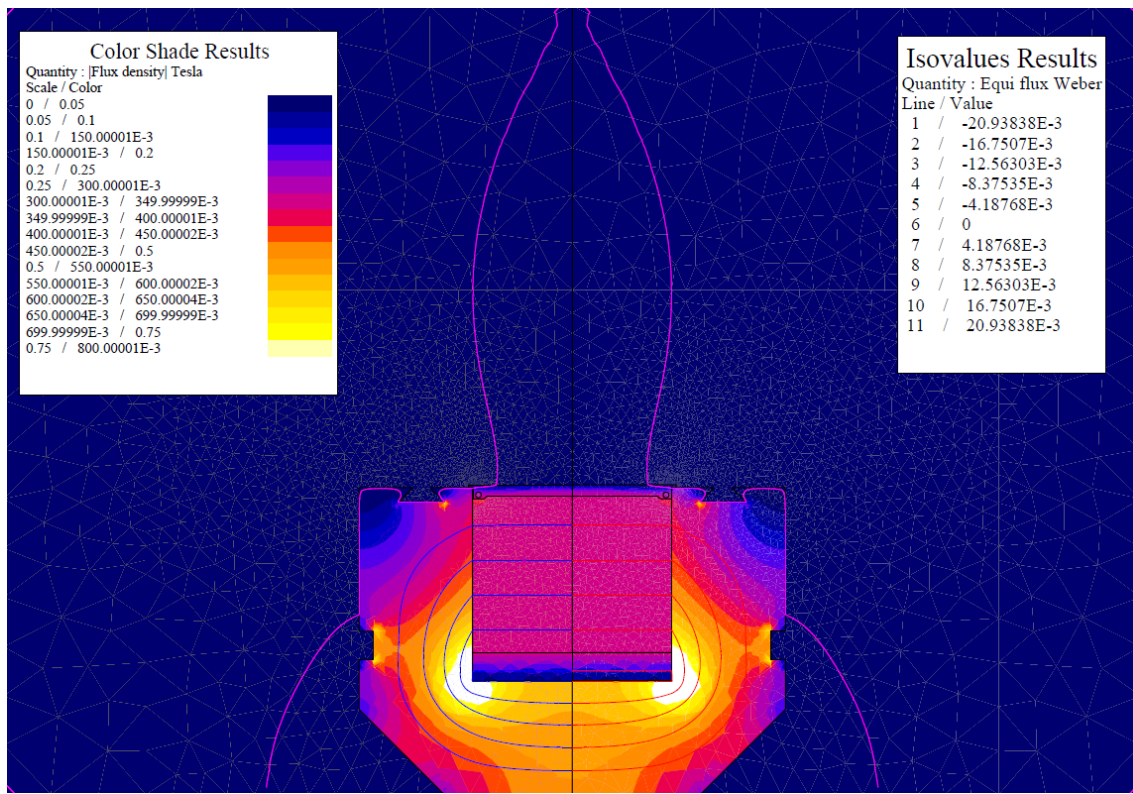
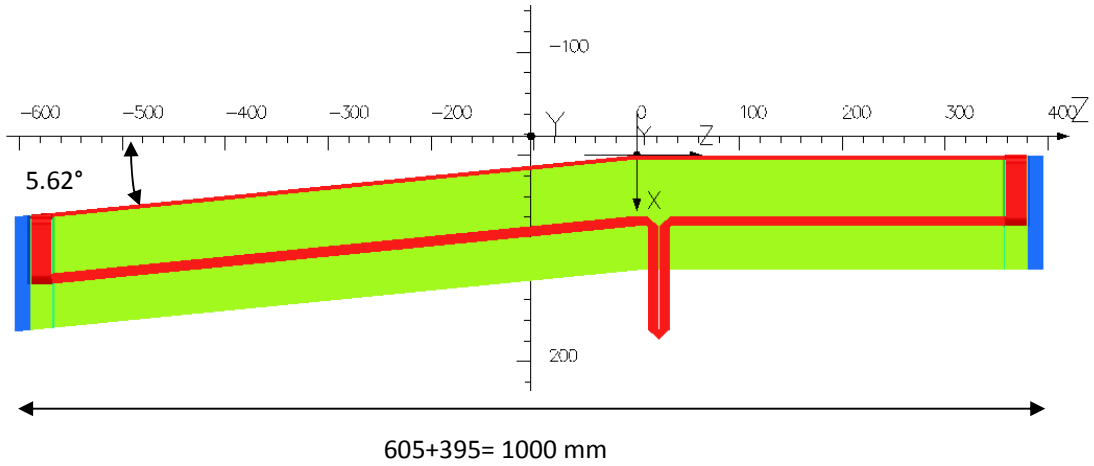
