

## Motor Arc Segments

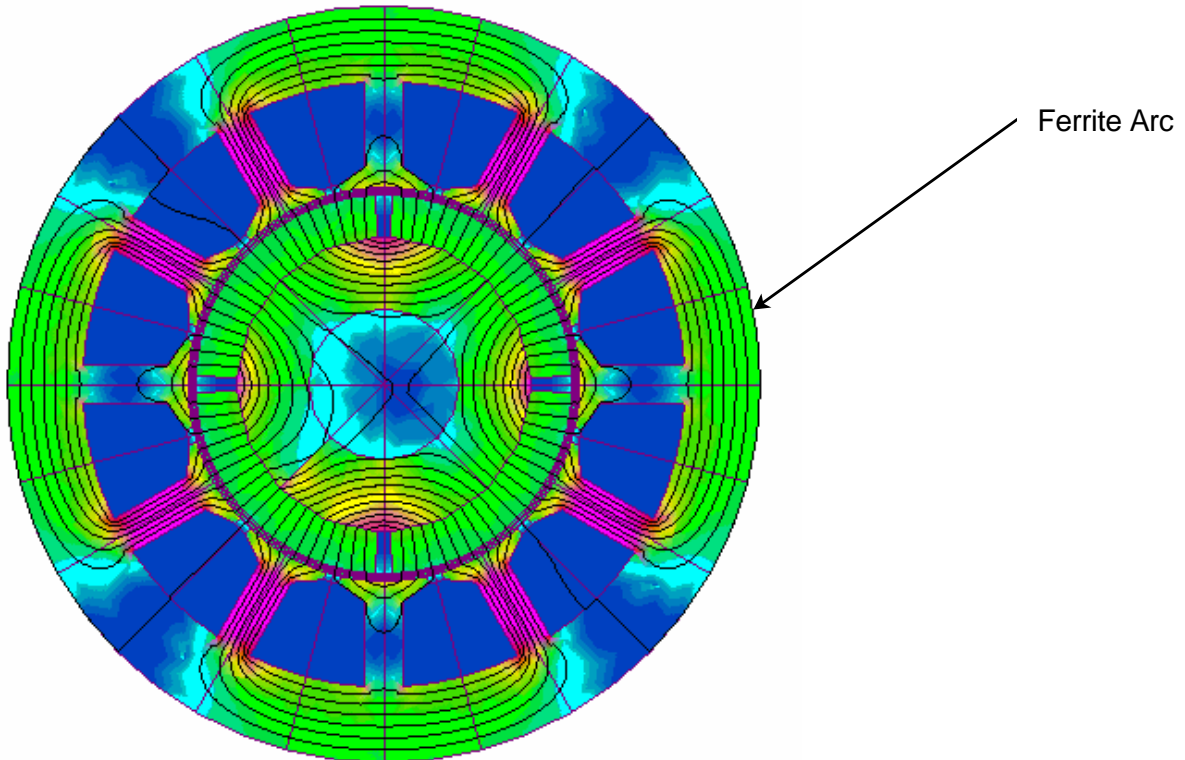


Figure showing magnetic flux within a 4-pole DC motor  
Carried out using in-house Infolytica magnetic FEA software

At MMG we are dedicated to partner our customers to develop new and ever improving materials and applications. We are totally focused on delivering customer solutions and in offering totally unbiased technical advice.

In no other area is this more apparent than in the Electric Motor industry. MMG has built up a fine reputation of being innovative and has successfully served and supplied the DC motor industry for many years. This was done initially with ferrite arc segments but interest has now switched to the “New Era” materials of sintered and bonded NdFeB and SmCo.

As part of our on-going and continuous technical development of our materials and products we would like to present an overview of what is currently available to Motor Manufacturers. This is not designed to be exhaustive but gives an outline of what is available. If you do not see what you require, please do not hesitate to contact our Technical and Application Engineers.

### Sintered Ferrite

*Still the most cost effective material available.*

Grade	Br		Hcj		Hcb		BH		Max Temp.°C
	T	Gs	KA/m	KOe	KA/m	KOe	KJ/m <sup>3</sup>	MGOe	
Y28	0.37-0.40	3.7-4.0	180-220	2.3-2.8	175-210	2.2-2.6	26-30	3.3-3.8	250
Y30H-1	0.38-0.40	3.8-4.0	235-290	3.0-3.7	230-275	2.9-3.6	27-33	3.4-4.1	250
Y30H-2	0.40-0.42	4.0-4.2	310-335	3.9-4.2	275-300	3.5-3.8	29-32	3.5-4.0	250
Y33	0.41-0.43	4.1-4.3	225-255	2.8-3.2	220-250	2.8-3.1	32-35	4.0-4.4	250

### Bonded Neodymium-Iron-Boron

Isotropic resin bonded NdFeB material offers a high energy product with an exceptional resistance to demagnetisation experienced on startup.

*Fast becoming popular for miniaturised DC motors.*

Grade	Br		Hcj		Hcb		BH		Max Temp.°C
	T	Gs	KA/m	KOe	KA/m	KOe	KJ/m <sup>3</sup>	MGOe	
BN8-13	0.60-0.64	6.0-6.4	870	11	410	5.2	61	7.7	150
BN8-15	0.59-0.64	5.9-6.4	1030	13	400	5.0	60	7.5	120
BN8-17	0.59-0.62	5.9-6.2	1190	15	400	5.0	60	7.5	105

### Samarium Cobalt

These sintered magnets are produced by a powder metallurgy process and provide an exceptional high -energy product and resistance to demagnetisation. Being very brittle they must be handled with extreme care.

*Still the best choice for high temperature applications.*

Grade	Br		Hcj		Hcb		BH		Max Temp.°C
	T	Gs	KA/m	KOe	KA/m	KOe	KJ/m <sup>3</sup>	MGOe	
S28/20	1.06-1.12	10.6-11.2	1560	17-22	720-840	9.0-10.5	208-232	26-29	300
S32/14	1.12-1.18	11.2-11.8	1120	10-18	640-880	8.0-11.0	224-264	28-33	300
S25H	1.02-1.06	10.2-10.6	2440	26-35	736-816	9.2-10.2	184-208	23-26	320

**Neodymium-Iron-Boron**

Sintered NdFeB, made by powder metallurgy, is fast becoming the choice for small DC motors.

*Commercially the most powerful material currently available.*

Grade	Br		Hcj		Hcb		BH		Max Temp.°C
	T	Gs	KA/m	KOe	KA/m	KOe	KJ/m <sup>3</sup>	MGOe	
N30SH	1.08-1.12	10.8-11.2	1592	20	804-844	10.1-10.6	223-239	28-30	150
N35SH	1.17-1.21	11.7-12.1	1592	20	860-907	10.8-11.4	263-279	33-35	150
N40SH	1.26-1.29	12.6-12.9	1592	20	860-907	10.8-11.4	303-318	38-40	150
N30UH	1.08-1.12	10.8-11.2	1989	25	804-844	10.1-10.6	223-239	28-30	180
N35UH	1.17-1.21	11.7-12.1	1989	25	860-907	10.8-11.4	263-279	33-35	180
N28EH	10.4-10.8	1.04-1.08	2387	30	780-812	9.8-10.2	207-223	26-28	200
N33EH	11.4-11.7	1.14-1.17	2387	30	820-876	10.3-11.0	247-263	31-33	200

