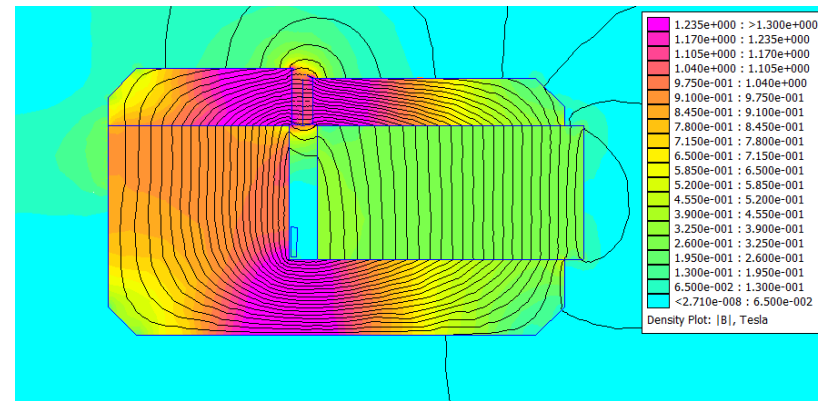


Multimagnet Technology versus Standard - Neodym-, SamCo- & Ferritmagnets



up to 80% raw material Material savings in the amount of used neodymium / dysprosium / boron / samarium / cobalt materials.

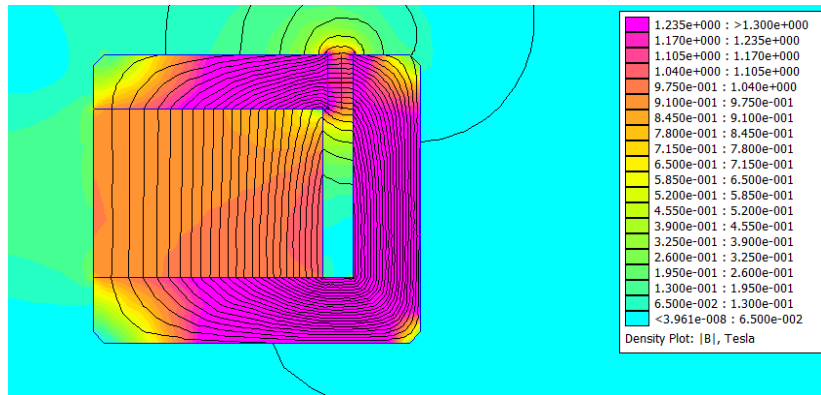
or

up to 65% in material, volume and weight savings compared to conventional Ferritmagnet Technologie with almost the same price

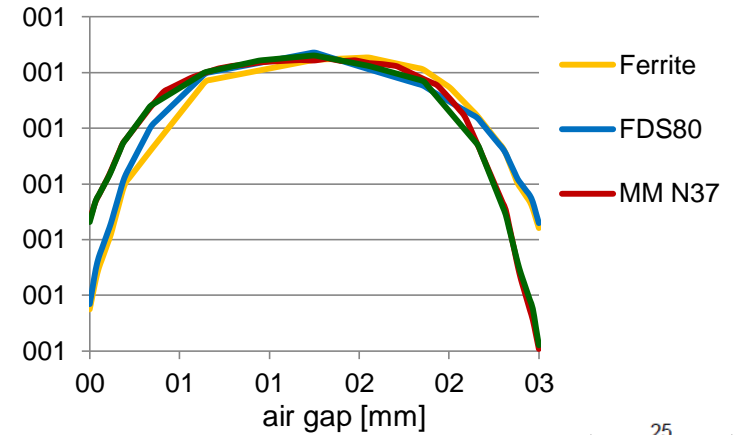
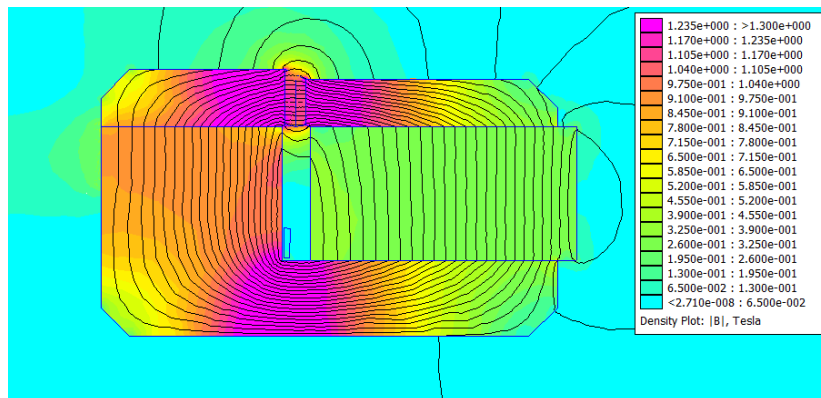
confidential !

Project: FDS Speaker Evaluation Multimagnet System instead of normal Neodym- and Ferritmagnets "Proof of Concept"

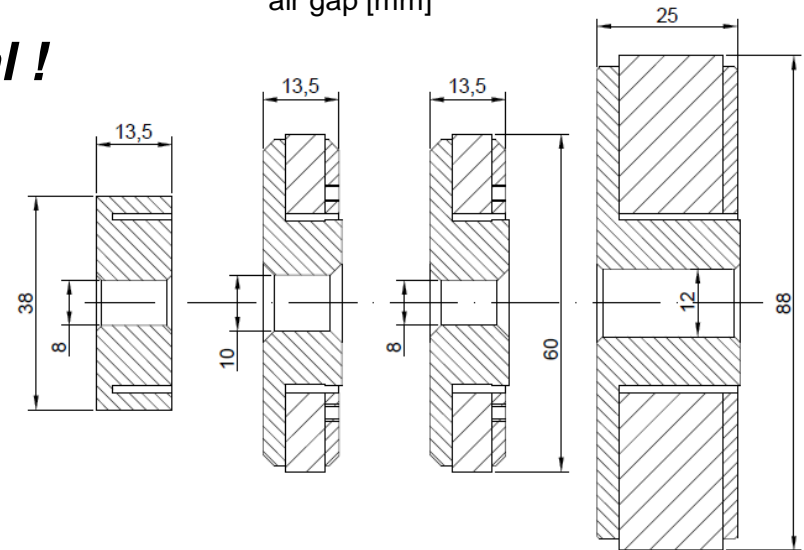
FDS 80:



Multimagnet:



confidential !



FDS 80 Neo

MM Neo

MM SamCo

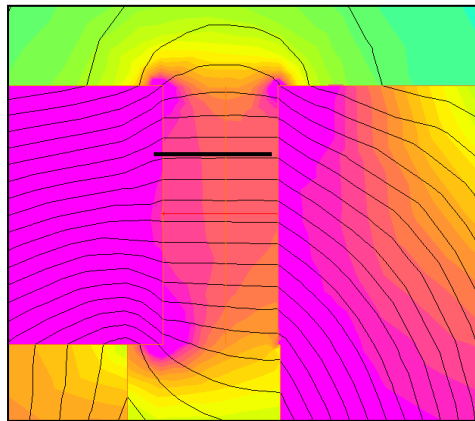
Ferrite

Horizontal field distribution in air gap along black lines

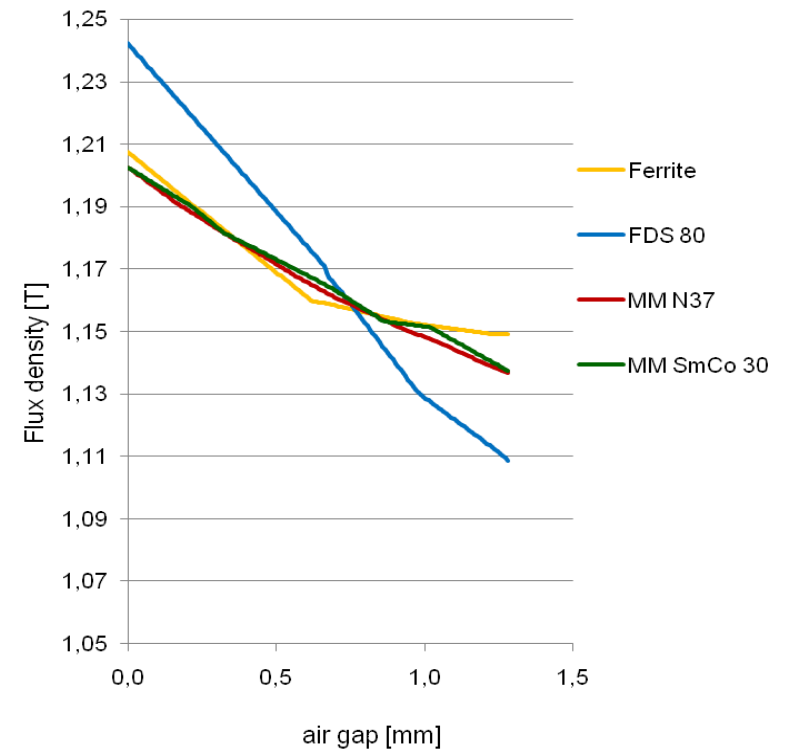
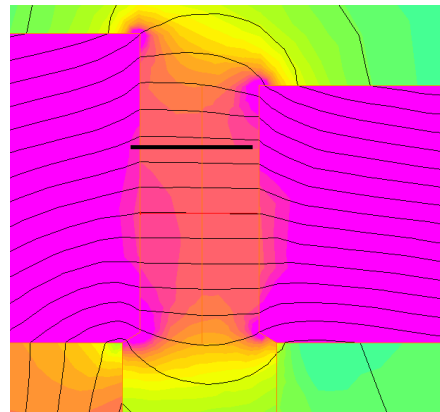
→ Multimagnet & Ferrite more homogeneous than FDS80 Standard