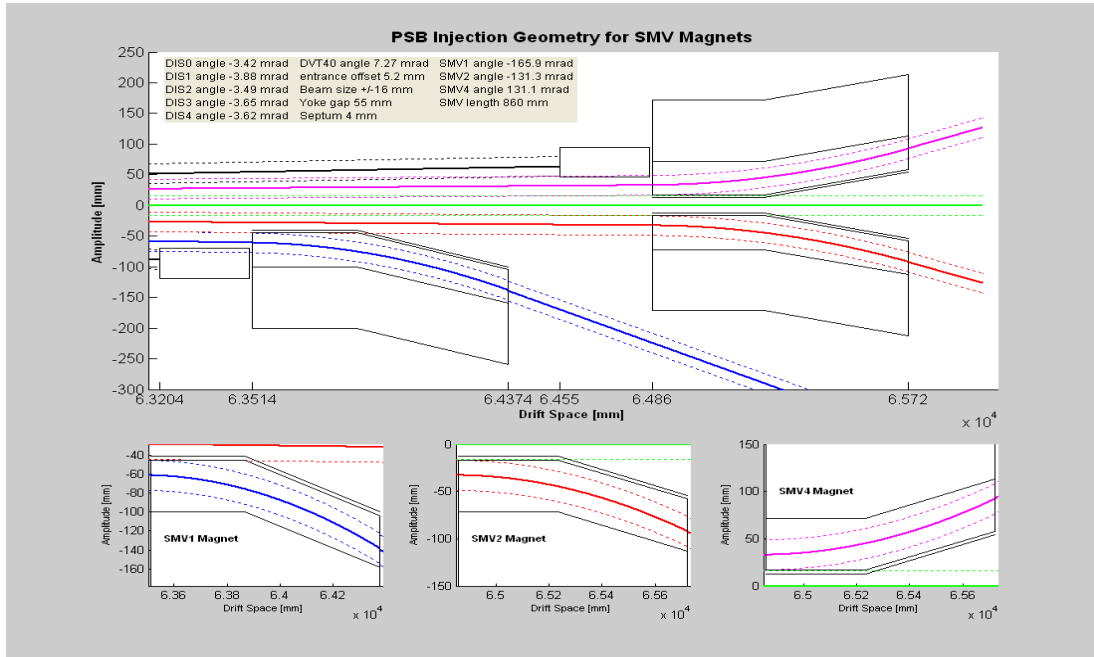
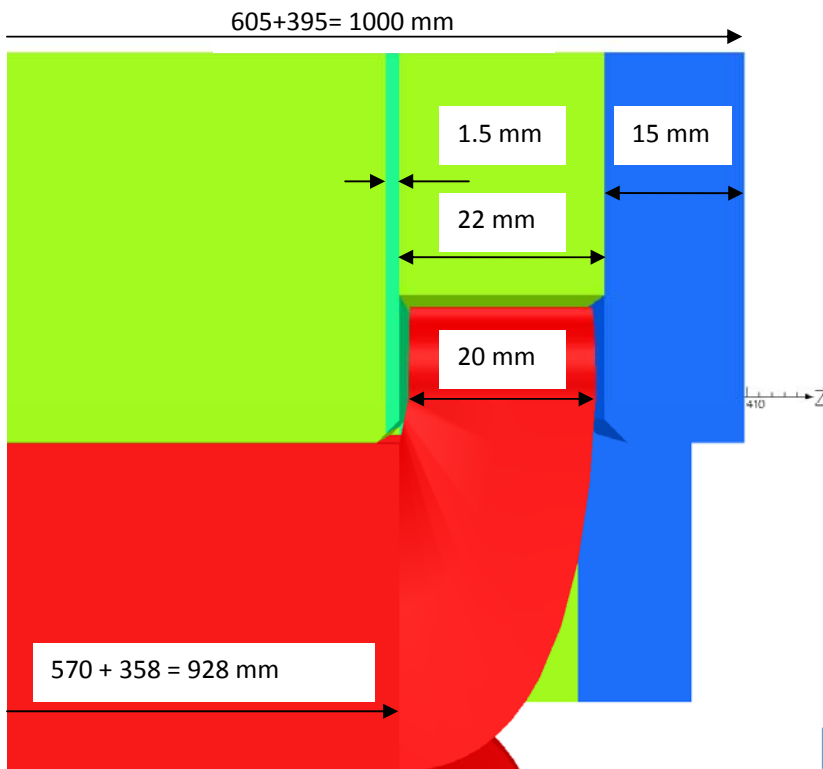


