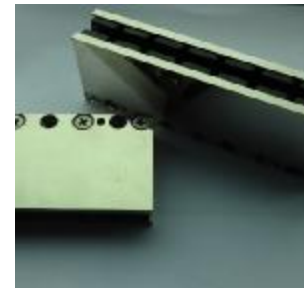


SHENZHEN NEWLAND MAGTECH CORPORATION



MAGNET



MAGNETIC
MODULE





Company Briefing



Permanent Magnet - NdFeB



Magnetic Module



Leading Technology



Solution & Example



Company Briefing



Shenzhen Newland Magtech Corporation
--- Magnetic Module



Ningbo Newland Magnet Co., Ltd

--- NdFeB Sintering Magnet

Shenzhen Facility

Innovate The Future

Product: Magnetic Assembly



SHENZHEN NEWLAND MAGTECH CORPORATION was established in 2006, which focus on providing Magnetic Assembly like magnetic rotor/stator, magnetic coupling, pot/holding magnet, magnetic lifter, magnetic generator and other magnetic assemblies. The facility covers an area of 10000 square meters with 35 employees. The engineering includes 15 qualified and skilled engineers, by aiming of 'providing highly optimized design of magnetic circuit and manufacture'.

Ningbo Facility

Innovate The Future

Product: Sintering NdFeB Magnet



NINGBO NEWLAND MAGNET Co.,Ltd is specialized in sintered NdFeB magnet, with over 2000 tons annual capacity of NdFeB magnet, providing both licensed and unlicensed magnet in any request

We utilize new sintered NdFeB techniques and equipment as strip casting, HDDR(Hydrogenation Disproportionation Desorption Recombination) technology to make any magnet with different performance and types from series N to M, H, SH, UH, EH grade, with BHmax 33~51MGOe, max. working temp. up to 230°C. The production of NEWLAND is with ISO9001 and ISO/TS16949.

NEWLAND

Customers

Innovate The Future

Schneider
Electric

 **metso**

PHILIPS

lenovo

 **JOHNSON
ELECTRIC**

Canon

SYNEY
ELEVATOR

Walmart
Save money. Live better.

NEWLAND

Certificate

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ISO9001:2008



ISO/TS16949



Permanent Magnet NdFeB



NEWLAND

Production Line

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NEWLAND

Inspection Device

Innovate The Future

Laser Particle Size
Measuring Instrument



Magnetic Torque Tester



BH Curve for Performance



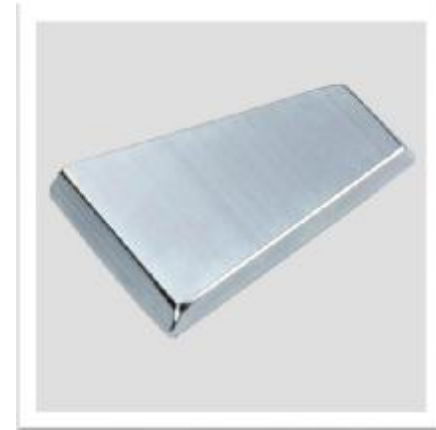
HX-MIAS



NEWLAND

Product

Innovate The Future



Date Sheet

Innovate The Future

Series	Grade	Br	bHc	iHc	Bhmax	Density	Br.Temp. Coefficient%/°C	Tc°C (L/D≥0.7)	Working Temp. °C
		mT (KGs)	KA/m (KOe)	KA/m (KOe)	KJ/m ³ (MGOe)	g/cm ³			
N	N35	1180-1250	≥860	≥955	263-295	7.4-7.6	-0.12 (60°C)	310	≤80
		(11.8-12.5)	(≥10.8)	(≥12)	(33-37)				
	N38	1230-1290	≥899	≥955	287-318	7.5-7.7	-0.12 (60°C)	310	≤80
		(12.3-12.9)	(≥11.3)	(≥12)	(36-40)				
	N40	1270-1330	≥923	≥955	302-334	7.5-7.7	-0.12 (60°C)	310	≤80
		(12.7-13.3)	(≥11.6)	(≥12)	(38-42)				
	N45	1330-1390	≥876	≥955	342-374	7.5-7.7	-0.12 (60°C)	310	≤80
		(13.3-13.9)	(≥11.0)	(≥12)	(43-47)				
	N48	1370-1420	≥836	≥955	366-390	7.5-7.7	-0.12 (60°C)	310	≤80
		(13.7-14.2)	(≥10.5)	(≥12)	(46-49)				
	N50	1400-1450	≥836	≥876	374-406	7.5-7.7	-0.12 (60°C)	310	≤80
		(14.0-14.5)	(≥10.5)	(≥11)	(47-51)				
	N52	1430-1480	≥836	≥876	390-422	7.5-7.7	-0.12 (60°C)	310	≤80
		(14.3-14.8)	(≥10.5)	(≥11)	(49-53)				
M	40M	1270-1330	≥923	≥1114	302-334	7.5-7.7	-0.12 (80°C)	320	≤100
		(12.7-13.3)	(≥11.6)	(≥14)	(38-42)				
	45M	1330-1390	≥994	≥1114	342-374	7.5-7.7	-0.12 (80°C)	340	≤100
		(13.3-13.9)	(≥12.5)	(≥14)	(43-47)				
	48M	1370-1420	≥1019	≥1114	366-390	7.5-7.7	-0.12 (80°C)	340	≤100
		(13.7-14.2)	(≥12.8)	(≥14)	(46-49)				
	50M	1400-1450	≥1042	≥1114	374-406	7.5-7.7	-0.12 (80°C)	340	≤100
		(14.0-14.5)	(≥13.1)	(≥14)	(47-51)				
H	38H	1230-1290	≥899	≥1353	287-318	7.5-7.7	-0.1 (100°C)	340	≤120
		(12.3-12.9)	(≥11.3)	(≥17)	(36-40)				
	40H	1270-1330	≥923	≥1353	302-334	7.5-7.7	-0.1 (100°C)	340	≤120
		(12.7-13.3)	(≥11.6)	(≥17)	(38-42)				
	42H	1290-1350	≥955	≥1353	318-350	7.5-7.7	-0.1 (100°C)	340	≤120
		(12.9-13.5)	(≥12.0)	(≥17)	(40-44)				
	44H	1310-1370	≥963	≥1353	326-358	7.5-7.7	-0.1 (100°C)	340	≤120
		(13.1-13.7)	(≥12.1)	(≥17)	(41-45)				
	46H	1330-1380	≥980	≥1353	342-374	7.5-7.7	-0.1 (100°C)	340	≤120
		(13.3-13.8)	(≥12.3)	(≥17)	(43-47)				
	48H	1370-1420	≥1019	≥1353	358-390	7.5-7.7	-0.1 (100°C)	340	≤120
		(13.7-14.2)	(≥12.8)	(≥17)	(45-49)				

Date Sheet

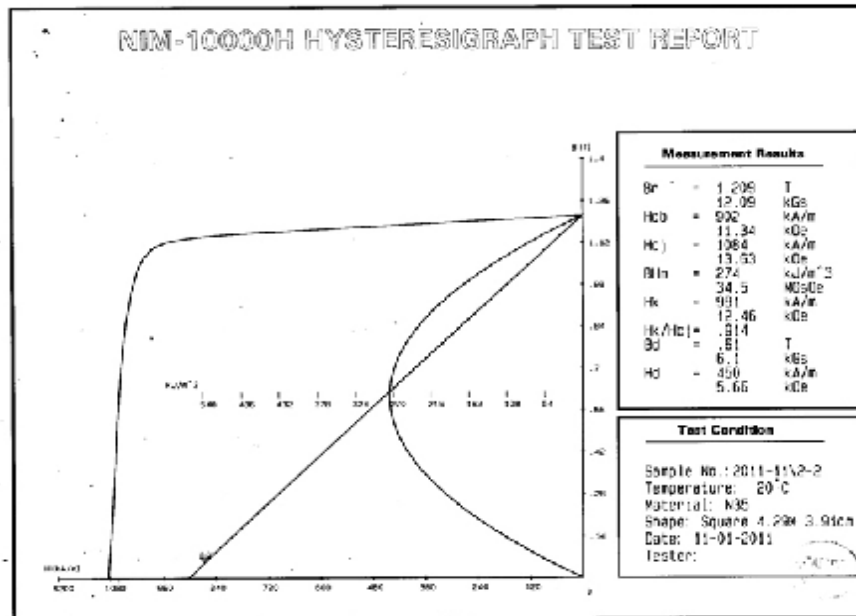
Innovate The Future

Series	Grade	Br	bHc	iHc	Bhmax	Density	Br.Temp.Coefficient %/°C	Tc °C (L/D ≥ 0.7)	Working Temp. °C
		mT (KGs)	KA/m (KOe)	KA/m (KOe)	KJ/m³ (MGOe)	g/cm³			
SH	30SH	1080-1160	≥812	≥1592	223-255	7.5-7.7	-0.1 (100°C)	340	≤150
		(10.8-11.6)	(≥10.2)	(≥20)	(28-32)				
	33SH	1140-1210	≥844	≥1592	247-279	7.5-7.7	-0.1 (100°C)	340	≤150
		(11.4-12.1)	(≥10.6)	(≥20)	(31-35)				
	35SH	1170-1240	≥876	≥1592	263-295	7.5-7.7	-0.1 (100°C)	340	≤150
		(11.7-12.4)	(≥11.0)	(≥20)	(33-37)				
	38SH	1220-1290	≥907	≥1592	287-318	7.5-7.7	-0.1 (100°C)	340	≤150
		(12.2-12.9)	(≥11.4)	(≥20)	(36-40)				
	40SH	1260-1320	≥939	≥1592	302-334	7.5-7.7	-0.1 (100°C)	340	≤150
		(12.6-13.2)	(≥11.8)	(≥20)	(38-42)				
UH	30UH	1080-1160	≥812	≥1990	223-255	7.5-7.7	-0.1 (100°C)	350	≤180
		(10.8-11.6)	(≥10.2)	(≥25)	(28-32)				
	33UH	1140-1210	≥852	≥1990	247-279	7.5-7.7	-0.1 (100°C)	350	≤180
		(11.4-12.1)	(≥10.7)	(≥25)	(31-35)				
	35UH	1170-1240	≥876	≥1990	263-295	7.5-7.7	-0.1 (100°C)	350	≤180
		(11.7-12.4)	(≥11.0)	(≥25)	(33-37)				
	38UH	1220-1290	≥915	≥1990	287-318	7.5-7.7	-0.1 (100°C)	350	≤180
		(12.2-12.9)	(≥11.5)	(≥25)	(36-40)				
	40UH	1260-1320	≥923	≥1990	302-334	7.5-7.7	-0.1 (100°C)	350	≤180
		(12.6-13.2)	(≥11.6)	(≥25)	(38-42)				
EH	30EH	1080-1160	≥812	≥2388	223-255	7.5-7.7	-0.1 (100°C)	350	≤200
		(10.8-11.6)	(≥10.2)	(≥30)	(28-32)				
	33EH	1140-1210	≥852	≥2388	247-279	7.5-7.7	-0.1 (100°C)	350	≤200
		(11.4-12.1)	(≥10.7)	(≥30)	(31-35)				
	35EH	1170-1240	≥876	≥2388	263-295	7.5-7.7	-0.1 (100°C)	350	≤200
		(11.7-12.4)	(≥11.0)	(≥30)	(33-37)				
AH	30AH	1080-1160	≥804	≥2786	223-255	7.6-7.7	-0.09 (100°C)	350	≤200
		(10.8-11.6)	(≥10.1)	(≥35)	(28-32)				
	33AH	1140-1210	≥852	≥2786	247-279	7.6-7.7	-0.09 (100°C)	350	≤200
		(11.4-12.1)	(≥10.7)	(≥35)	(31-35)				
	35AH	1170-1240	≥868	≥2786	263-295	7.6-7.7	-0.09 (100°C)	350	≤200
		(11.7-12.4)	(≥10.9)	(≥35)	(33-37)				