FDS80:



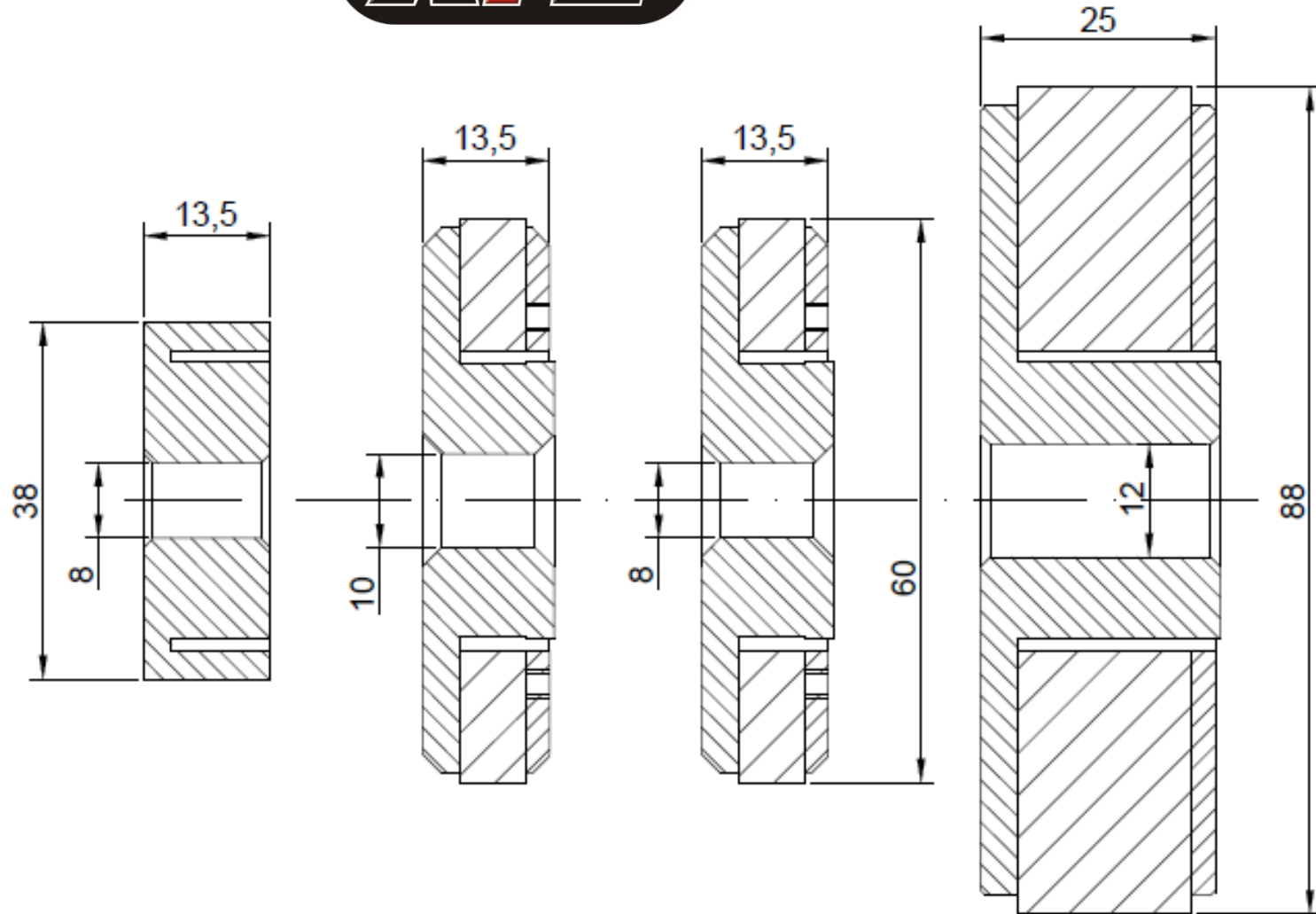
Multimagnet: 



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Comparison of Magnets

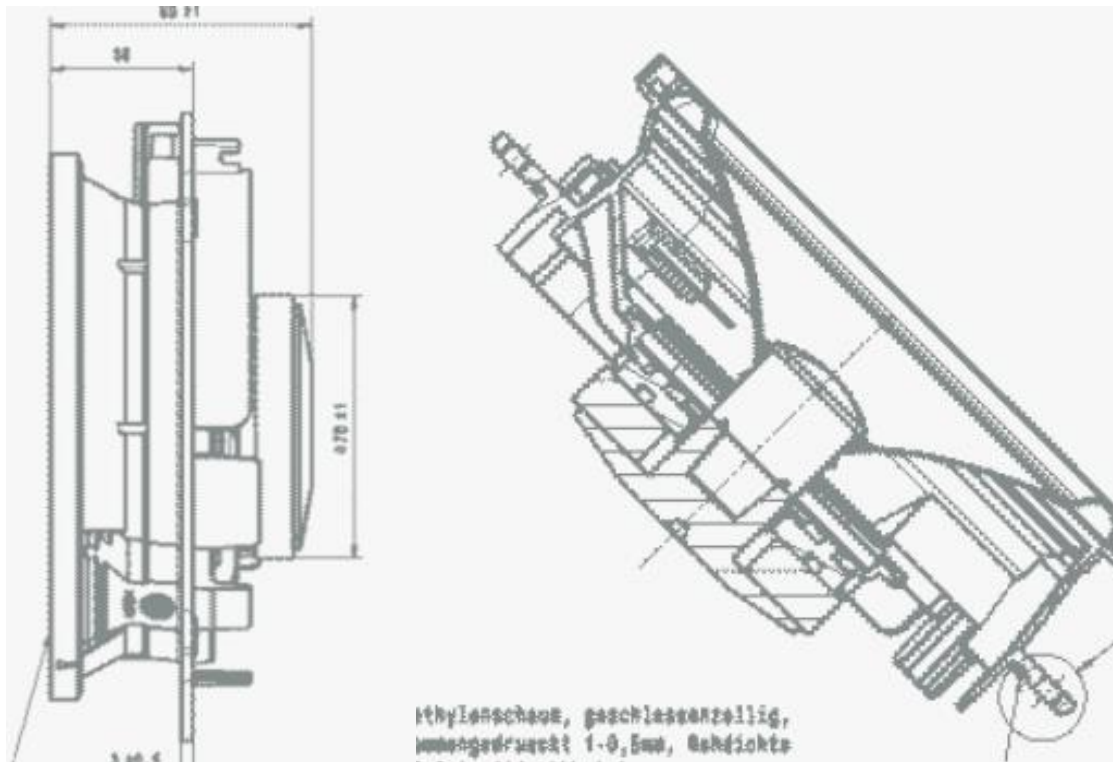
- Dimensions
- Weight
- Material Price
- PCT / EP Patent pending