BISMV 3D Simulation based on WW geometry proposition and JB design & 2d geometry presented april 2009

BISMV simulations with Flux2D  
 BISMV parameters used  
 Septum 4 mm  
 Gap width 55 (vertical beam acceptance)  
 Rear conductor thickness 10 mm  
 Gap height 70 mm (horizontal beam acceptance)  
 Play between septum and yoke 0.05 mm  
 Cooling tube diameter 2 mm  
 Steel used VM111ISO  
 Required deflection 170 mrad  
 Assumed Leq 960 mm  
 B.dl required 323 mT.m  
 Required gap field 376 mT  
 Required current 19 kA  
 Available Lphysical 1000 mm







UNITS	
Length	mm
Magn Flux Density	T
Magn Field	A m <sup>-1</sup>
Magn Scalar Pot.	A
Magn Vector Pot.	Wb m <sup>-1</sup>
Elec Flux Density	C m <sup>-1</sup>
Elec Field	V m <sup>-1</sup>
Conductivity	S mm <sup>-1</sup>
Current Density	A mm <sup>-2</sup>
Power	W
Force	N
Energy	J
Mass	kg

PROBLEM DATA	
1000 mm opt coil 20 node 10250 amps 3rd yoke optm.op3	
TOICA Magnetostatic	
Nonlinear materials	
Simulation No 1 of 1	
3054130 elements	
410616 nodes	
23 conductors	
Nodally interpolated fields	
Activated in global coordinates	
Reflection in ZX plane (Z x Y fields=0)	

Field Point Local Coordinates	
Local = Global	

FIELD EVALUATIONS	
Line L10E (node) 1001 Cartesian	
x=-25.0 to 100.0 y=0.0 z=0.0 to -400.0	

Opera

16/Nov/2009 14:07:50

Surface contours: BMOD



UNITS	
Length	mm
Magn Flux Density	T
Magn Field	A m <sup>-1</sup>
Magn Scalar Pot.	A
Magn Vector Pot.	Wb m <sup>-1</sup>
Elec Flux Density	C m <sup>-1</sup>
Elec Field	V m <sup>-1</sup>
Conductivity	S mm <sup>-1</sup>
Current Density	A mm <sup>-2</sup>
Power	W
Force	N
Energy	J
Mass	kg

PROBLEM DATA	
1000 mm opt coil 20 node 10250 amps 3rd yoke optm.op3	
TOICA Magnetostatic	
Nonlinear materials	
Simulation No 1 of 1	
3054130 elements	
410616 nodes	
23 conductors	
Nodally interpolated fields	
Activated in global coordinates	
Reflection in ZX plane (Z x Y fields=0)	