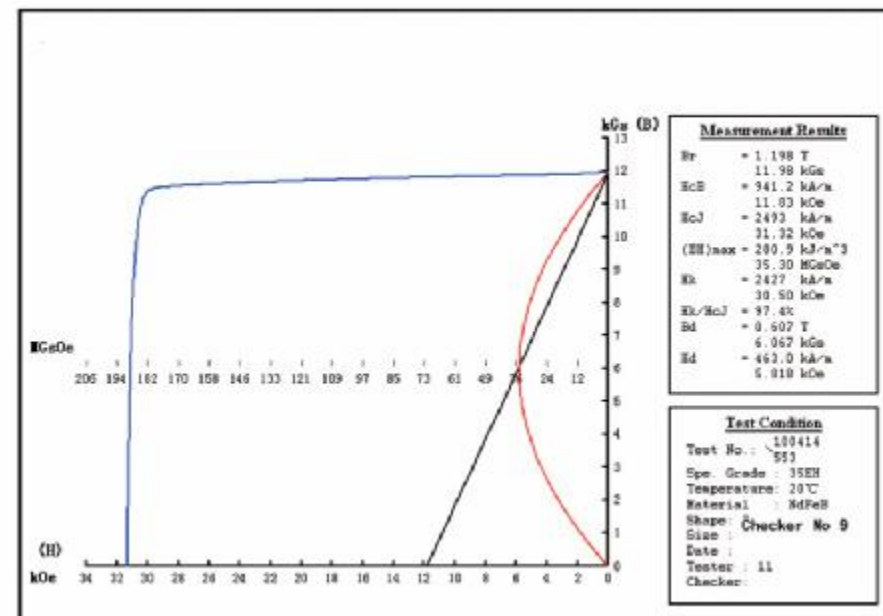
BH Loop Curve

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N35



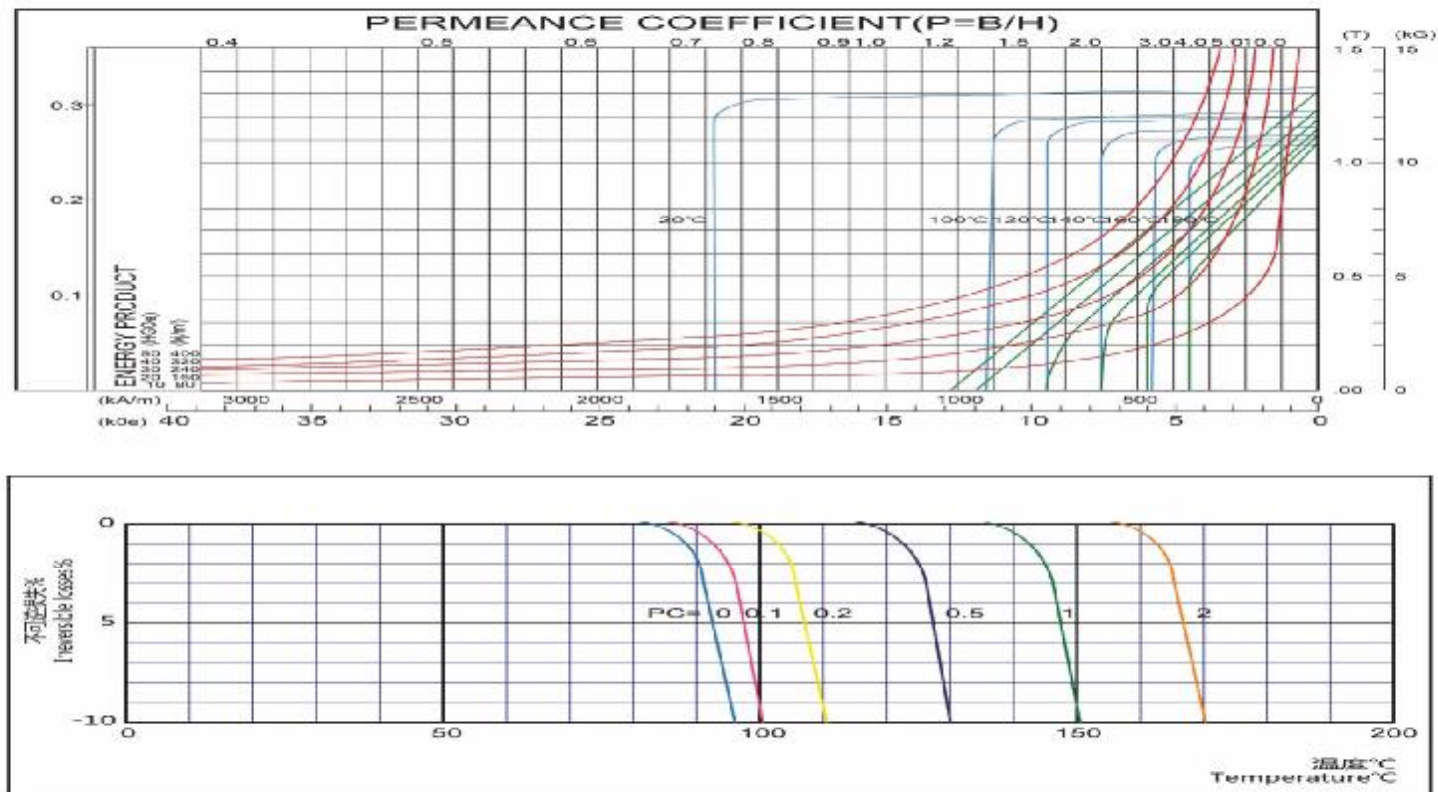
N35H



BH Loop Curve

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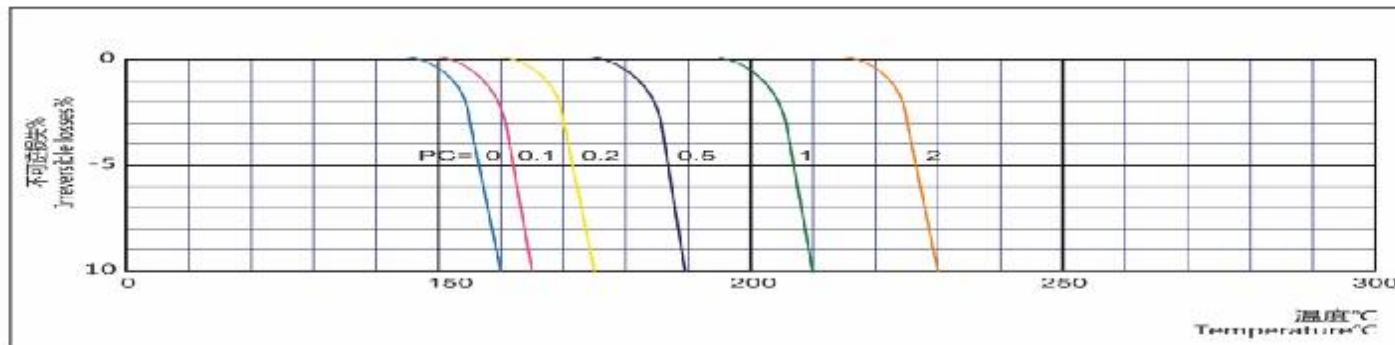
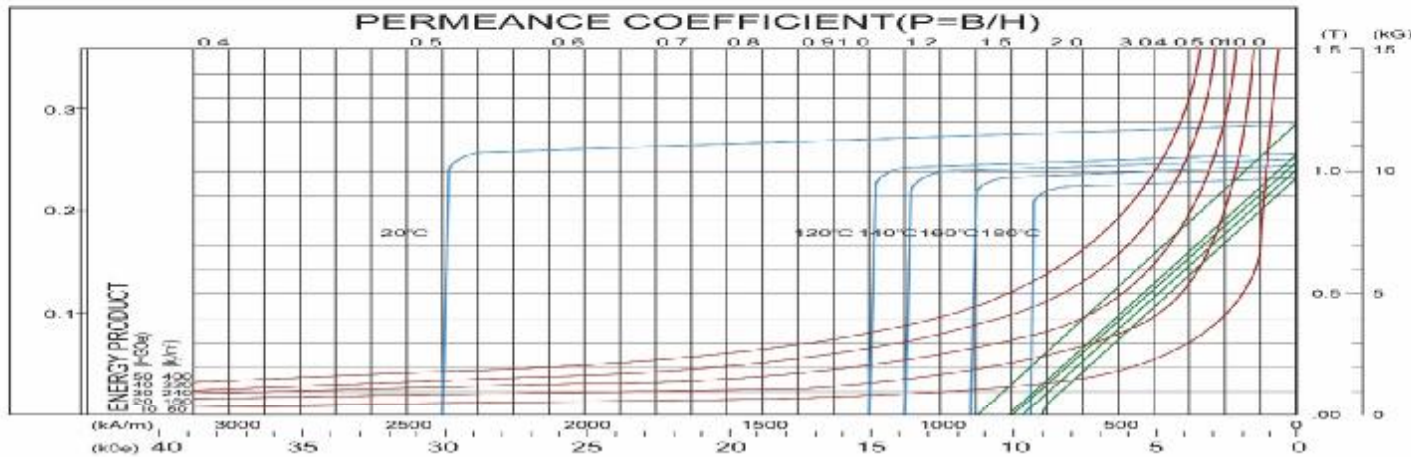
N45SH