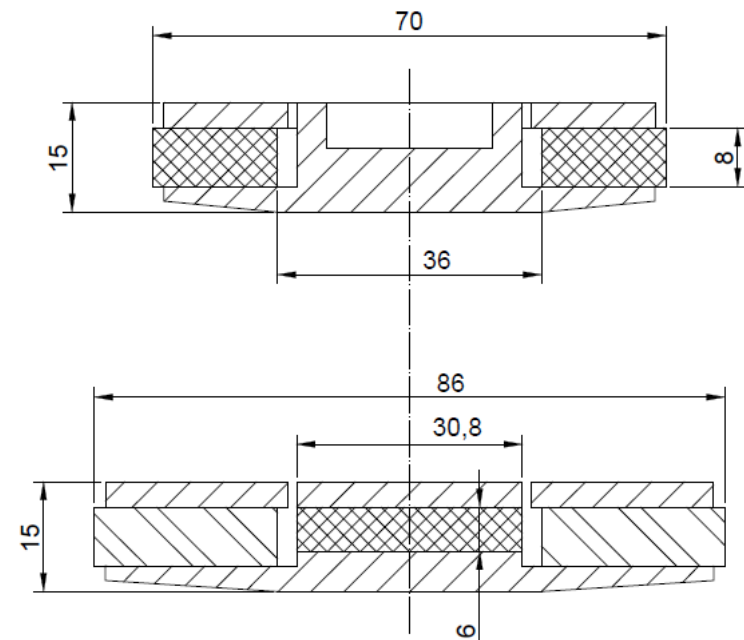
Type	FDS N35	FDS N35H	MM N37	MM N37H	MM SmCo30	Ferrite
Weight	100g	100g	205g	205g	210g	635g
Price	1,28 €	1,45 €	0,68€	0,78€	0,85 €	0,65€

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**Projekt: „Evaluierung Mutimagnet für Subwoofer instead of Neodym Ringmagnets,
Woofer Frontdoor 20 035 454 NMS NCS:**



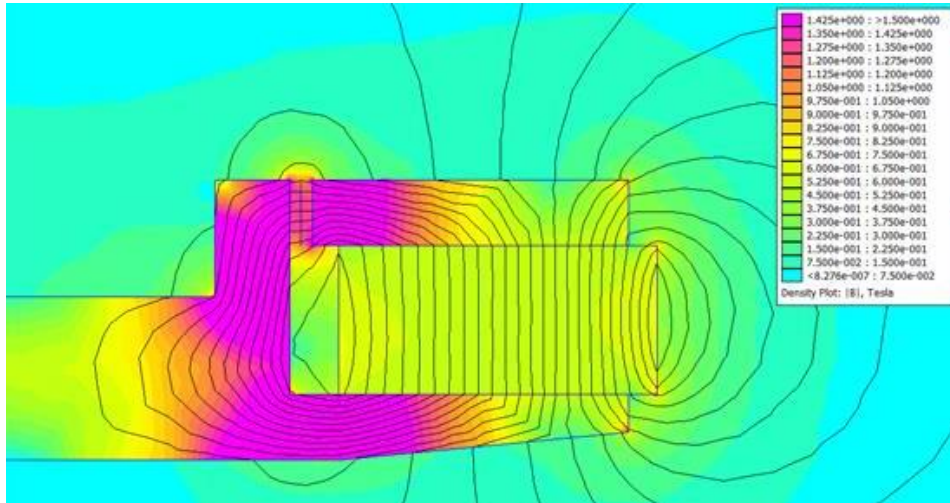
**Original Magnet
Neodymium Ring 8 x 36 x 70 mm**



residual Neodymium Magnet 6 x 30,8 mm

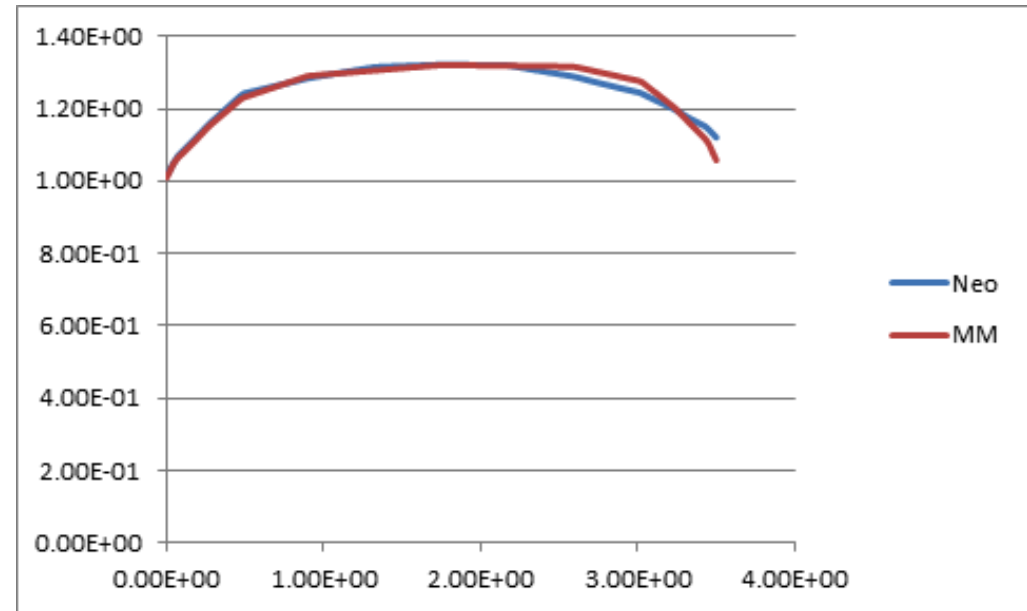
confidential !