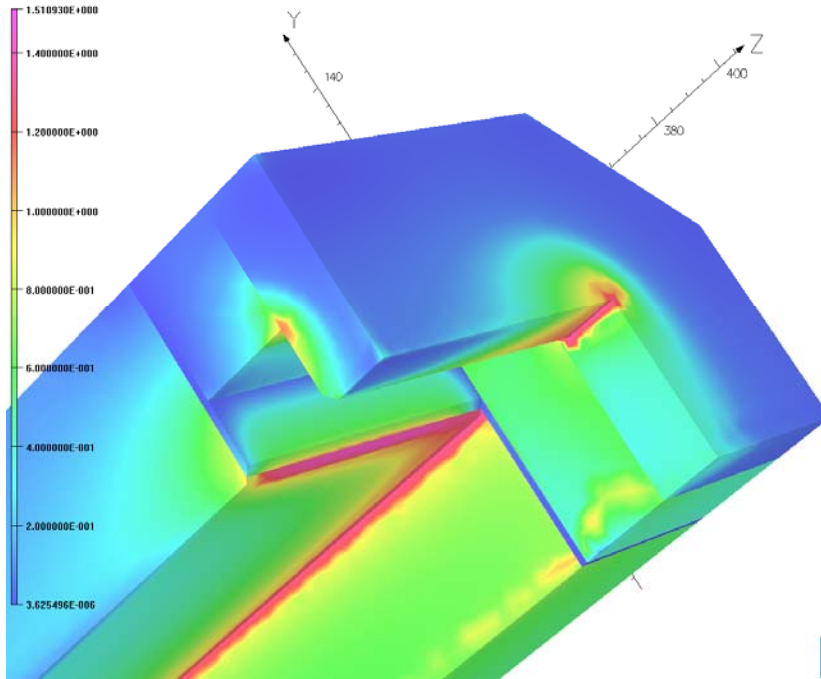
  

Field Point Local Coordinates	
Local = Global	

Opera

16/Nov/2009 14:32:48

Surface contours: BMOD



<b>UNITS</b>	
Length	mm
Magn Flux Density T	
Magn Field	A/m
Magn Scalar Pot	A
Magn Vector Pot	Wb/m
Disc Flux Density	C/m
Disc Field	V/m
Conductivity	S/m
Current Density	A/m <sup>2</sup>
Power	W
Force	N
Energy	J
Mass	kg

---

<b>PROBLEM DATA</b>	
1000 mm opti coil 2D node 18250 amp 3rd yoke optm.ap3	
TOSCA Magnetostatic	
Nonlinear materials	
Simulation No 1 of 1	
389433 elements	
4106146 nodes	
23 conductors	
Nodally interpolated fields	
Activated in global coordinates	
Reflection in ZX plane (z+z; fields=0)	

---

<b>Field Point Local Coordinates</b>	
Local = Global	

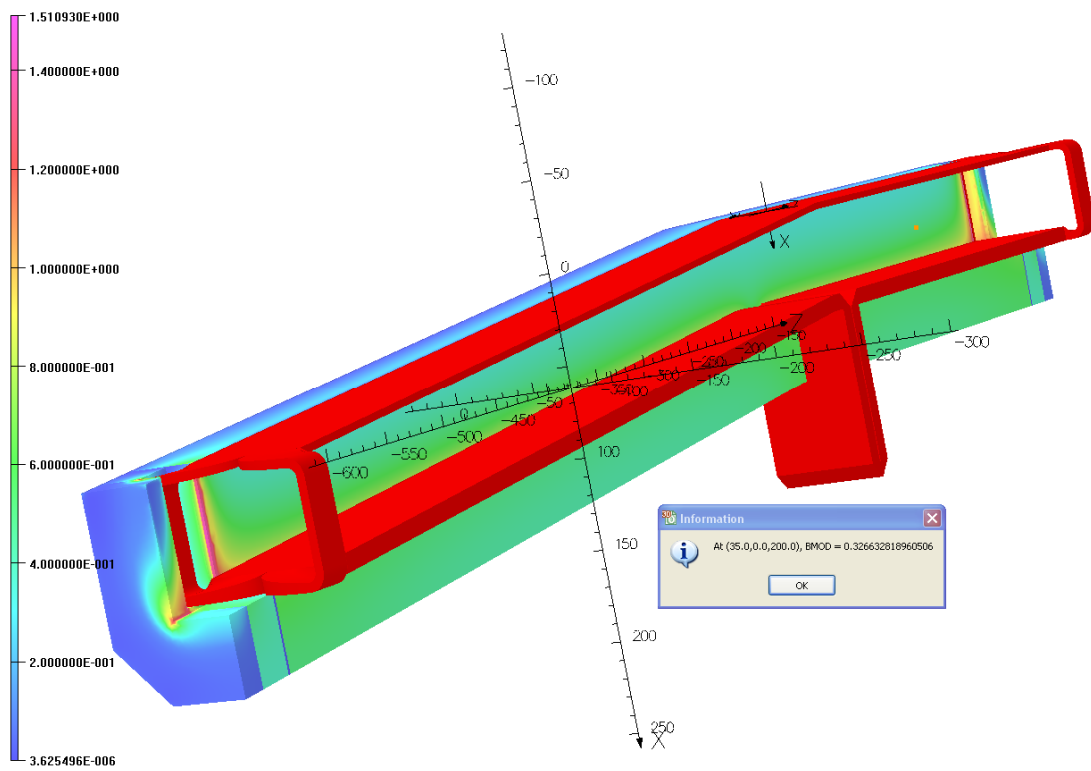
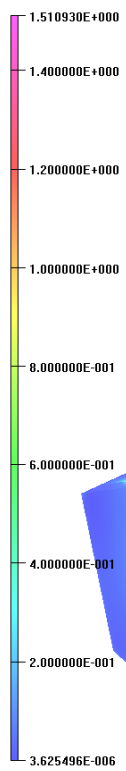
---