BH Loop Curve

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N35EH





Magnetic Assembly

- Ø Magnetic Rotor/Stator
- Ø Magnetic Coupling
- Ø Clamping & Lifting

Magnetic Rotor

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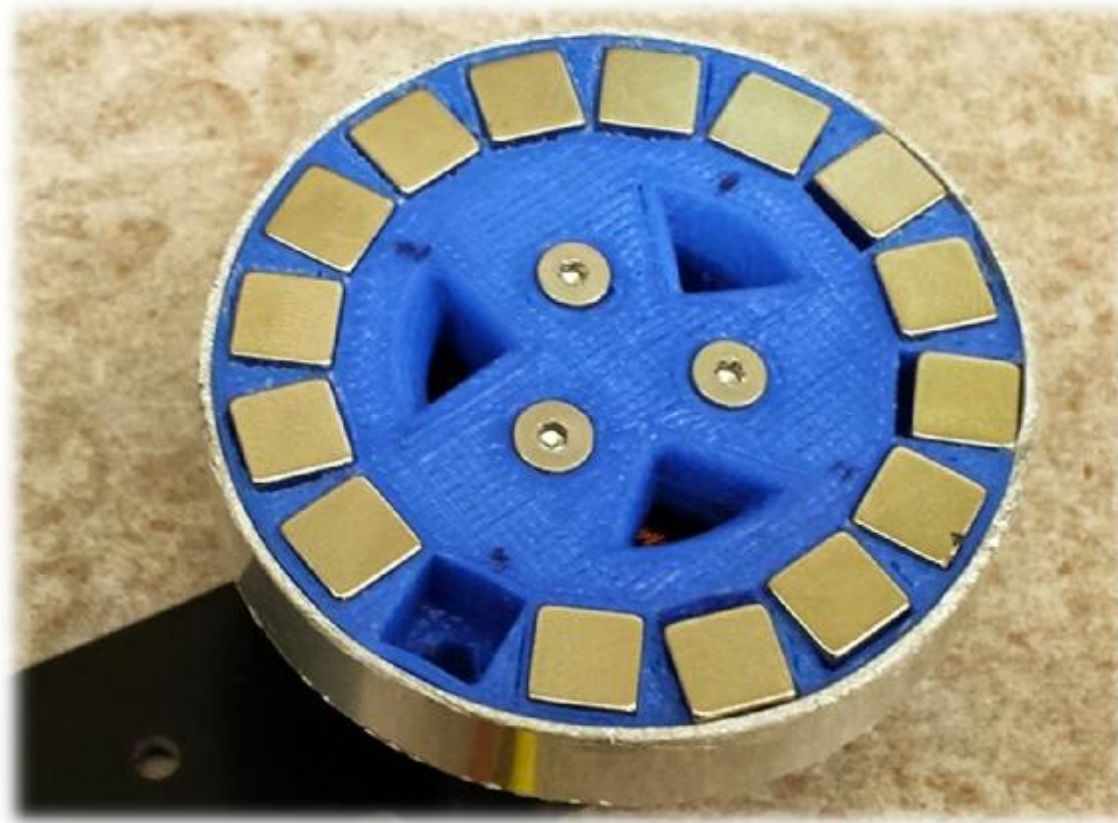
Used in Micro Motors(servo/DC/Brushless)



Magnetic Rotor

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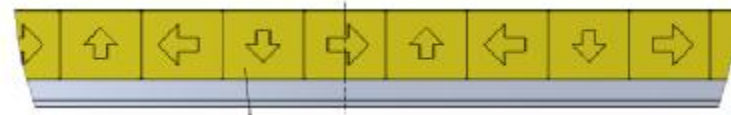
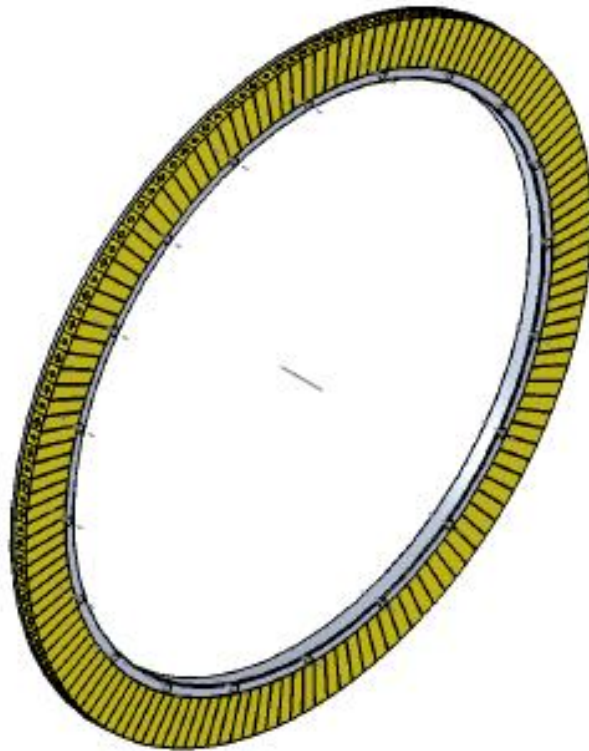
Plastic-base Magnetic Rotor



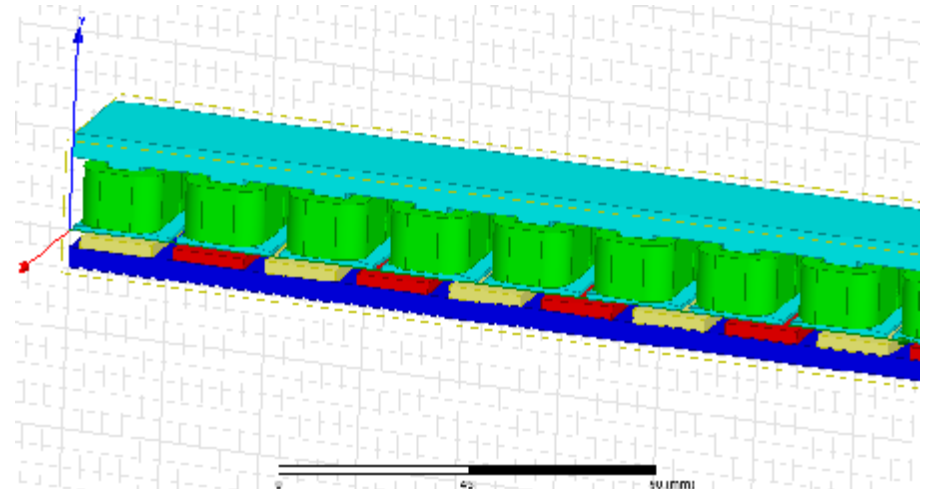
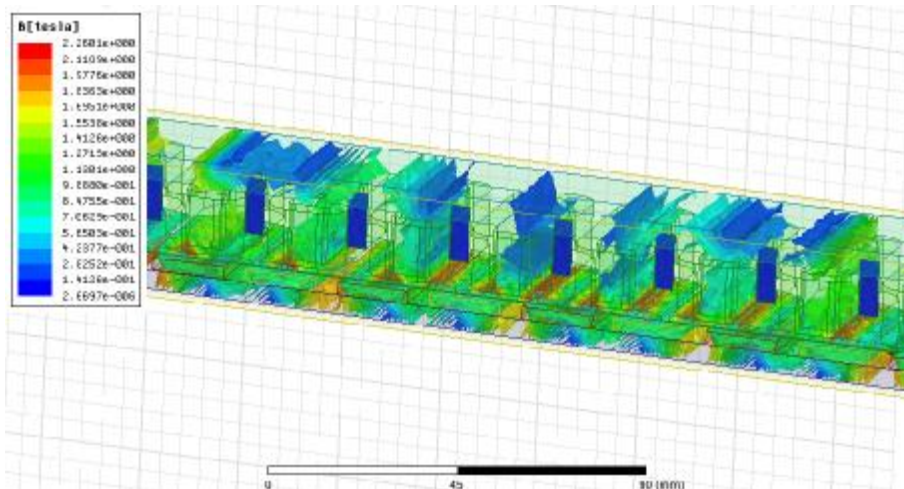
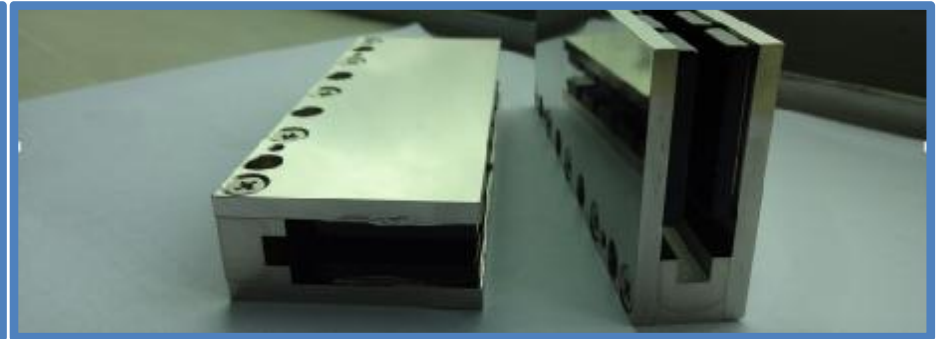
Magnetic Rotor

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Halbach Array Magnetic Rotor