Neo- D70mm, H15mm ... N35H Ring Volumen: 22,6 cm³

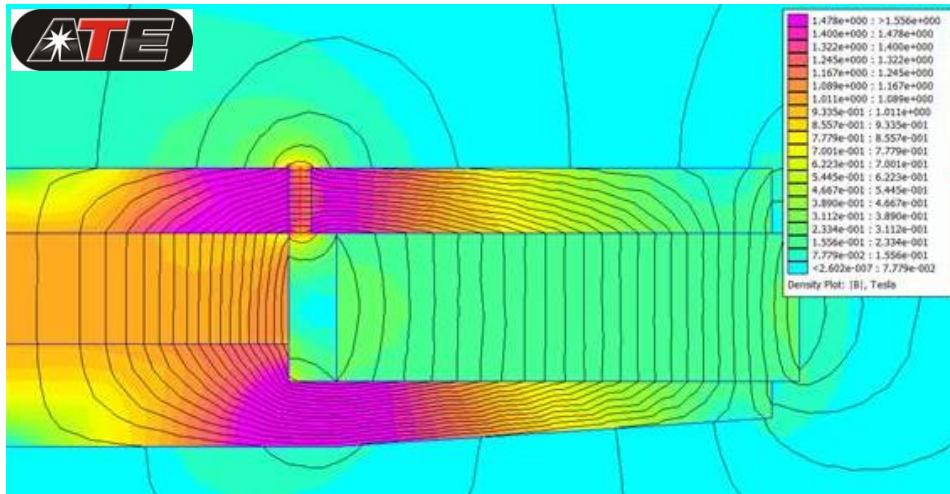


Multi magnet with the same thickness, with 86 mm outer diameter

Residual NdFeB 20% ... Ferrit: Di:36mm Da: 86 mm H=8mm



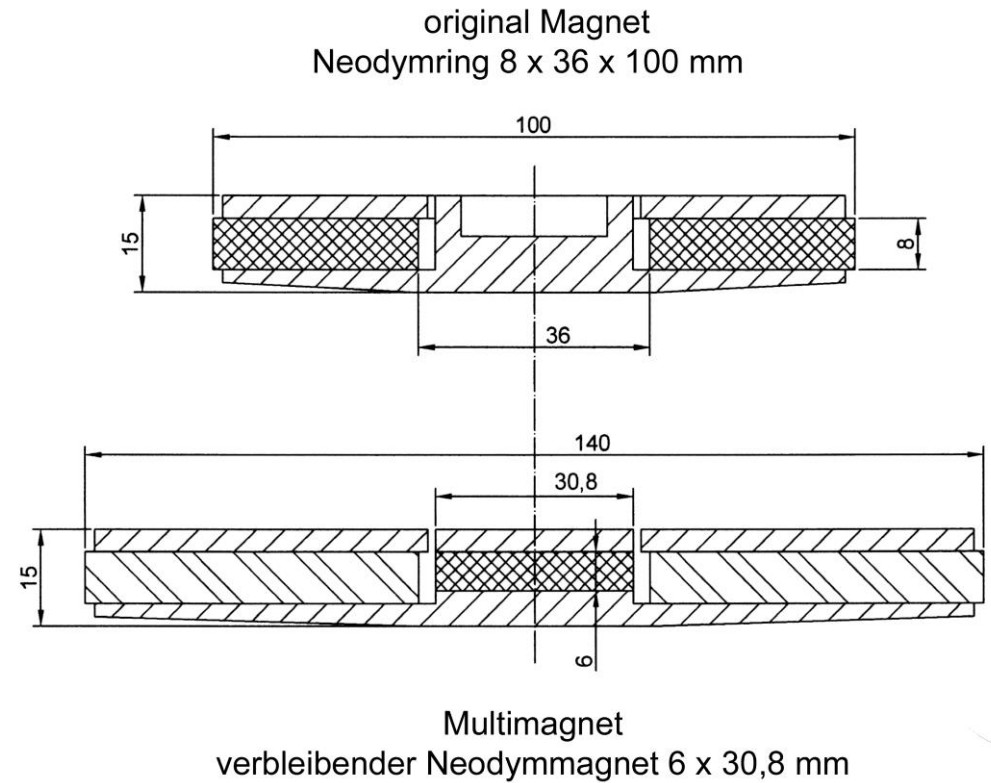
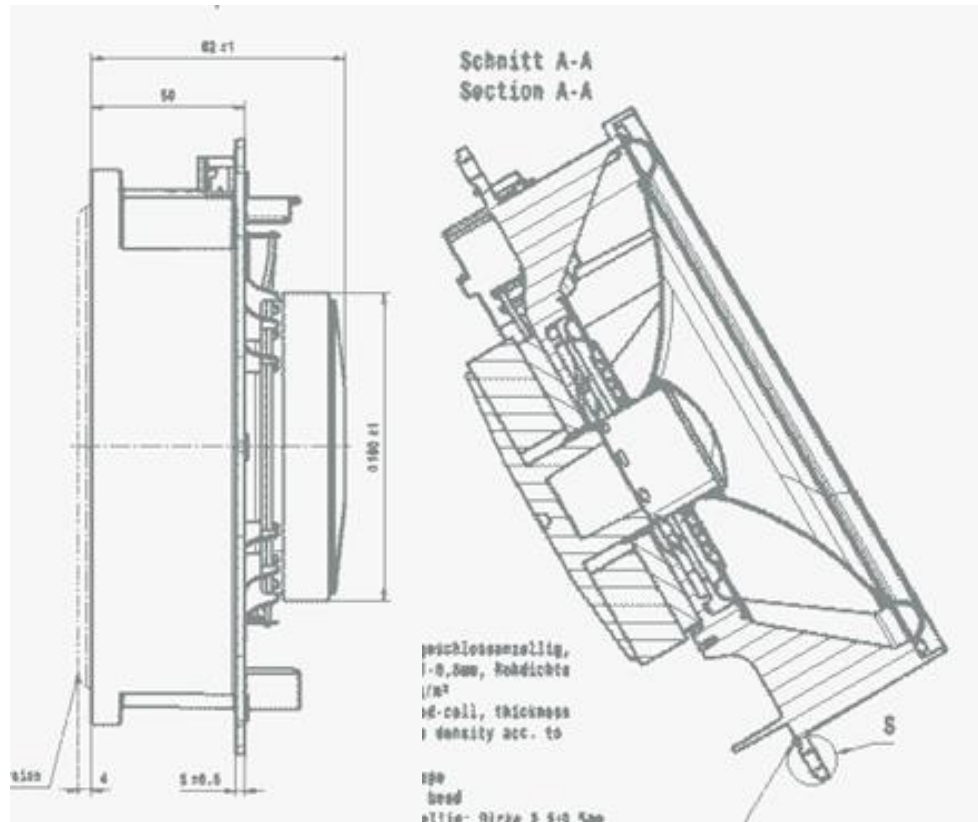
M-Magnet D86mm, H15, N45H-Scheibe Volumen: 4,5cm³



Equally field strengths in Neo and MM,
total flow : 440μWb vs Multimagnet: 441μWb

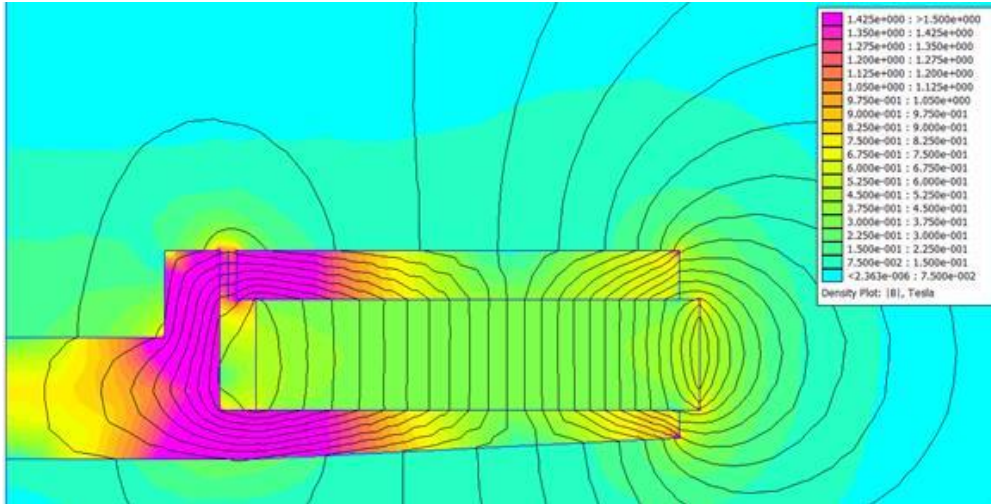
confidential !

Evaluation “Mutimagnet for subwoofer instead neodymium ring magnet” Woofer Front Door 20035454 NBNF :

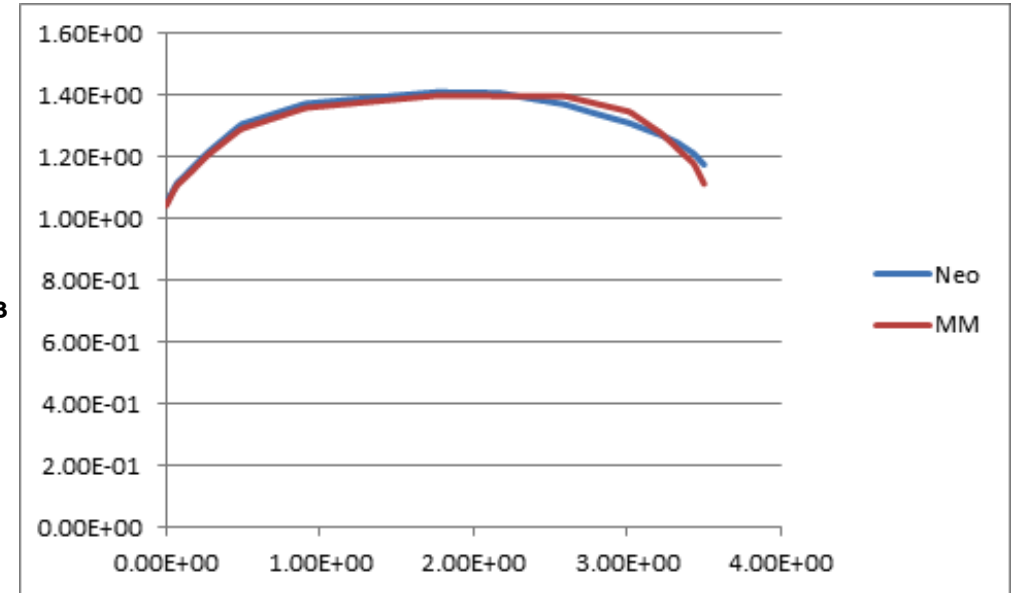


confidential !

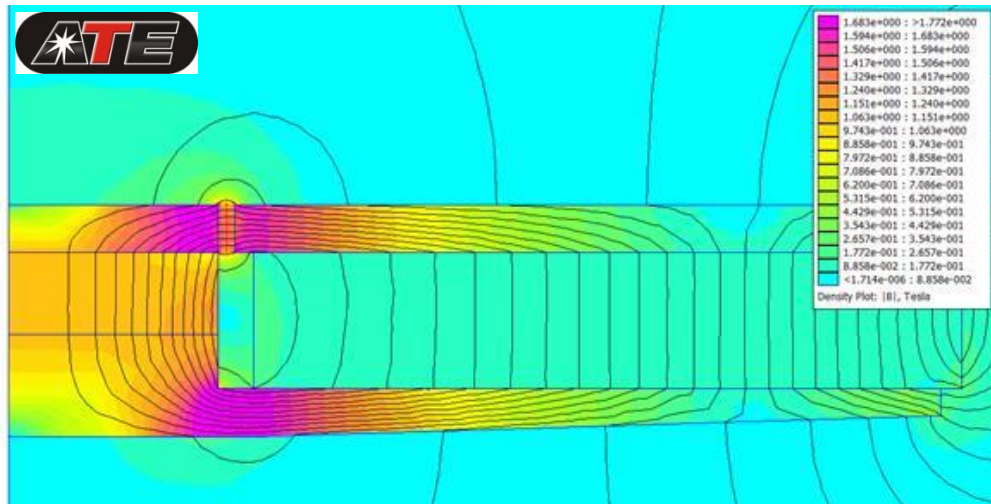
Neo- D100mm, H15mm ... N35H-Ring mit Volumen: 54,7 cm³ Multimagnet with 17 mm (+2 mm) thickness, 140 mm Outer Diameter