<b>FIELD EVALUATIONS</b>	
Use LHM (nodes) 1801 Cartesian	
x=35.0 to 100.0 y=0.0 z=0.0 to -800.0	

Opera

16/Nov/2009 14:46:55

Surface contours: BMOD

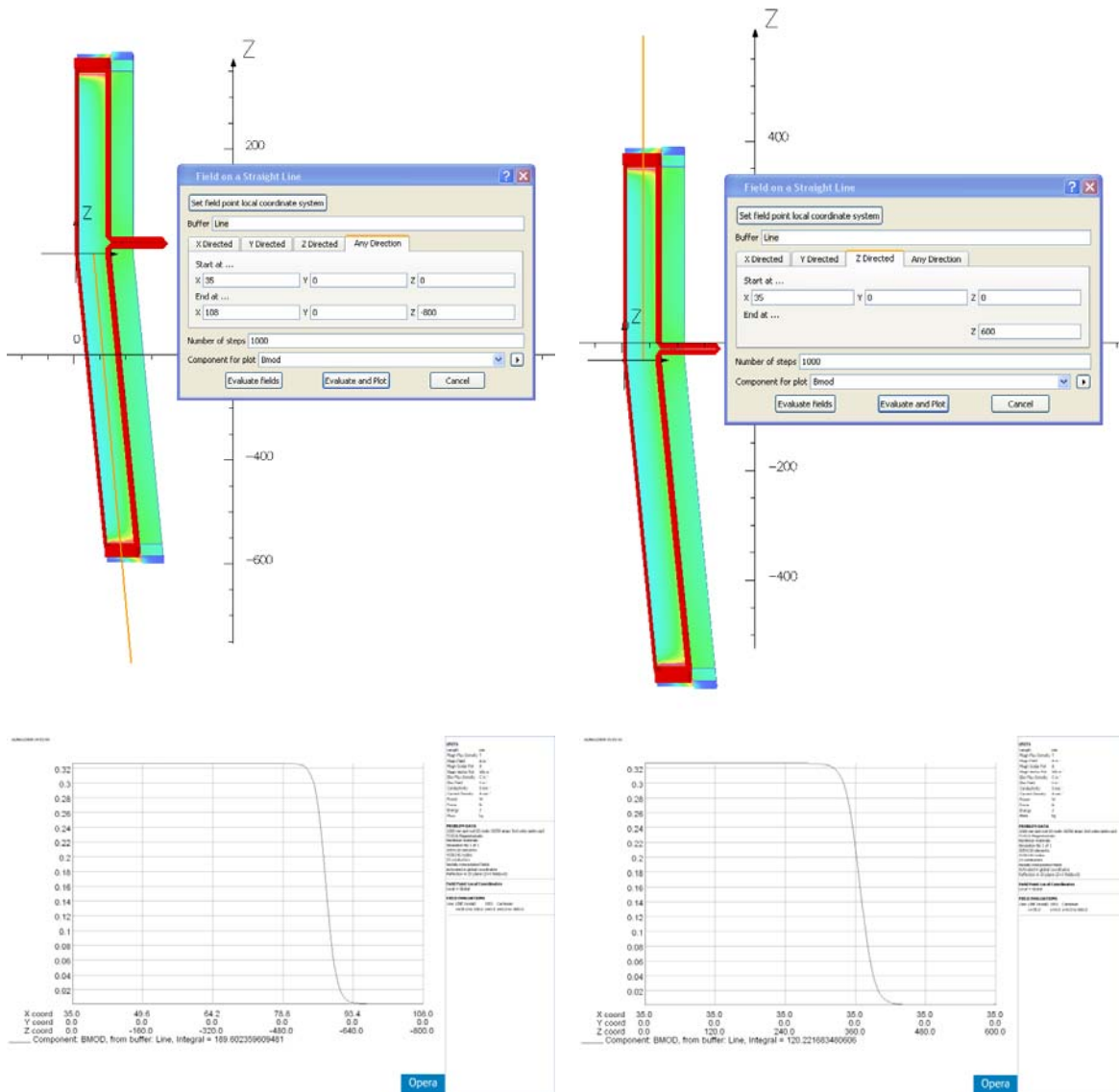


Information

At (35.0,0.0,200.0), BMOD = 0.326632818960506

OK

Opera



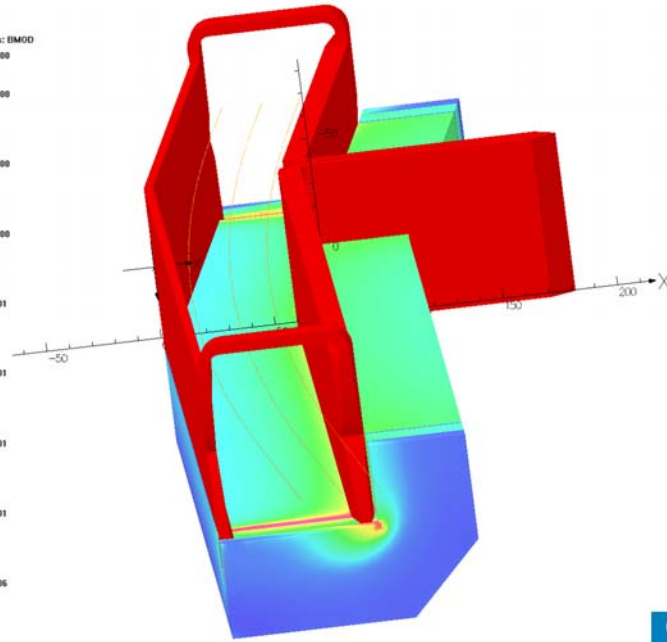
Magnetic flux density B over the length of the magnet = 189.60 + 120.22 = 309.82 Tmm.

$$l_{equ} = \frac{\int B dl}{B_0} = \frac{309.82 * Tmm}{0.3266T} = 948.5 \text{ mm}$$

I	Amps	1800	18250
L physical	mm	1000	1000
Bdl droit	mTm	118.57	120.22
