

QUADRANT

Sensor Magnet Simulation and Testing

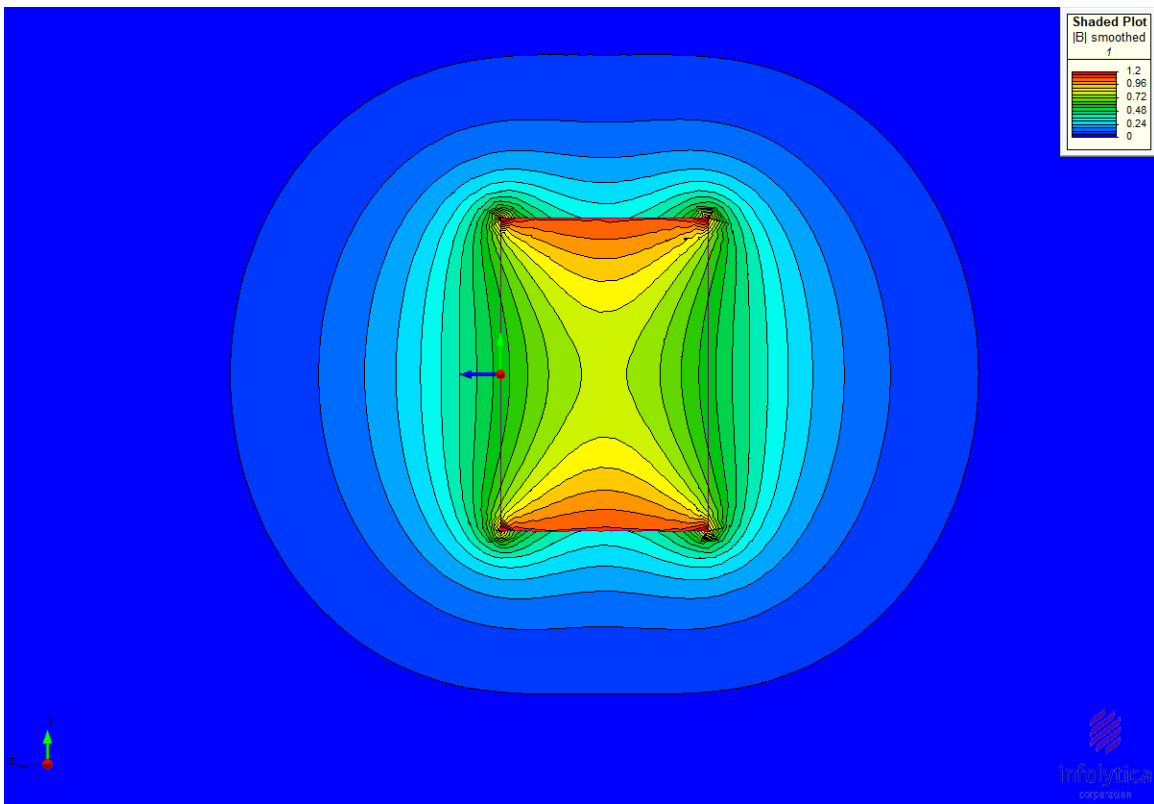
Equipment:

- Siemens MagNet Simulation Software
- Lake Shore F41 Teslameter
- Transverse Probe (0.040" sheathing)
- 0.350", 0.475", 0.575" offset fixtures

Simulations:

- Magnet simulated in free space
 - No magnetic materials in close proximity
- Nominal Dimensions of magnet used:
 - OD: .375"
 - Thickness: 0.250"
- Nominal N52 Magnetic properties used

Simulation Results:



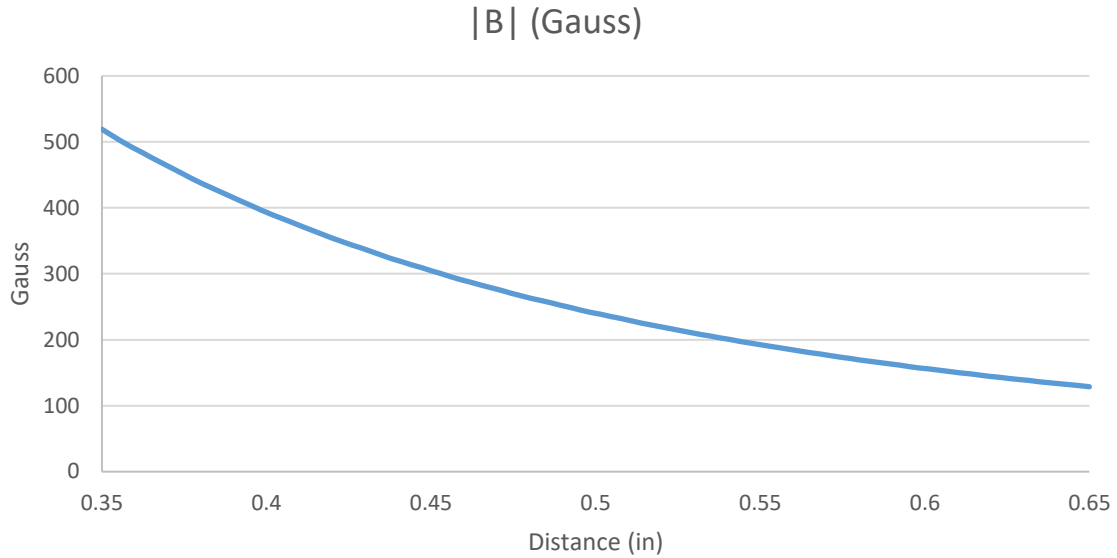
Gauss Field

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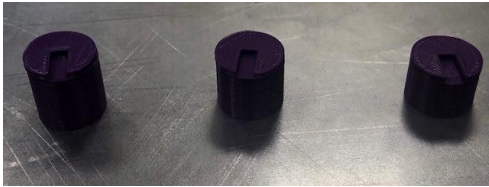
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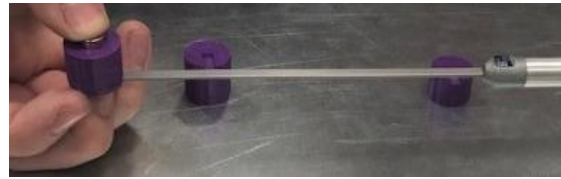
Gauss Vs Distance

Magnetic Testing:

- Magnets were tested along centerline using offset fixtures (0.005" tolerance)



Offset Fixtures

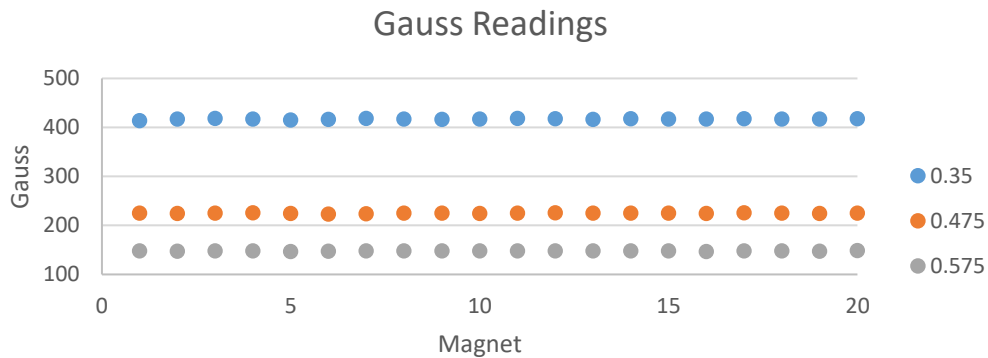


Testing set up

- Actual measured distances were 0.390", 0.515", and 0.615"
 - Offset (0.350", 0.475", 0.575") + Probe Sheathing (0.040")

Testing Results:

- Testing was performed on both North and South poles on each magnet.
 - Average Gauss for each magnet are shown:



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- Tested and simulated readings are shown

Distance	Gauss	
	Reading (Tested)	Expected (simulation)
.390	417	416
.515	225	225
.615	148	147

Tested and simulated gauss readings

Conclusions:

- Gauss testing verified Simulation results across the interested measuring range:
 - At 0.475" air gap reading will be approximately 270 Gauss

Distance	Reading (Gauss)
0.39	416
0.4	390
0.41	372
0.42	354
0.43	333
0.44	318
0.45	304
0.46	286
0.47	274
0.475	270
0.48	263
0.49	250
0.5	238
0.51	228
0.52	216
0.53	208
0.54	200
0.55	192
0.56	182
0.57	175
0.58	169
0.59	161
0.6	155
0.61	149
0.62	142

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