Residual NdFeB = 8,2 % ... Ferrit: Di:36mm Da:140mm H=8mm



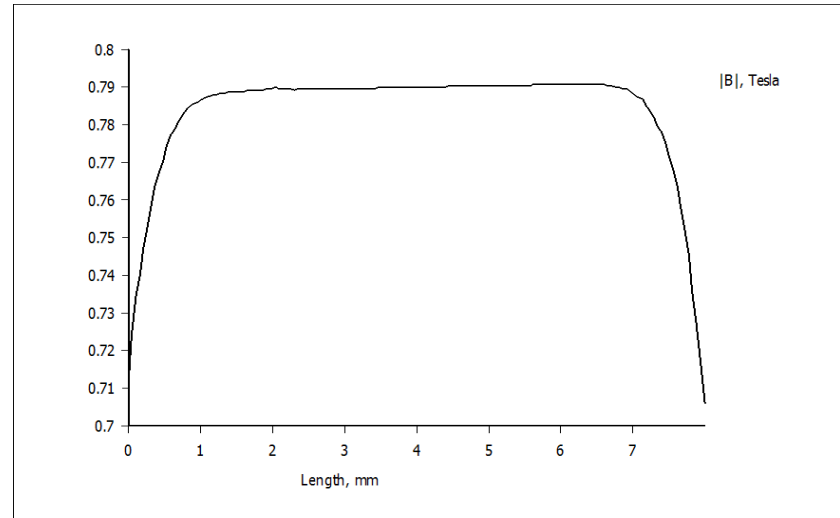
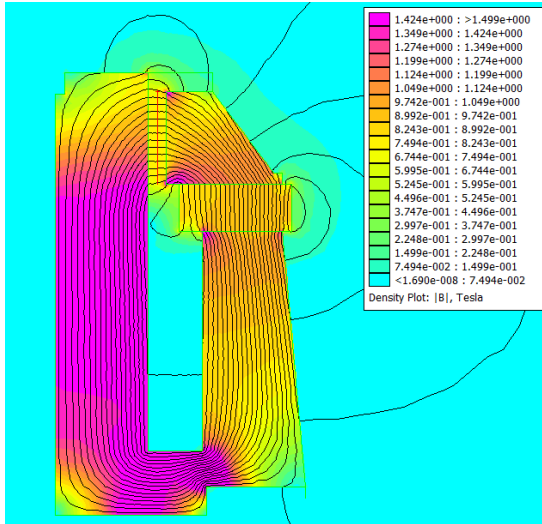
M-Magnet D140mm, H17, N45H-Scheibe mit Volumen: 4,5cm³



Equally field strengths in Neo and MM,
total flow : 467μWb vs Multimagnet: 466μWb

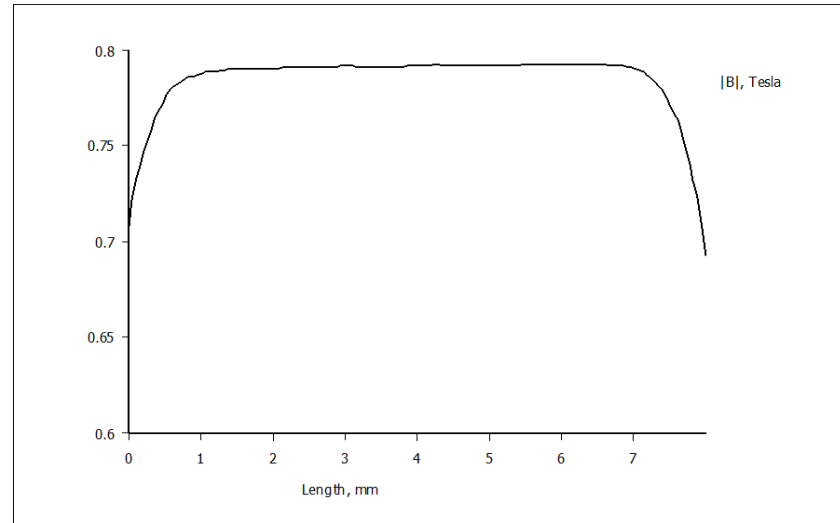
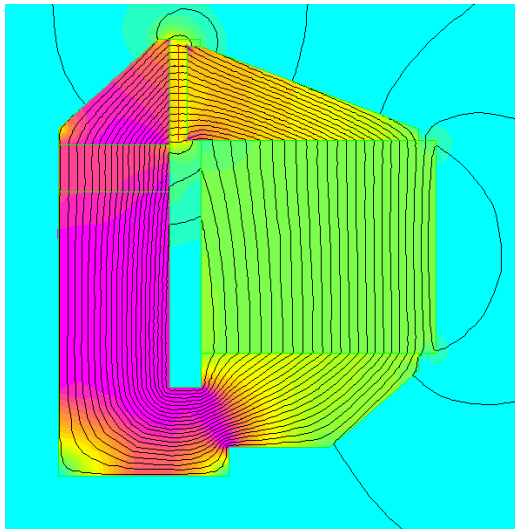
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Project: „Evaluation Mutimagnet for Subwoofer Neodym Ringmagnet Inverted Bass“



Original Neomagnet

- Mass: 0.558kg
- **NdFeB: 44.4 g N45**
- Induction: 0.782T



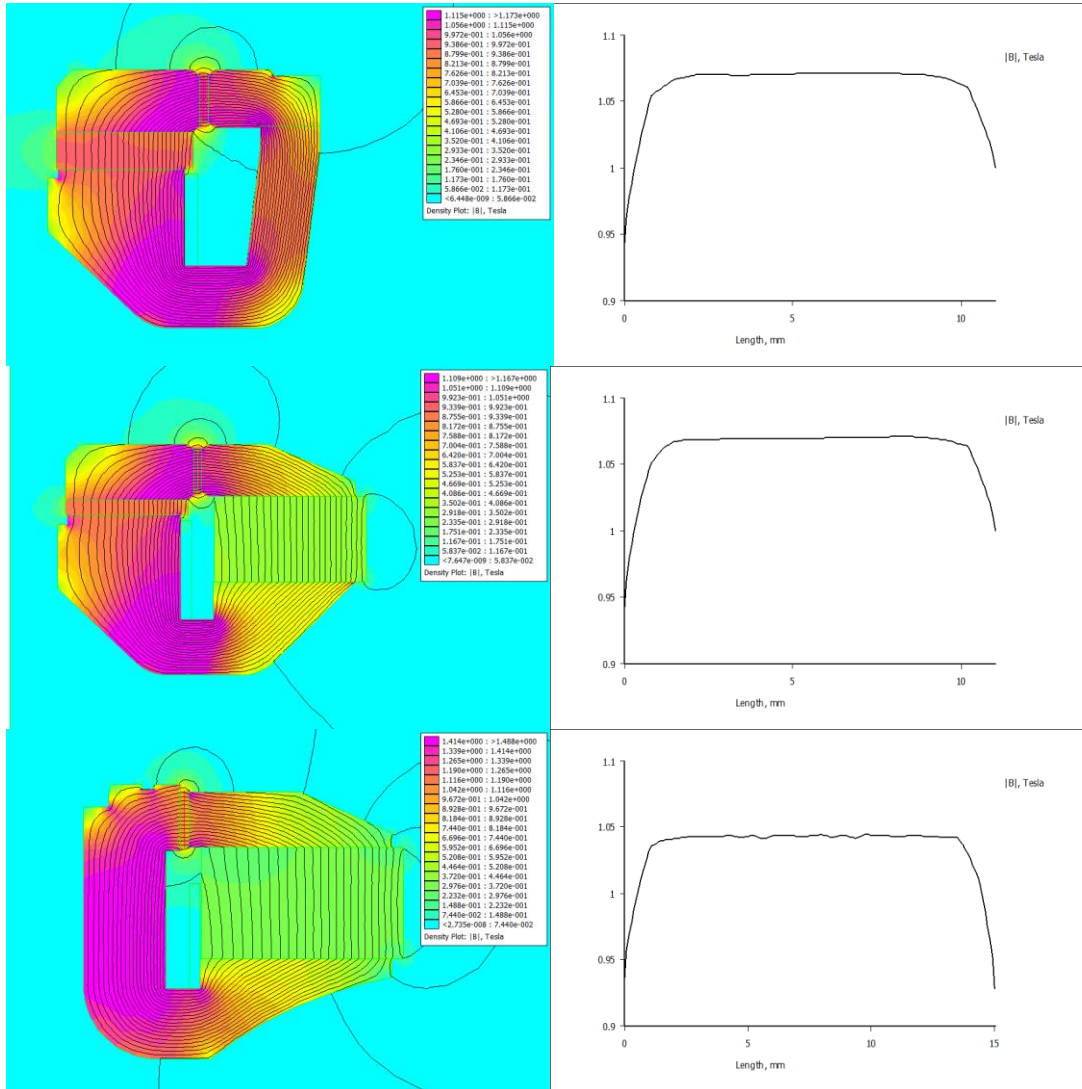
Multimagnet Neo



- Mass: 0.857kg
- **NdFeB: 23.0 g N45**
- Induction: 0.785T

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ATE MM = Multi Magnet versus B&C Serie Ferrit Magnet und Neodym Magnet



