Magnets for the Sirius machine

Conventional Magnets Production

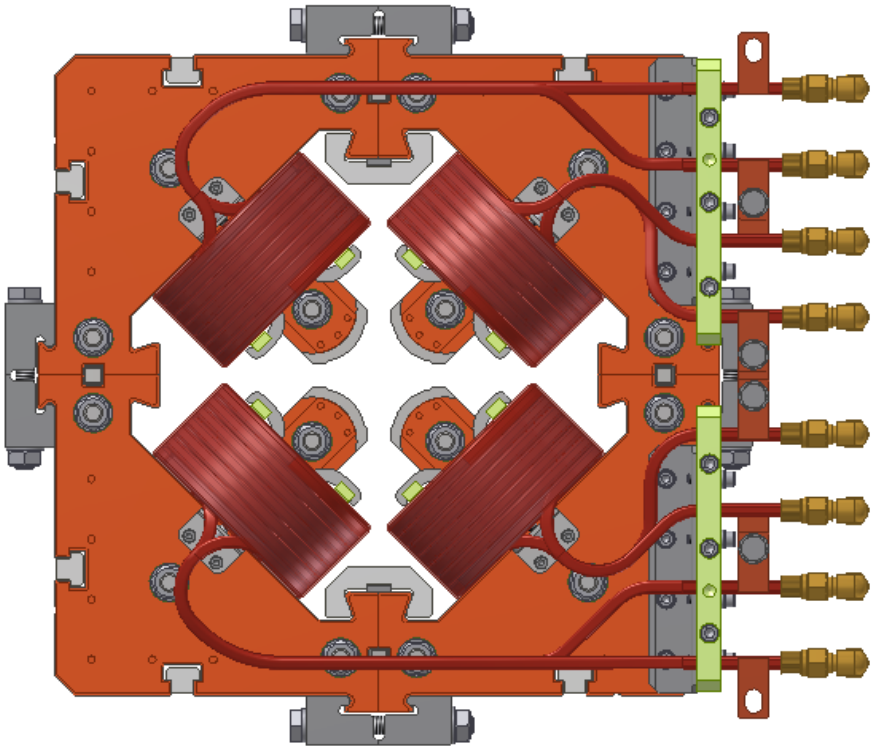
WEG

Brazilian electrical motor manufacturer with 26000 employees

Booster quadrupole prototypes delivered last August

Booster

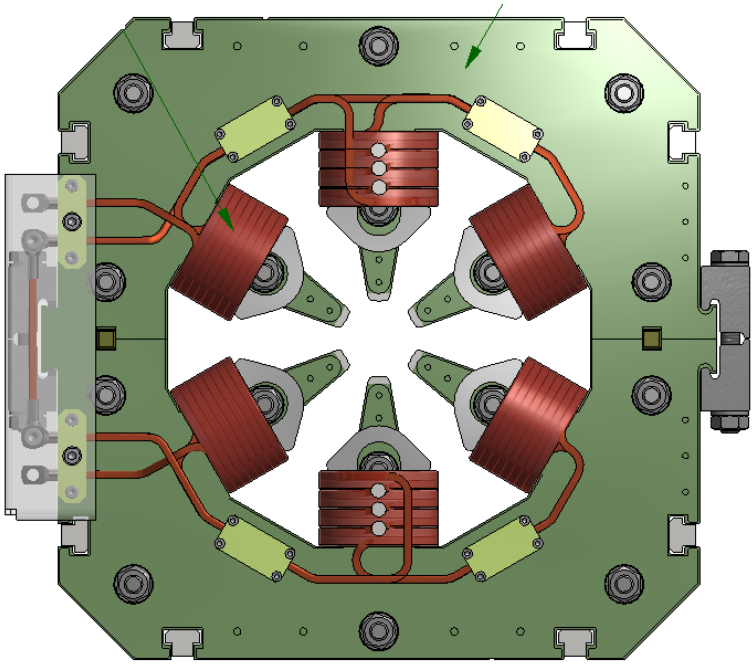
Quadrupole



- 20.6 T/m gradient
- 40 mm bore diameter
- 127 A maximum current
- 340 mm x 340 mm x 200 mm