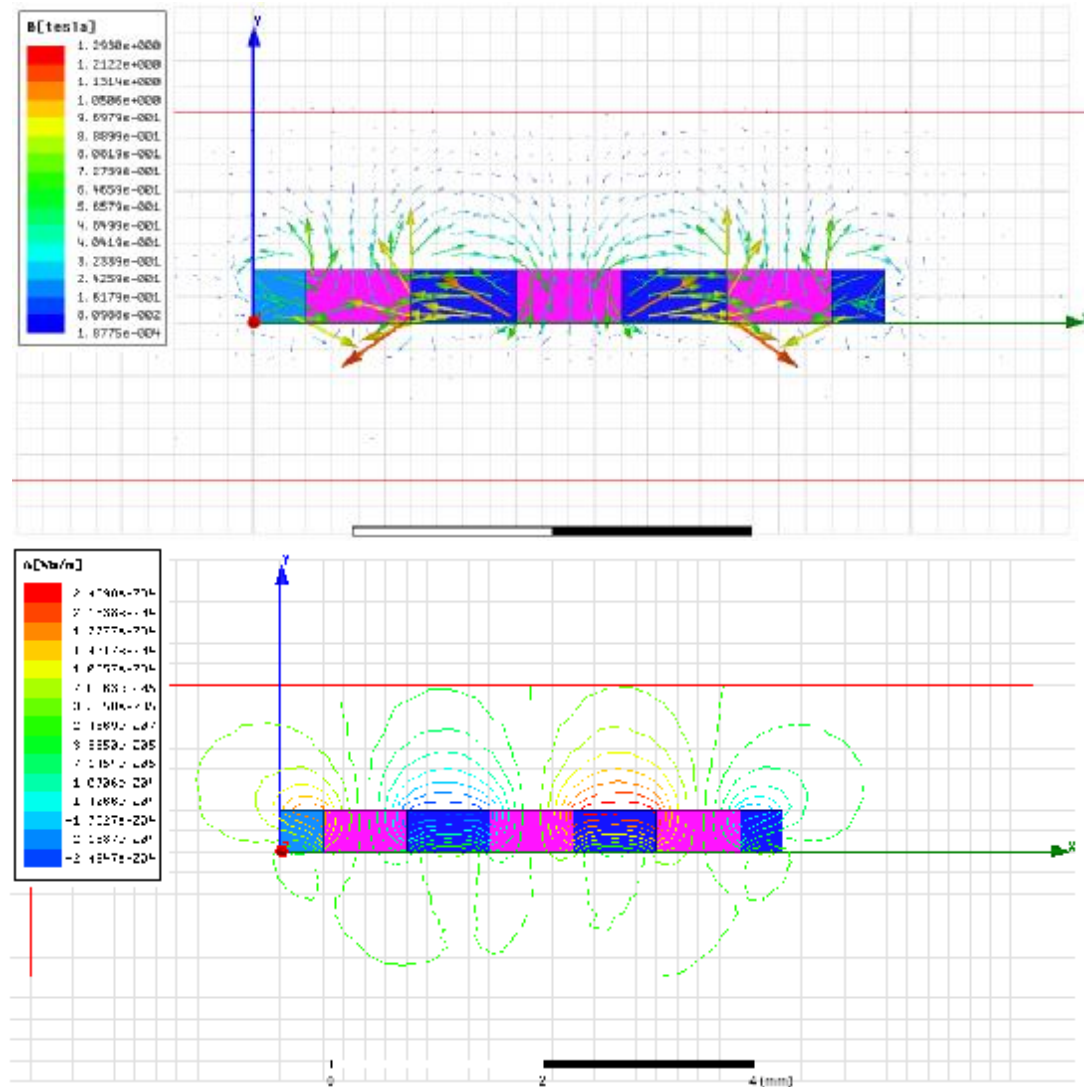
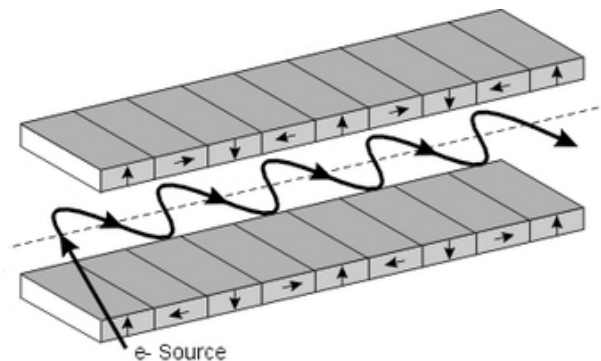
Magnetic Stator of Linear Motor



Magnetic Stator

Innovate The Future

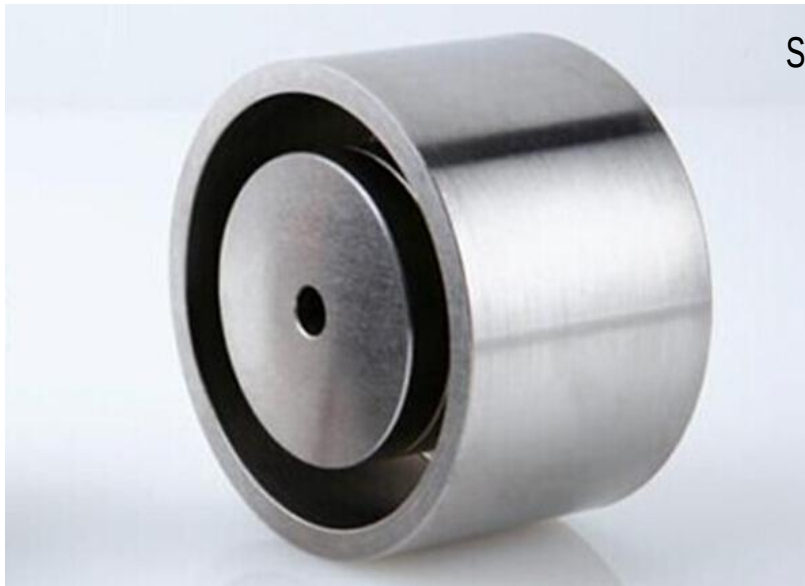
Halbach Array Magnetic Stator of Linear Motor



Magnetic Stator

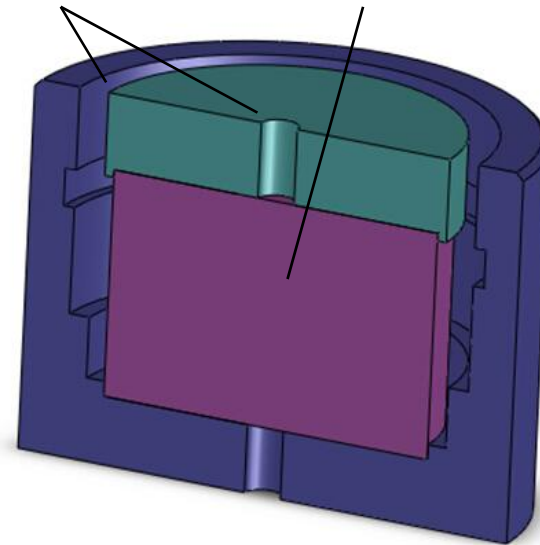
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Magnetic Part of Voice Coil Motor



Stainless Steel Shell

Magnet



Magnetic Stator

Innovate The Future

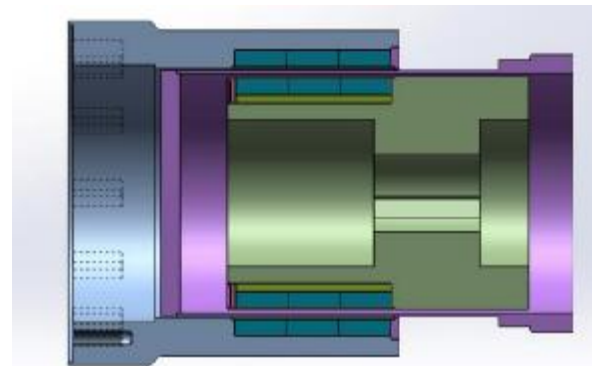
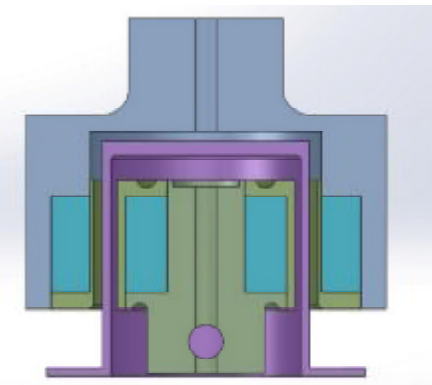
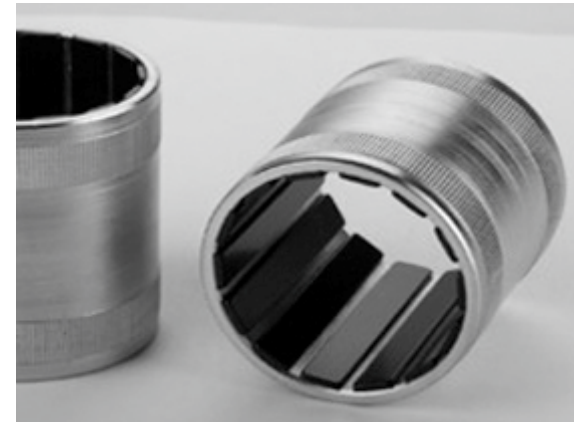
Voice Coil Magnet



NEWLAND

Magnetic Coupling

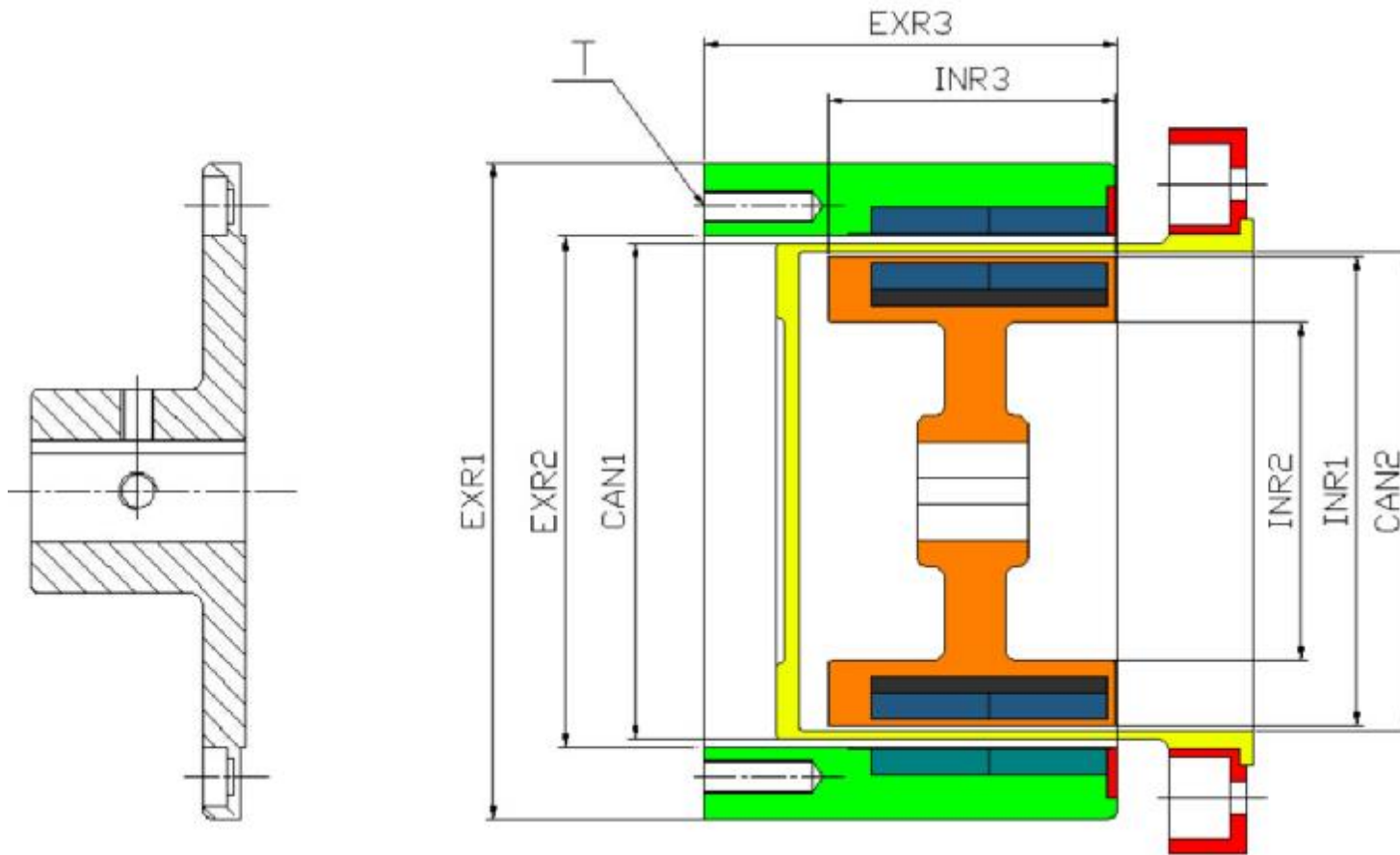
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Magnetic Coupling