Neomagnet:

6.8 kg, netto 465g N35 (1.06 T)

Airgap length: 11mm

Airgap width: 2.15mm

OD = 157mm

Multi Magnet :



9.0 kg, netto 207g N35 (1.06 T)

Airgap length: 11mm

Airgap width: 2.15mm

OD = 192mm

Ferritmagnet:

12.6 kg (original Layout 1.05 T)

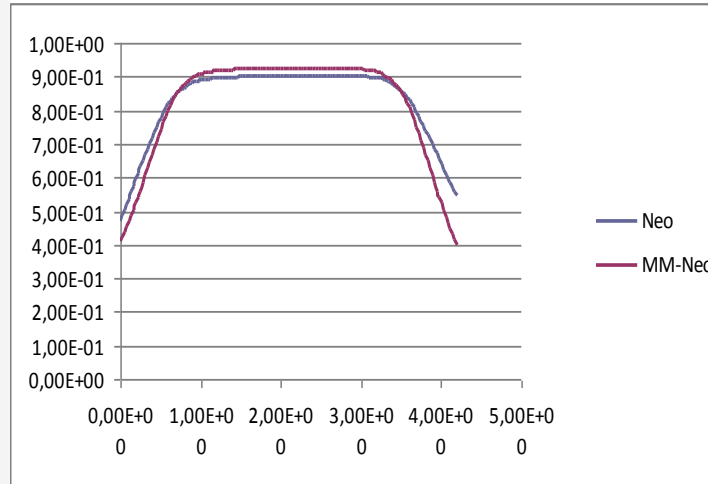
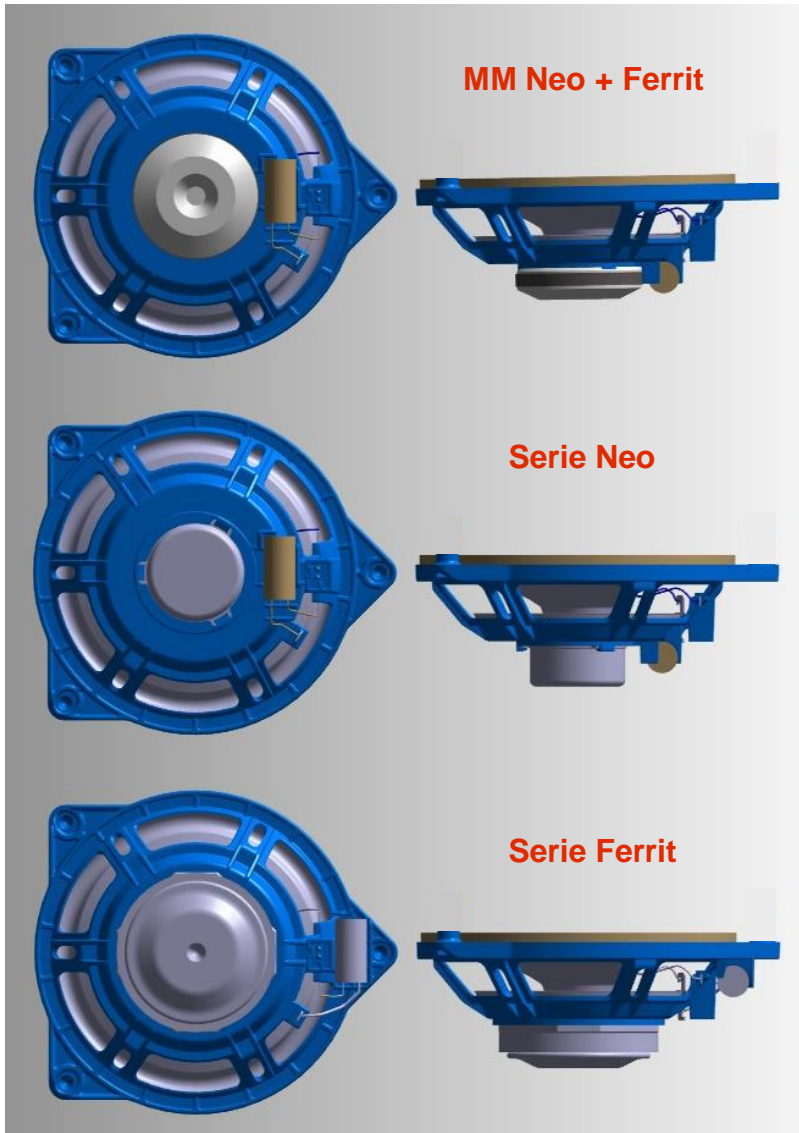
Airgap length: 15mm


Airgap width: 2.25mm

OD = 220mm

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ATE MM = Multi Magnet versus Serie Ferrit- und Neodym Magnet 100er Midrange

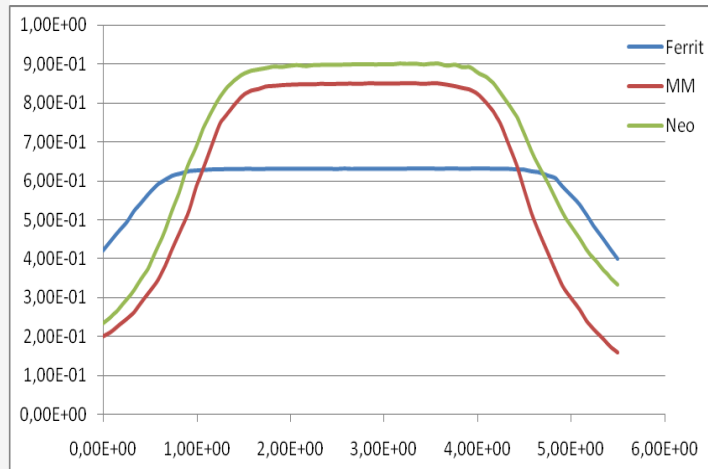



Multimagnet Neo 

Airgap = 0,93 T
Neodym weight = 3,7 gr
Magnet weight = 72 gr

Neomagnet:

Airgap = 0,90 T
Neodym weight = 11 gr
Magnet weight = 72 gr



Multimagnet Ferrit 

Airgap = 0,85 T
Neodym weight = 3,4 gr
Magnet weight = 72 gr

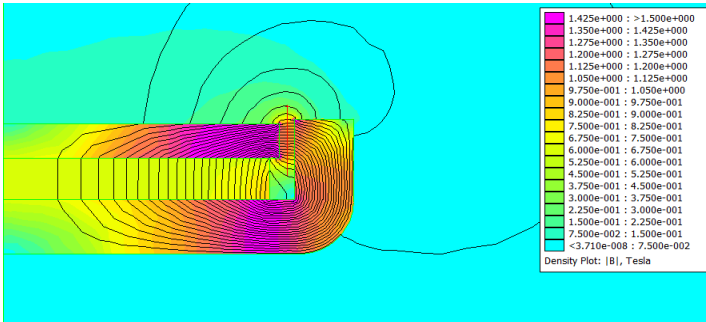
Ferritmagnet: (original Layout)

Airgap = 0,63 T
Neodym weight = 0,00 gr
Magnet weight = 167 gr

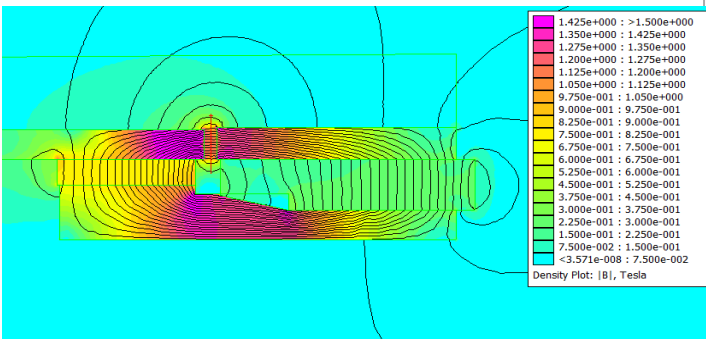
confidential !

