot	lot Working instruction of	۸ ماند د د
		Plating NI Slot		ultraconia PH			4.0~4.6	PH meter	Continuo	Each lot	plating Working instruction of	Adjust
				Temperatu			45~55	Thermometer	us Continuo	Each lot	plating Working instruction of	Adjust
				re Time			70~100	Timer	us Continuo us	Each lot	plating Working instruction of	Adjust Adjust
				Electric current			30~40A	Ammeter	Continuo us	Each lot	Working instruction of plating	Adjust

Part	Process		Characteristics				Methods					
proc ess	Name Operatio n Descripti	Mfg.				Speci al featu	Product/Process Specification/ Tolerance		Sample		Control Method	Reaction Plan
num ber			No. Prod	Product				Evaluation/Measu rement Technique	Size	Freq		i iuii
	Plating NiCuNi	Plating Cu Slot		Temperatu re			40~50	Thermometer	Continuo us	Each lot	Working instruction of plating	Adjust
190				Time			25~35	Timer	Continuo us	Each lot	Working instruction of plating	Adjust
				Electric current			70~100	Ammeter	Continuo us	Each lot	Working instruction of plating	Adjust
				PH			4.0~4.6	PH meter	Continuo us	Each lot	Working instruction of plating	Adjust
		Plating NI Slot		Temperatu re			45~55	Thermometer	Continuo us	Each lot	Working instruction of plating	Adjust
		Flating Ni Slot		Time			70~100	Timer	Continuo us	Each lot	Working instruction of plating	Adjust
				Electric current			30~40A	Ammeter	Continuo us	Each lot	Working instruction of plating	Adjust
		Plating NI Slot		PH			4.0~4.6	PH meter	Continuo us	Each lot	Working instruction of plating	Adjust
				Temperatu re			45~55	Thermometer	Continuo us	Each lot	Working instruction of plating	Adjust
				Time			70~100	Timer	Continuo us	Each lot	Working instruction of plating	Adjust
				Electric current			30~40A	Ammeter	Continuo us	Each lot	Working instruction of plating	Adjust
		Test		Dimension/ Thickness of coating			15~31μm	Coating thickness gauge	2~5pcs	Each lot	Inspection record	Rework/R eject
				Appearanc e			Surface without broken, durt, bared and banked	By visual	100%	Each lot	Inspection record	Degrade/R eject
				Chamfer			R<0.50mm	Projector	5pcs	Each lot	Chamfer Record	Adjust machine
	Final magnets inspectio n			Dimension (Tolerance		М	Ф 4.50 <sup>0/0.15</sup> *6.00 <sup>0.5/0</sup> (mm)	0.001mm Micron micrometers	GB2828 Normal	Each lot		Rework/R eject
200				Appearanc e		М	No bleach,feculence, broken of the coating	By visual	100%	Each lot	Final magnet inspection instruction(ZY-8.2.4-09)	Isolate/Re work/Reje ct
				No harmful substance			Do meet EU RoHS environmental requirements	Products sent to SGS for testing	200cm2	One Year	3.2.1. 33/	Rework/R eject
210	Magnetizi ng	Magnetizing machine			Voltage Current Time		Operation instruction	Machine automatism	100%	Each Squad	Magnetizing operation instruction(ZY-6.3-03-45)	Adjust machine
220	Packagin g	vacumm packing machine, packing machine		Apperance			Carton size:320*24*13(mm)	By visual	100%	Each lot	Packaging operation	All Inspection
230	Warehou sing and Delivery			carton mark including quantity,gr ade ,size			According to customers'mark request and shipping method	By visual	100%	Each lot	instruction( ZY- 6.3-03-44)	Rework