Innovate The Future

Data Sheet of Magnetic Coupling



Magnetic Coupling

Innovate The Future

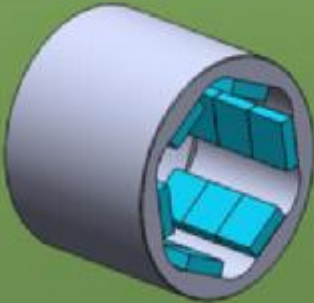
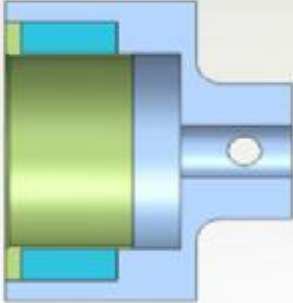
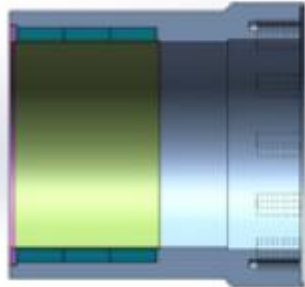
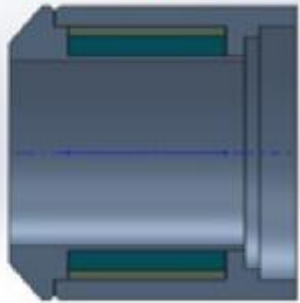
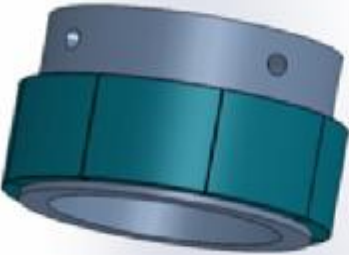
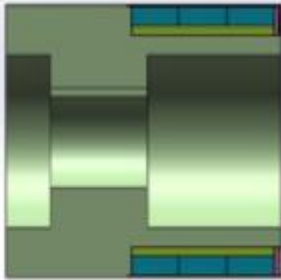
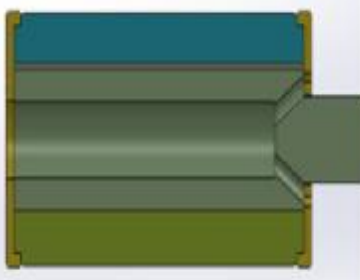
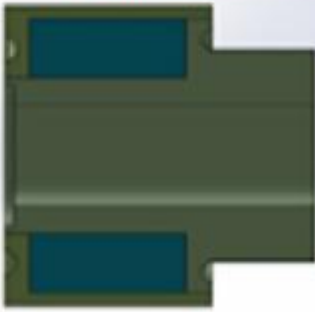
Data Sheet of Magnetic Coupling

Mode	Working Torque	Overload Torque	External Rotor			Internal Rotor			Insulation Can	
	(Nm)	(NM)	EXR1	EXR2	EXR3	INR1	INR2	INR3	CAN1	CAN2
ZMC-0.1	0.1	0.15	32	21	10	11	5	8	17	15
ZMC-0.5	0.5	0.75	32	21	15	11	5	10	17	15
ZMC-1	1	1.5	48	32	20	22	10	10	28	26
ZMC-3	3	4.5	68	52	50	42	20	25	46	44
ZMC-6	6	9	90	70	65	58	26	35	62	60
ZMC-16	16	28	90	70	95	58	26	62	62	60
ZMC-22	22	35	122	100	85	88	50	50	92	90
ZMC-30	30	48	122	100	100	88	50	62	92	90
ZMC-60	60	96	165	135	100	122	80	65	127.4	125
ZMC-80	80	130	184	156	100	142	90	65	148.4	146
ZMC-100	100	160	184	156	120	142	90	80	148.4	146
ZMC-150	150	240	200	156	150	142	90	110	148.4	146
ZMC-180	180	290	200	156	180	142	90	140	148.4	146
ZMC-220	220	350	200	156	200	142	90	160	148.4	146
ZMC-300	300	390	200	156	230	142	90	180	148.4	146
ZMC-400	400	520	220	178	230	164	110	200	170	168
ZMC-600	600	720	320	280	330	266	190	280	273	270
ZMC-1000	1,000	1,200	600	480	560	586	496	550	595	592

Magnetic Coupling

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Type of Outer Rotor(OR) and Inner Rotor(IR)

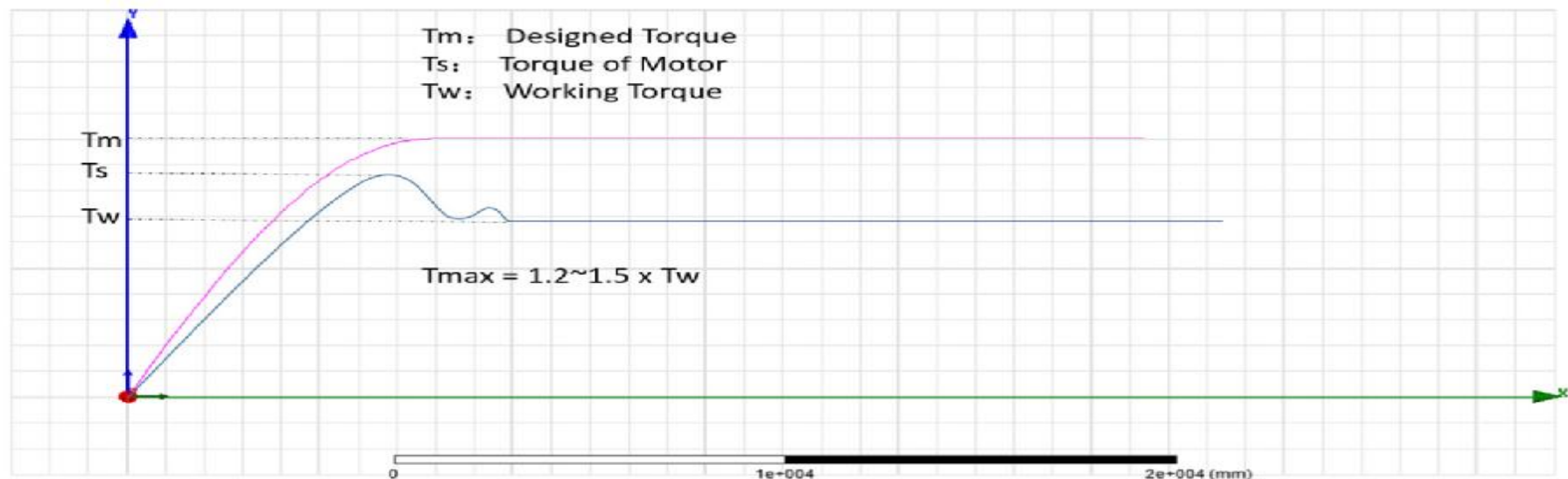
OR	1 Standard	2 With Envelop	3 With fulling glue	4 All-sealed by Welding
				
	5 Standard	6 Sealed by Envelop	7 Fixed by side cover	8 Plastic Sheel
				

Magnetic Coupling

Innovate The Future

Design to apply to different applications

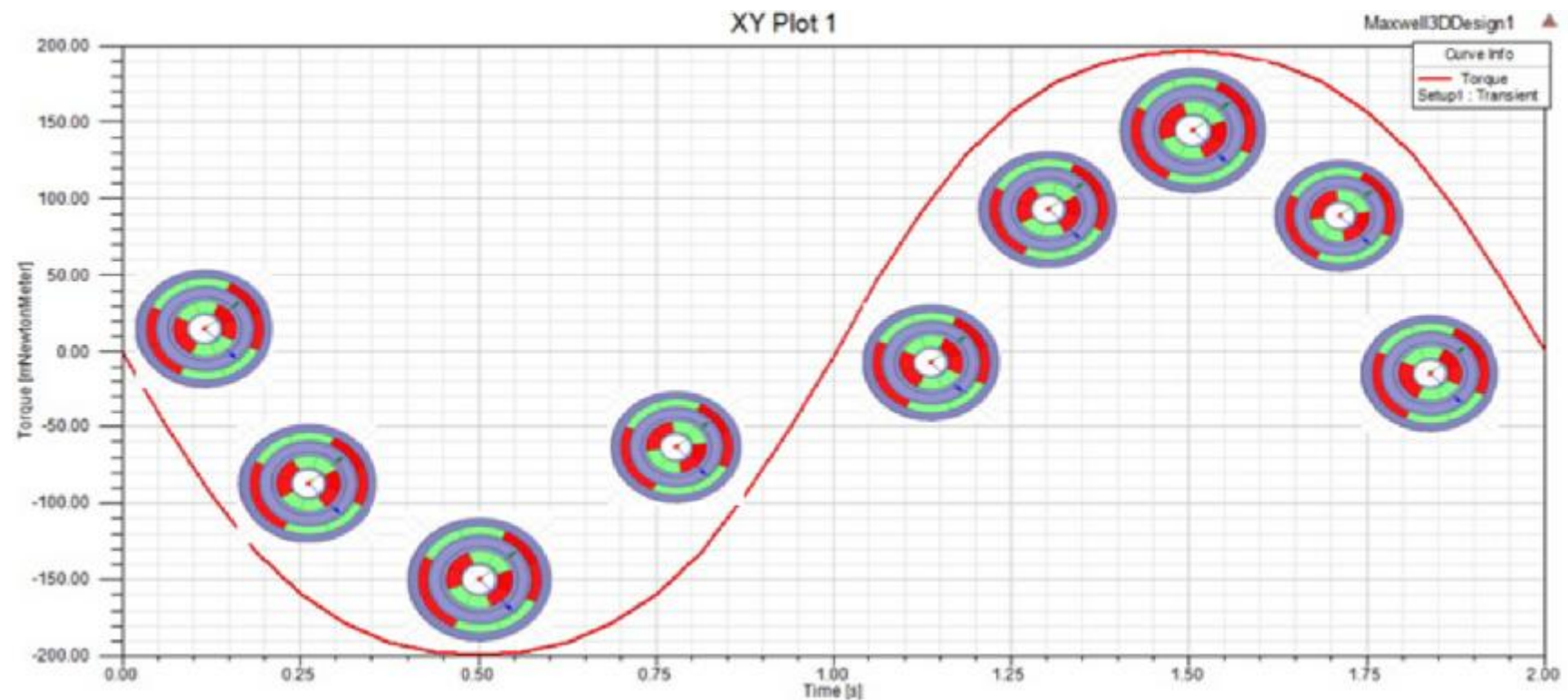
Combination Type	Material		Applied to condition	
	OR	IR		
OR1 + IR5	Carbon Steel	Carbon Steel	Medium environment, minimal corrosion	
OR2/3/4 + IR6/7	Carbon Steel	Stainless Steel	acid	
OR2/3/4 + IR8	Carbon Steel	Plastic	alkali	
Insolation Can	Material	Thickness	Pressure	Cost
	Stainless Steel	1~1.2 mm	1~2 Mpa	**
	Hastelloy	1~1.2 mm	1~3 Mpa	****
	Titanium	1~1.8 mm	3~8 Mpa	***
	Plastic	1~2.0 mm	1~5 Mpa	*