ATE MM = Multi Magnet versus Serie Ferrit- und Neodym Magnet

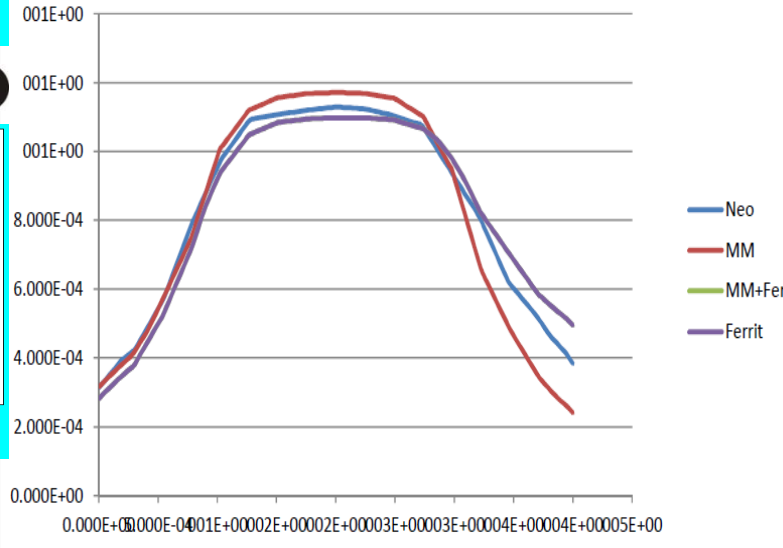
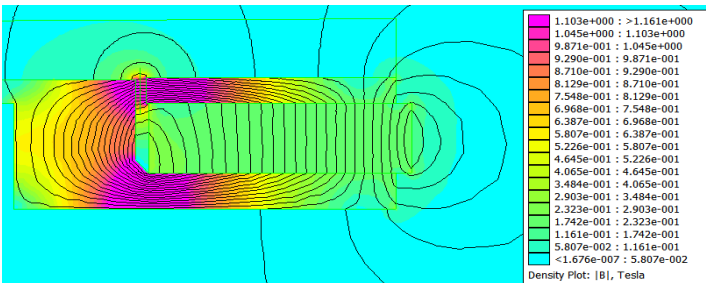
Serie Neo



MM Neo



Serie Ferrit



Neomagnet: (original Layout)

Airgap = 1,10T
Neodym weight = 12 gr
Magnet weight = 72 gr

Multimagnet Neo



Airgap = 1,11 T
Neodym weight = 5,31 gr
Magnet weight = 101 gr

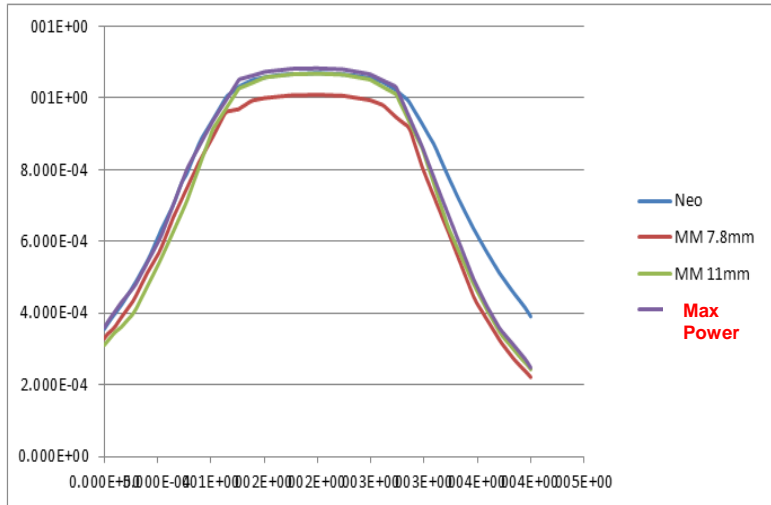
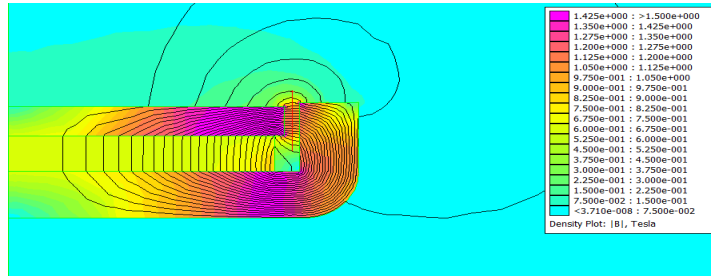
Ferritmagnet: (original Layout)

Airgap = 1,10 T
Neodym weight = 0,00 gr
Magnet weight = 278 gr

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ATE MM = Multi Magnet max Power versus Serie Ferrit- und Neodym Magnet

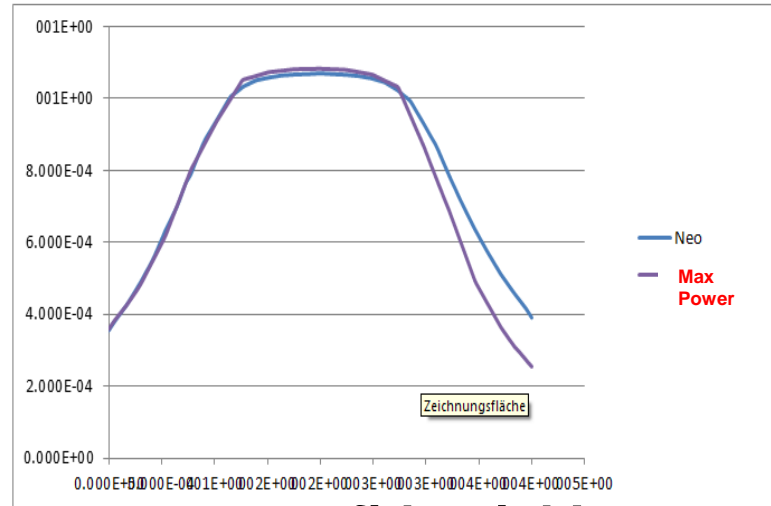
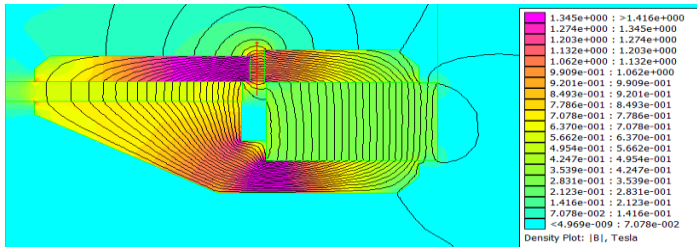
Serie Neo



Neomagnet: (original Layout)

Airgap = 1,09T
Neodym weight = 12 gr
Magnet weight = 72 gr

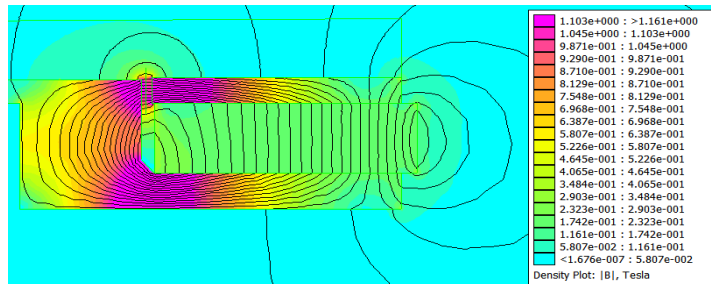
Max Power Multimagnet



Multimagnet max Power

Airgap = 1,16 T
Neodym weight = 7,20 gr
Magnet weight = 136 gr

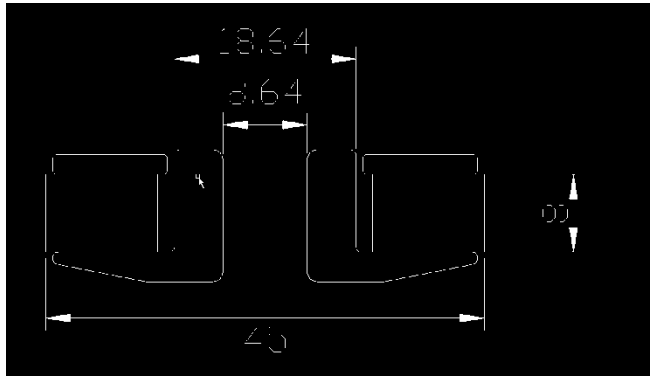
Serie Ferrit



Ferritmagnet: (original Layout)