Bdl incline	mTm	187.00	189.60
Bdl	mTm	305.58	309.82
B0	T	.3222	0.3266
Lmagn	mm	948.5	948.5
L ratio		1.054	1.054
angle sortie @ 20 mm	mrad	162	164.3

16/Nov/2009 15:24:40

Surface contours: EMOD



**UNITS**

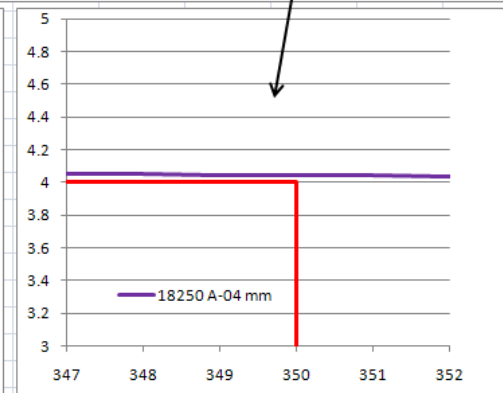
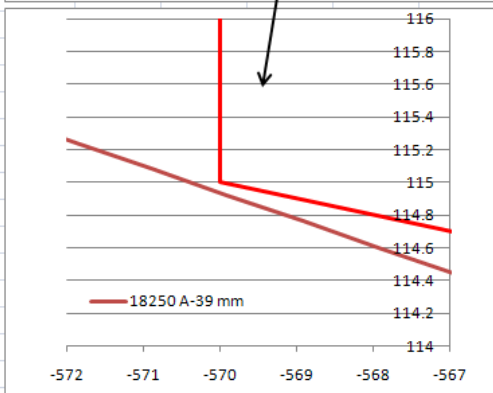
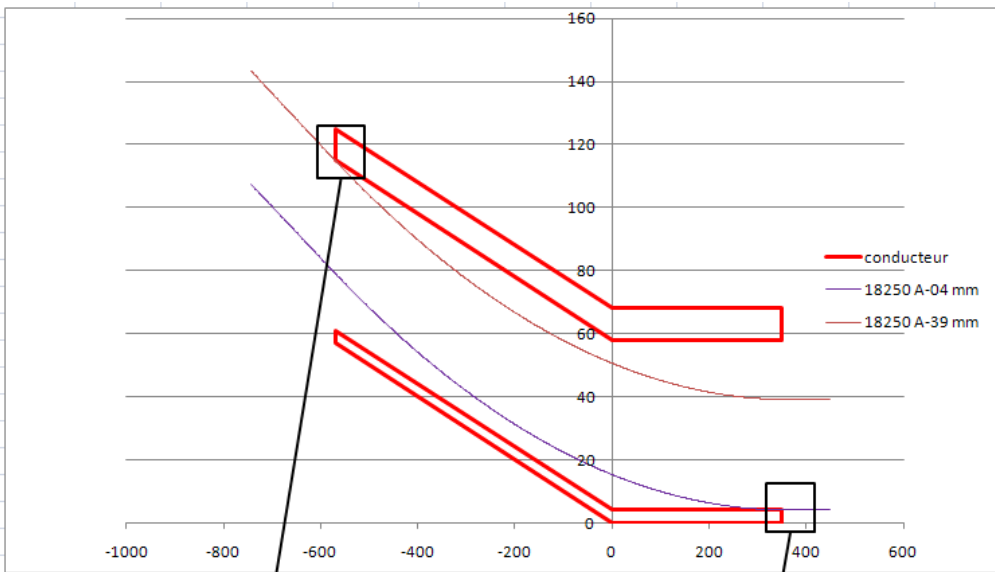
Length	mm
Magn Flux Density T	
Magn Field A/m	
Magn Scalar Pot A	
Magn Vector Pot Vb/m	
Elec Flux Density C/m <sup>2</sup>	
Elec Field V/m	
Conductivity S/m	
Current Density A/mm <sup>2</sup>	
Power W	
Force N	
Energy J	
Mass kg	