Magnetic Coupling

Innovate The Future

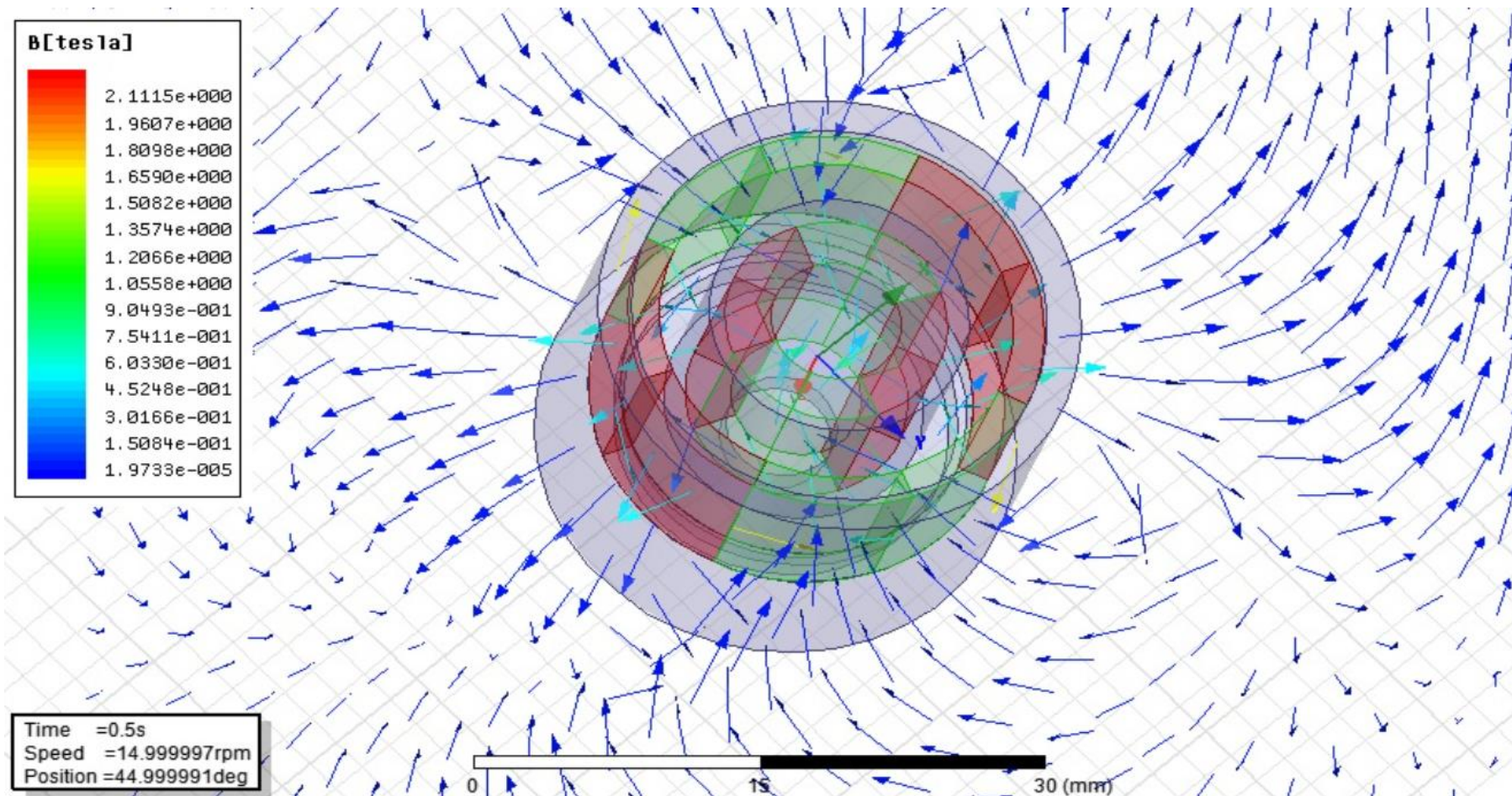
Torque Curve



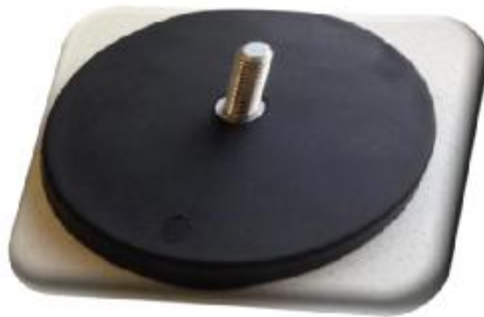
Magnetic Coupling

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Analysis of Magnetic Line of Force



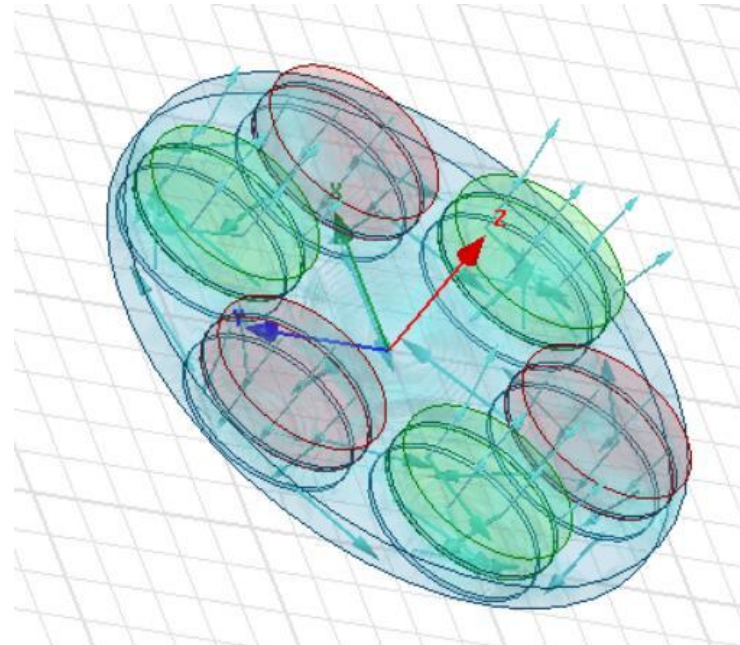
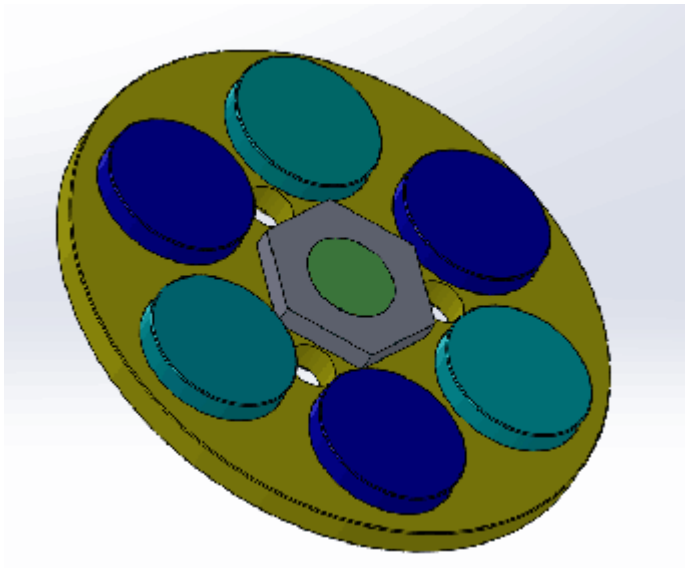
Rubber-coated Clamping Magnet



Type	Dimension			Force		Weight (g)	Max. Working Temperature (°C)
	D	H	Tread	Pulling	Shearing		
	(mm)	(mm)		(N)	(N)		
ZCM50-2206	22	6	M4	50	12	12	80
ZCM60-2206	22	6	M4	60	15	15	80
ZCM85-3106	31	6	M4	85	17	20	80
ZCM90-3106	31	6	M4	90	20	25	80
ZCM100-4306	43	6	M6	100	30	32	80
ZCM135-4308	43	8	M6	135	53	40	80
ZCM180-4310	43	10	M6	180	77	56	80
ZCM250-6608	66	8	M8	250	85	103	80
ZCM300-6610	66	10	M8	300	100	143	80
ZCM455-6615	66	15	M8	455	141	165	80

Rubber-coated Clamping Magnet

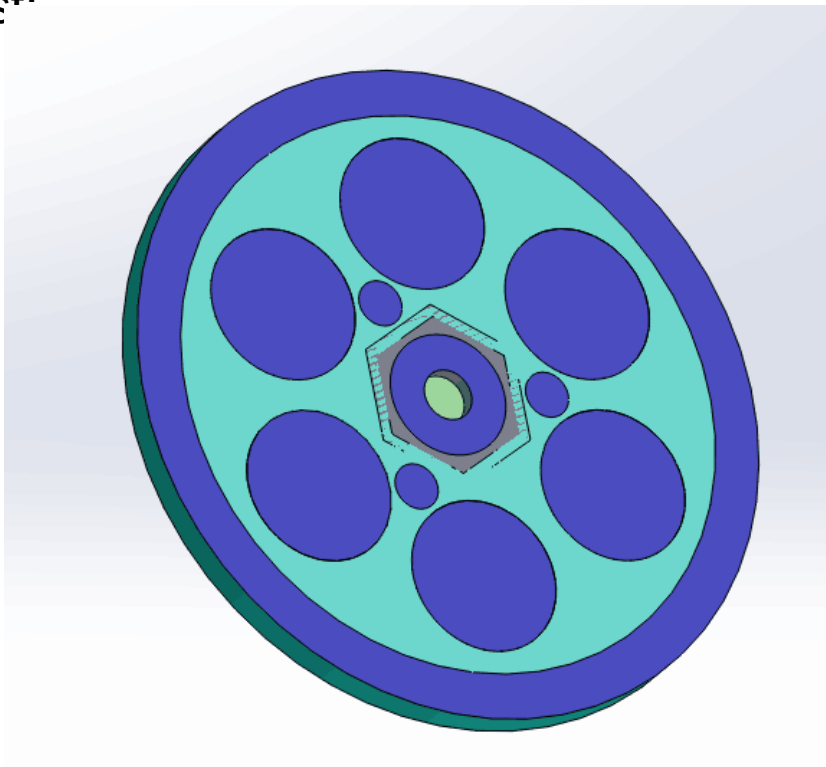
1. Brilliant Technical Ideal , assisting to save some cost:



By reversing the pole of half of magnets(Blue for N, Green for S), the magnetic circuit can be established between every 2 neighboring magnets, which will finally save 1/3 magnet usage

Clamping Round Magnet

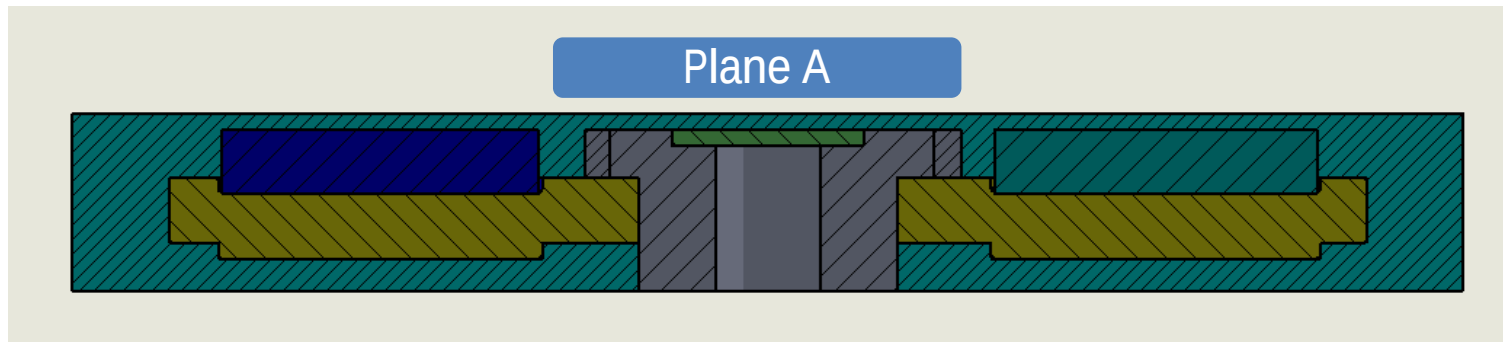
2. Brilliant Technical Ideal , assisting to save some cost



There will be 3 go-through holes near center of steel plate, after rubber coated, the upper and lower rubber layer will be connected, which would make the external surface smooth to decrease the gap distance between magnet and object

Clamping Round Magnet

3. Brilliant Technical Ideal , assisting to save some cost:



Our advanced rubber coating process will finally make sure the thickness for each layer of rubber within $0.5 \pm 0.1\text{mm}$, thus the force everywhere in plane A will be homogeneous. With the precise and lean process, the waste of magnets' volume will be much lower.

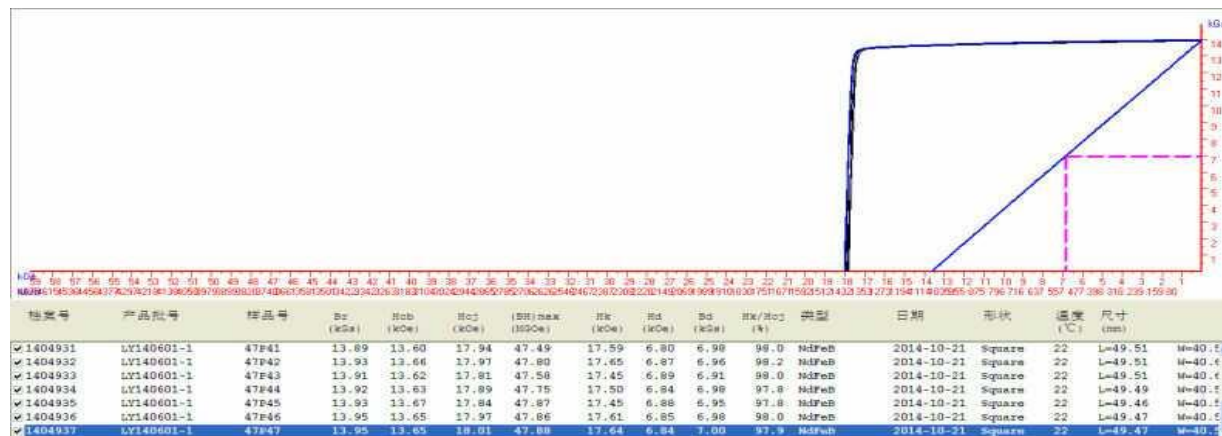


Leading Technology

- Ø Magnet Performance
- Ø Surface Protection
- Ø Coating Adhesion
- Ø Gluing Effect
- Ø Eddy Current(glue resistance)

Magnet Performance

1. Br/ Hcj Consistence: $\pm 1\%$ in one batch; $\pm 1.5\%$ in various batches
2. Low Weight Loss(IEC68-2-66): HAST 480h, Weight Loss $< 1.5\text{mg}/\text{cm}^2$
3. Zero-Dy or Low-Dy Formula for lowing sintering cost (example: 45H)



Consistence: 7pcs samples share with the same BH Curve

Surface Protection

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Zn-Ni Alloy: 240hrs/SST



Zn-Ni Alloy: 720hrs/SST



Zn-Ni Alloy: 1000hrs/SST



NiCuNi: 48hrs/SST



NiCuNi: 96hrs/SST



Surface Protection

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NiCu+Epoxy: 480hrs/SST



NiCu+Epoxy: 600hrs/SST



Surface Treatment	Thickness (um)	Pressure Cooker Test PCT (hrs)	Salt Spray Test SST (hrs)
Zn	5-15	≥8	≥24
NiCuNi	20-30	≥24	≥48
NiCu+Epoxy	20-30	≥120	≥480
Zn-Ni Alloy	10-20	≥168	≥720

Coating Adhesion

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glue



glue the locker onto subject



remove the glue aside



aside glue removed



set up the puller



twist the puller



after pull-off



reading the value

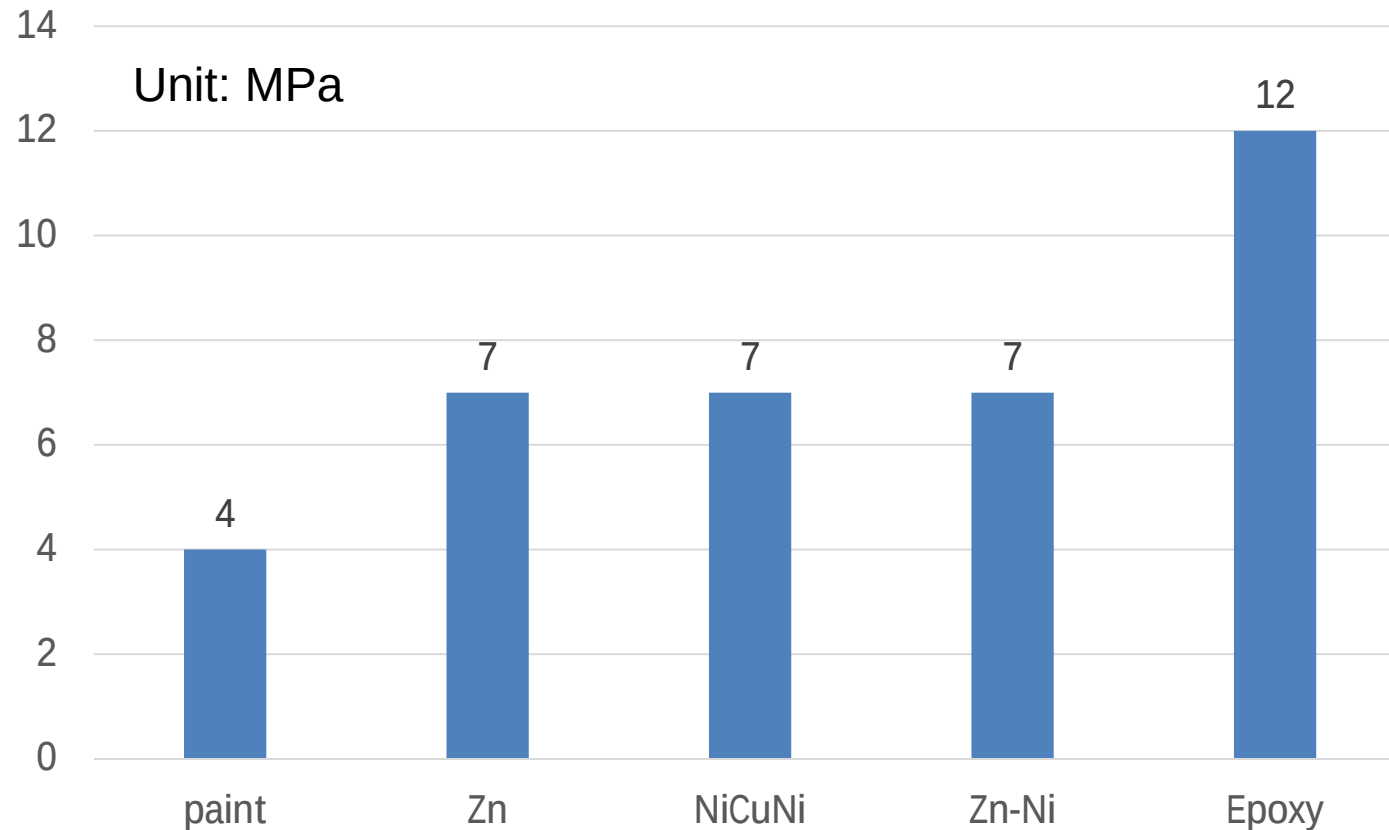


The equipment



The way
we test
the
adhesive
strength
of coating

Adhesion Level of Each Coating



Gluing Effect

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1. Pre-treatment

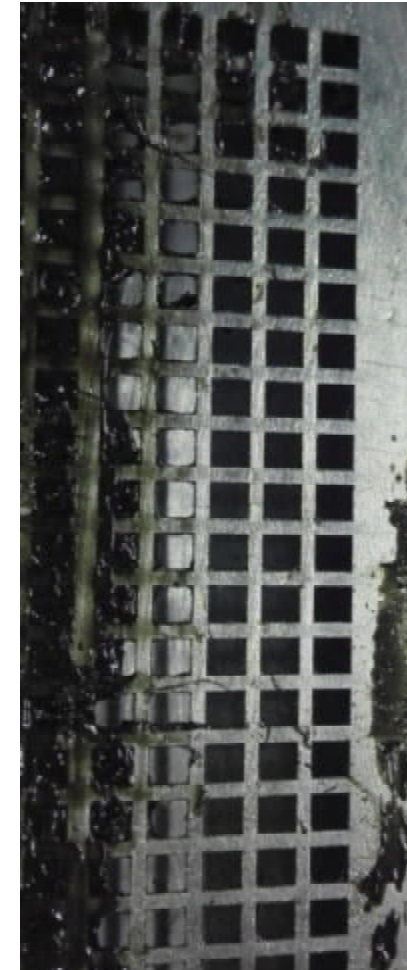
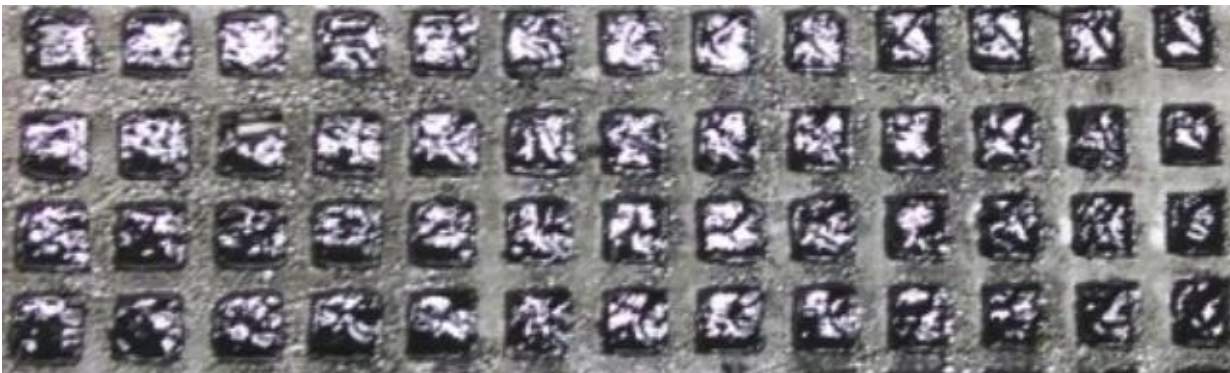
Automatic Sand Blasting