Airgap = 1,10 T
Neodym weight = 0,00 gr
Magnet weight = 278 gr

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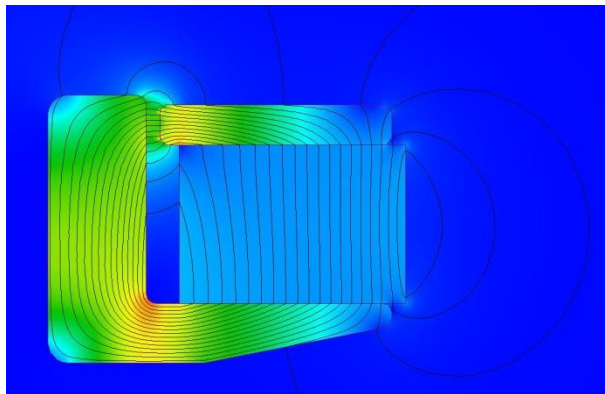


Series Ferrit versus **Multimagnet**
Target = **max Power = same size**

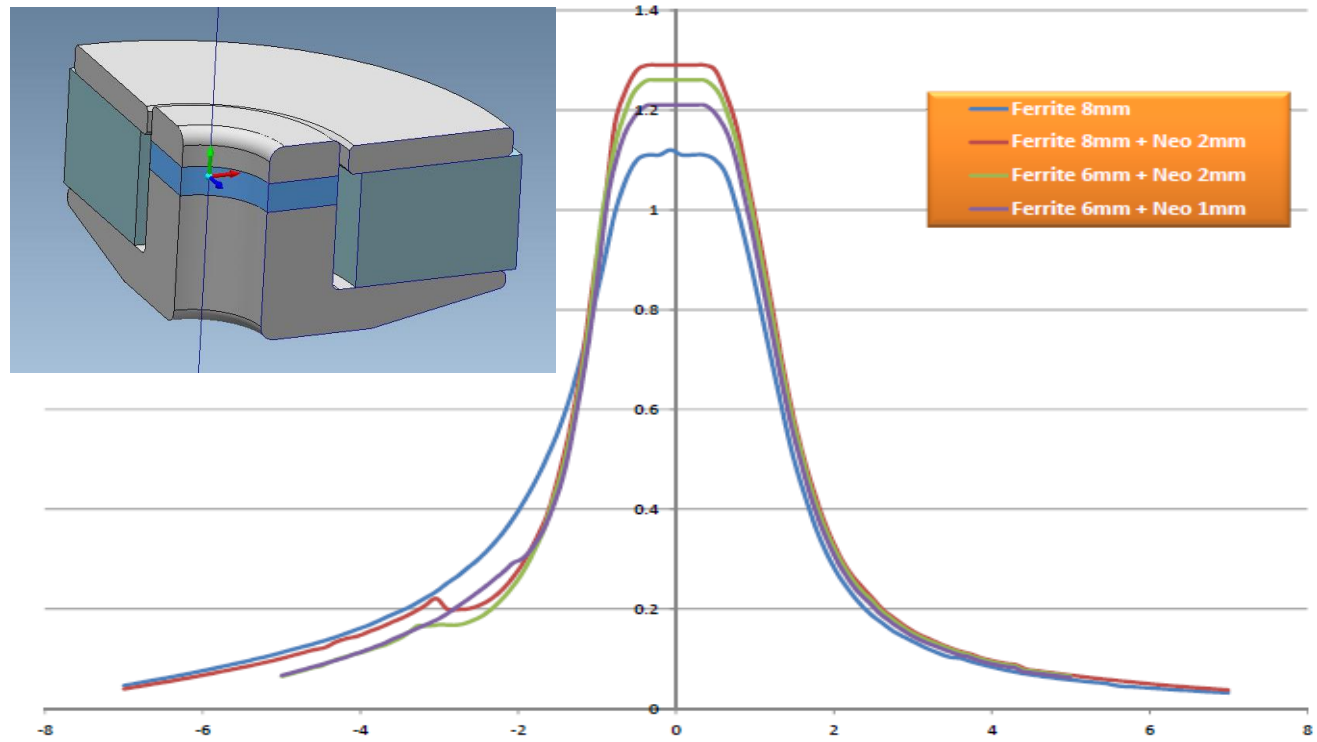
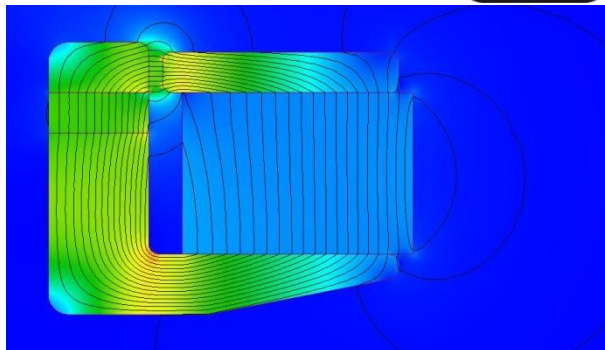
Ferrit Magnet: (original Layout)
Airgap = 1,11 T

Multimagnet Neo 
Airgap = 1,29 T

Serie Ferrit



MM Neo

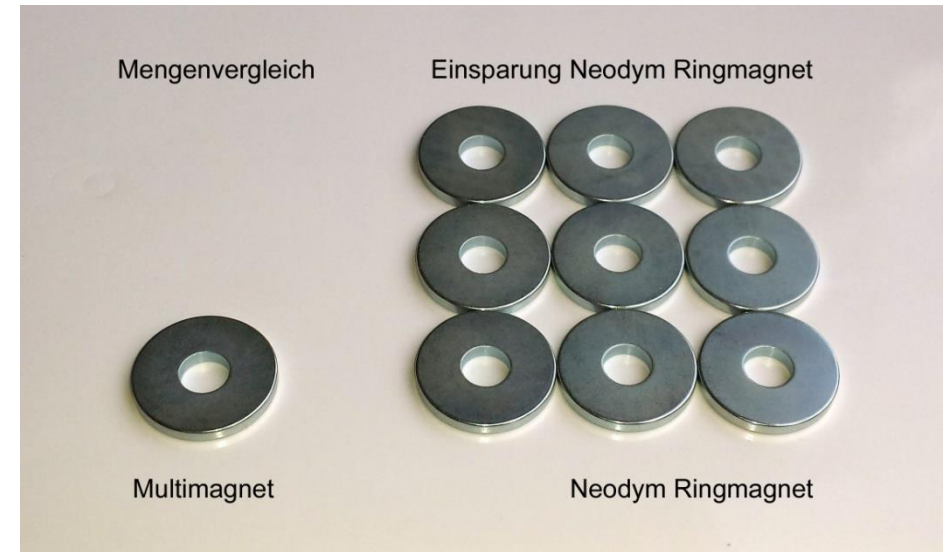
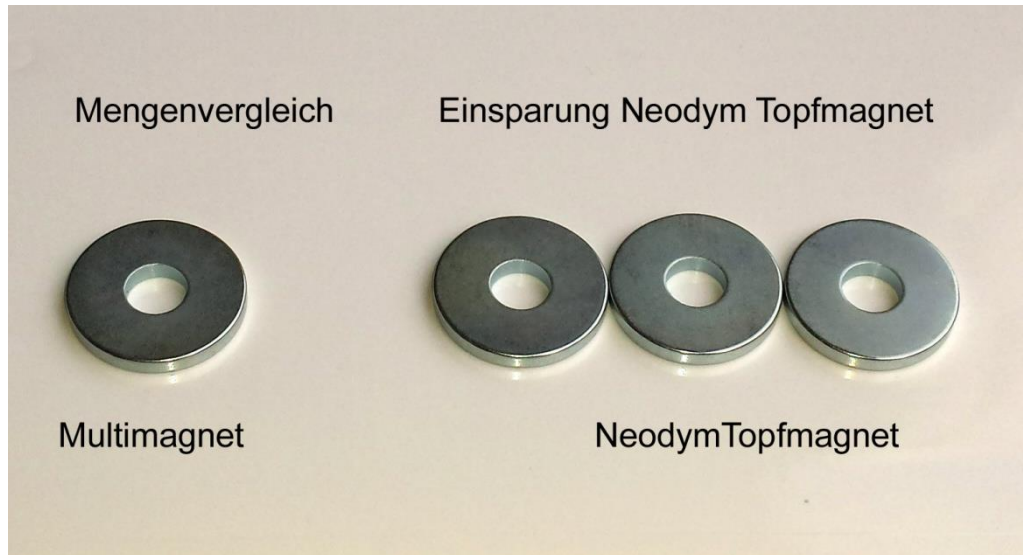


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Saving effect: by using the multimagnet technology

Projekt: FDS Speaker „proof of Concept“
Multimagnet System instead the standard
Neodymium - and Ferritmagnet“

Projekt: Evaluation „running Change“
Mutimagnet instead Neodymium Ringmagnets,
Woofer Frontdoor 20 035 454



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**Projekt "FDS Speaker" size and volume comparison between the magnetic types
Neo-pot magnet vs. Ferrite vs. Multimagnet – air gap always $D\ 30\ \text{mm} = 1,05\ \text{Tesla}$**



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