**PROBLEM DATA**  
 1000 mm opt col 2D node 18250 amps 3rd cycle optm.rpt  
 TOSTCA Magneto-static  
 Nonlinear materials  
 Simulation No 1 of 2  
 2054130 elements  
 4126144 nodes  
 23 conductors  
 Nodal/interpolated fields  
 Activated in global coordinates  
 Reflection in Z1 plane (Z=1, Field=0)

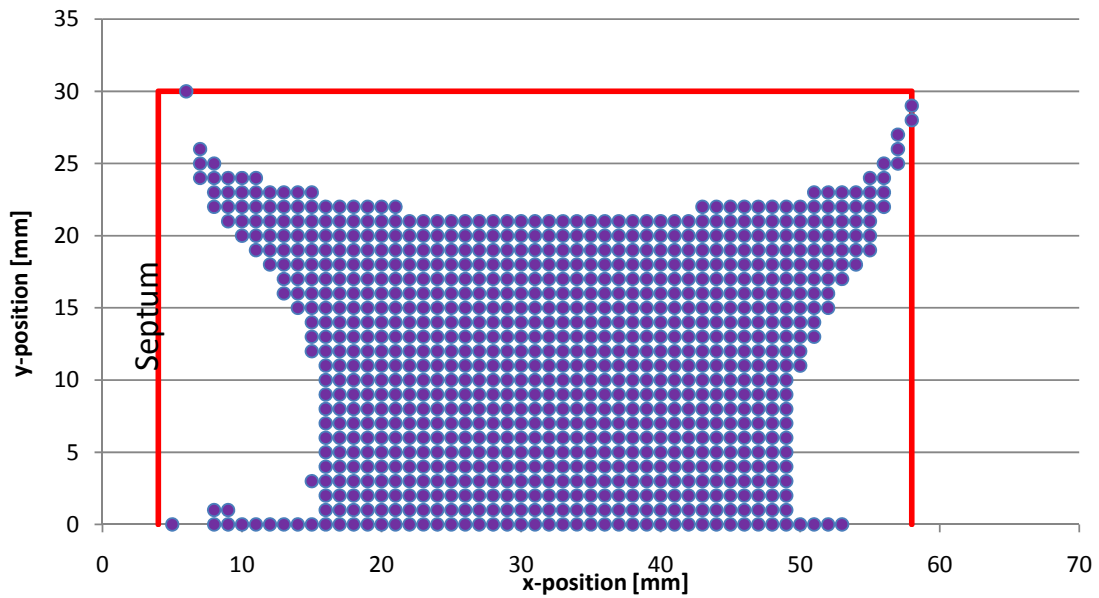
**Field Post Local Coordinates**  
 Local = Global

**FIELD EVALUATIONS**  
 Line LINE (node) 1001 Cartesian  
 x=35.0 y=0.0 z=0.0 to 400.0

Opera



### Good Field Region at 0.1%



### Good Field Region at 0.2%