Plasma Treatment



2. Glue-paste tools: Cross-net



Gluing Effect

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3. Gluing Devices

Automatic Gluing Device



Volume-control e-valve

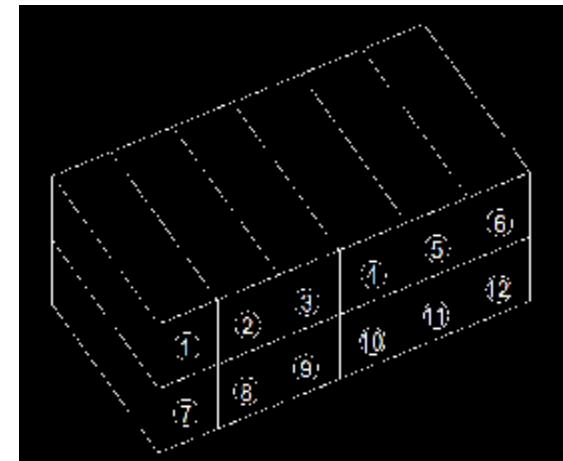


4. Curing Process

Automatic Step-by-step Heating



There are 12 temperature districts in this device, allowing to heat the glue at different temperature



Gluing Effect

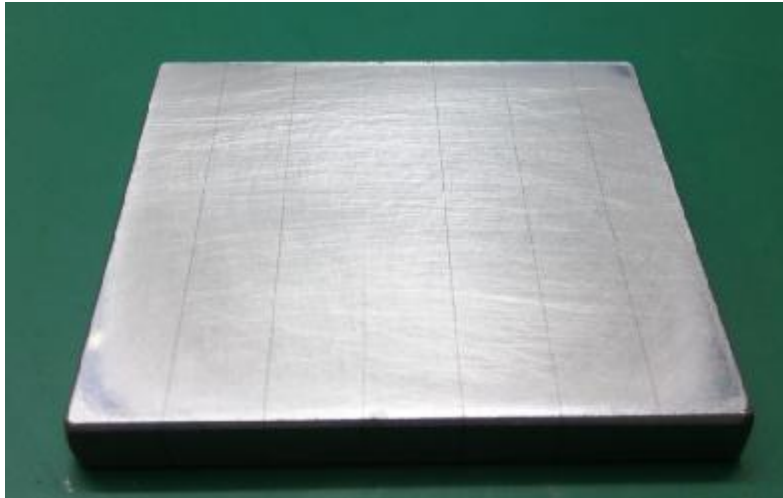
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Glue Type	Pre-treatment			Curing		Tearing Force	Max. Temp.
	Ultrasonic Cleaning	Sand Blasting	Plasma	SBS Heating	Pressure Holding		
Glue 1	+				+	10Mpa	110°C
Glue 2			+		+	25Mpa	120°C
Glue 3		+		+		13Mpa	280°C

Device & Process	Advantages
Automatic Gluing	Precise positioning and volume-control
Plasma Treatment	The gluing strength is stronger by 60%
Automatic SBS Heating	With higher stability and reliability
Cross-net Glue paste	Less waster of glue and less flow-out

Eddy Current

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The way to eliminate the eddy current(EC):

1. With isolated plastic stripe, we can precisely control the thickness of glue glayer
2. By adding some special material inside of the glue, the resistance of glue would be doubled or even more increased.

20M Ω is the stable parameter we can achieve in mass production

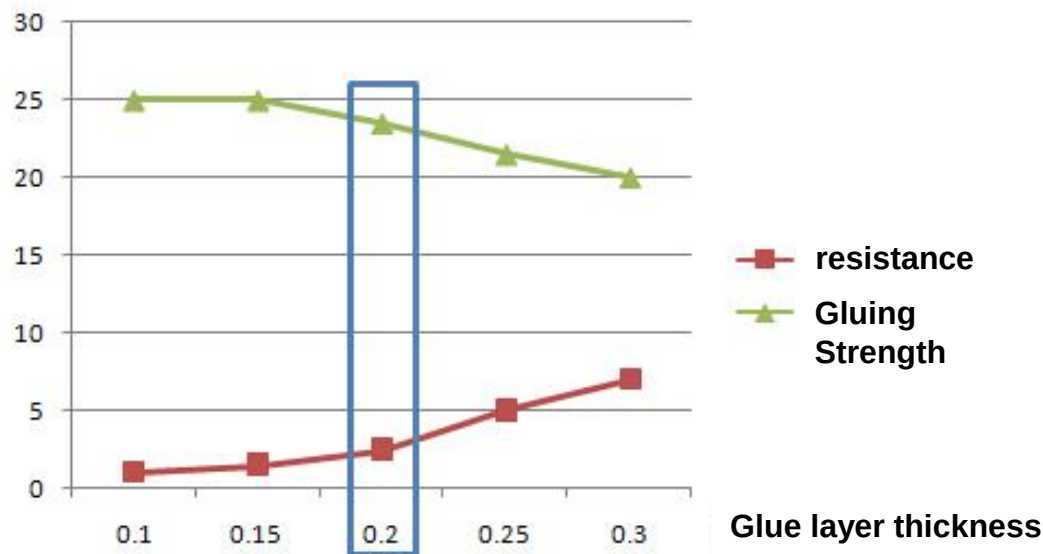




Solution & Example

- Ø Solution: balancing between gluing effect and eddy current
- Ø Example: Magnets for Wind Turbine & Driving Motor

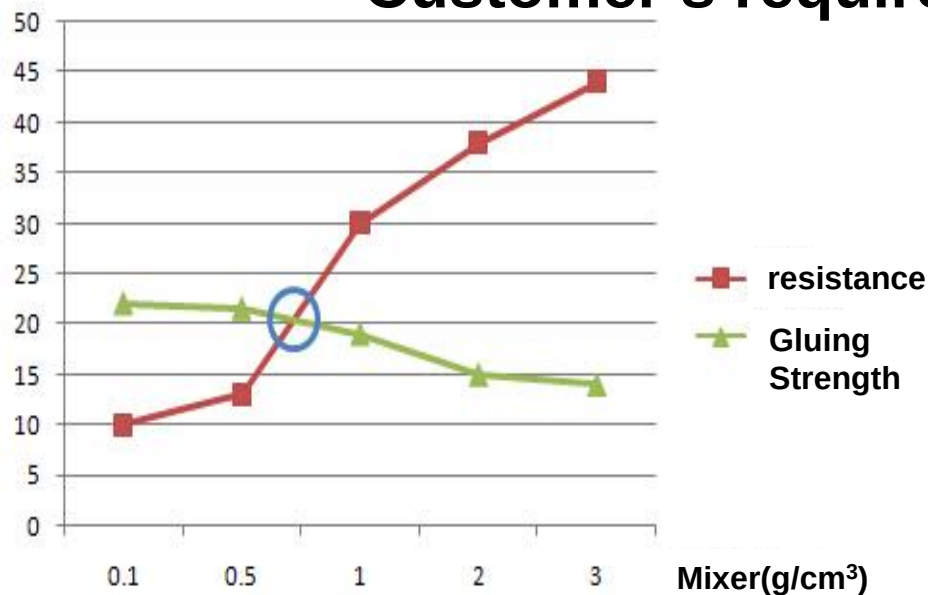
Case: Technical Settlement Based on Customer's requirements



Acc.to customer's requests:
 GS>20Mpa
 R>15MΩ,
 we firstly set GT as 0.2mm

	Unit					
Glue Thickness(GT)	mm	0.1	0.15	0.2	0.25	0.3
Resistance(R)	MΩ	1.05	1.5	2.5	5	7
Gluing Strength(GS)	Mpa	25	25	23.5	21.5	20

Case: Technical Settlement Based on Customer's requirements



The cross point:

R=20MΩ

GS=20Mpa

The final technical instruction:

GT=0.2mm

Mixer=0.7g/cm³

	Unit	GT=0.2mm					
Mixer	g/cm³	0.1	0.5	0.7	1	2	3
R	MΩ	10	13	20	30	38	44
GS	Mpa	22	21.5	20	19	15	14

Project 1: magnet for wind turbine**1.N45H****1) +20°C****Br = 1.35 T****HcB = - 1040 kA/m****HcJ > 1350 kA/m****2) +60°C****Br = 1.3 T****HcB = - 950 kA/m****HcJ > 950 kA/m****HK > 920 kA/m****2. Tolerance of Br and HcB within 1%****3. Coating material and thickness: NiCuNi+Epoxy,
Acc.to ISO12944,C3 High (or C4 low)**

Project 1: magnet for MW-grade wind turbine

4. Surface appearance:

- ① no crack and hole allowed on the surface of magnet
- ② the total weight of burrs and cracks on the edge shall be within 0.5% of magnet weight

5. Anti-corrosion: HAST test (IEC 68-2-66: 130° C/95% humidity /pressure 2,6 bar) after 240hrs, weight loss<3mg/cm²

6. Tracibility on each magnet (with 2D bar code)

Project 2: magnet for marine driving motor

1. N46H

1) +20°C

$Br \geq 1.35T$

$HcJ \geq 1273kA/m$

$HcB \geq 1010kA/m$

2) +80°C

$Br \geq 1.30T$

$HcJ \geq 800kA/m$

2. Tolerance of Br and HcB within 3%

3. Coating material and thickness: NiCuNi+Epoxy, Acc.to ISO12944,C3 High (or C4 low)



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The

End

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