Booster

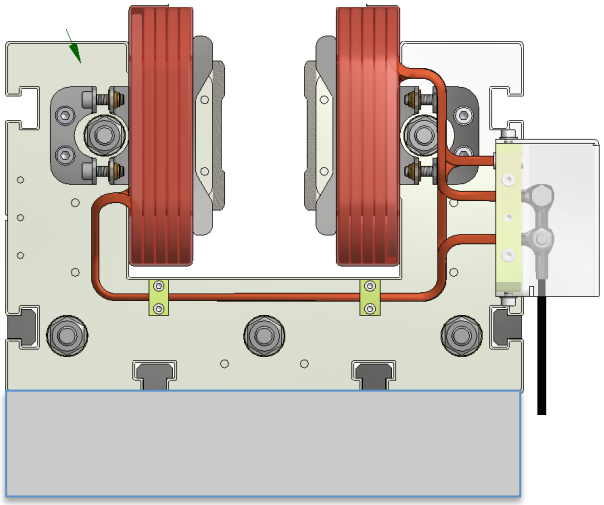
Sextupole

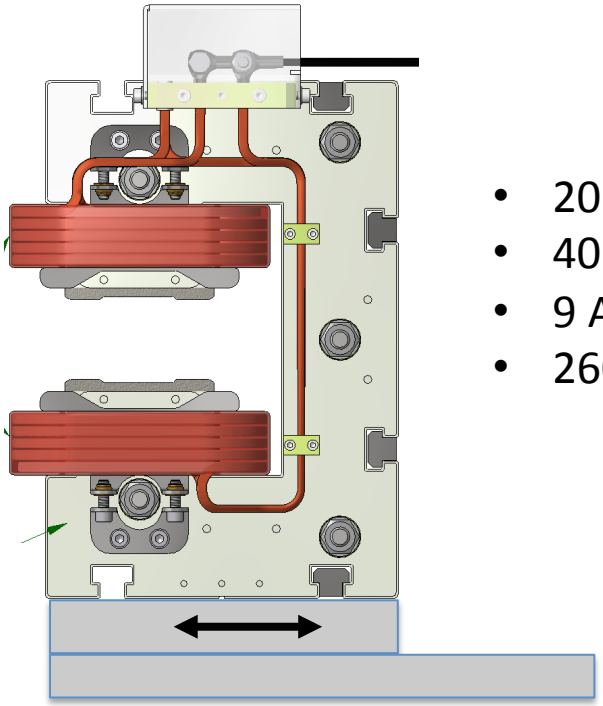


- 22.8 T/m^2 gradient
- 40 mm bore diameter
- 9.4 A maximum current
- 340 mm x 340 mm x 200 mm

Booster

Correctors





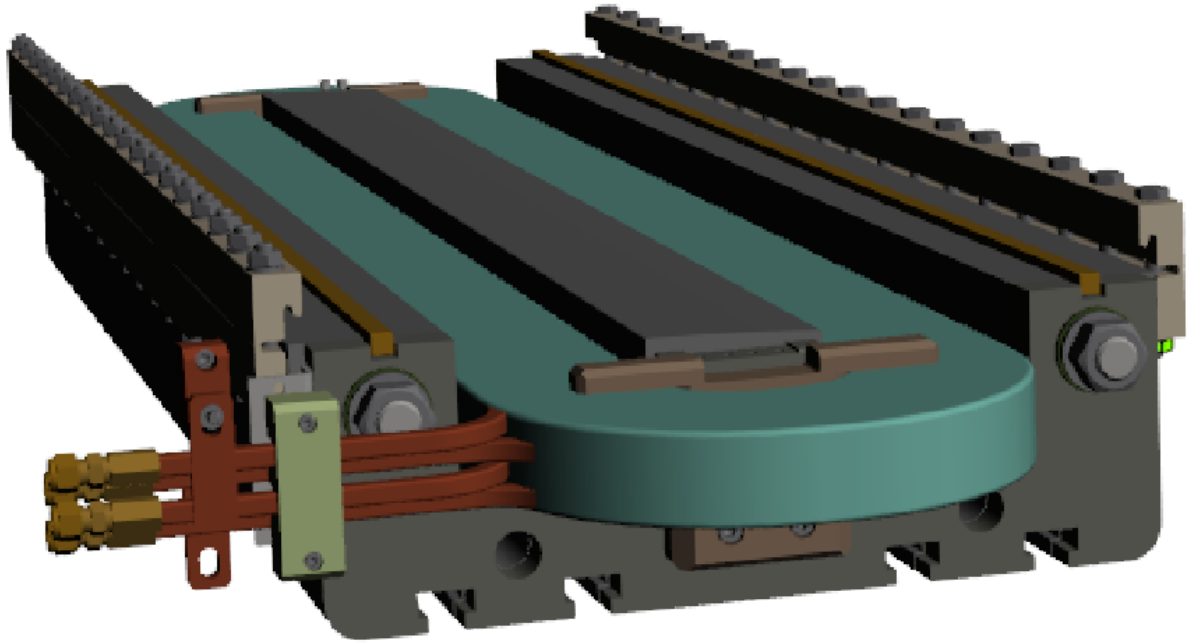
- 20 mT central field
- 40 mm bore diameter
- 9 A maximum current
- 260 mm x 177 mm x 100 mm

Sliding support for vacuum chamber installation

Booster

Dipoles

- 1.09 T bending field
- 1.9 T/m gradient
- 22.7 T/m^2 sextupole strength
- 28 mm gap
- 1.15 m lenght
- 50 units total



Storage Ring

Prototype II - NdFeB Bo = 0.5 T G = 2 T/m $\theta = 3.5^0$ and 5^0

PM low field dipoles (will not be used)

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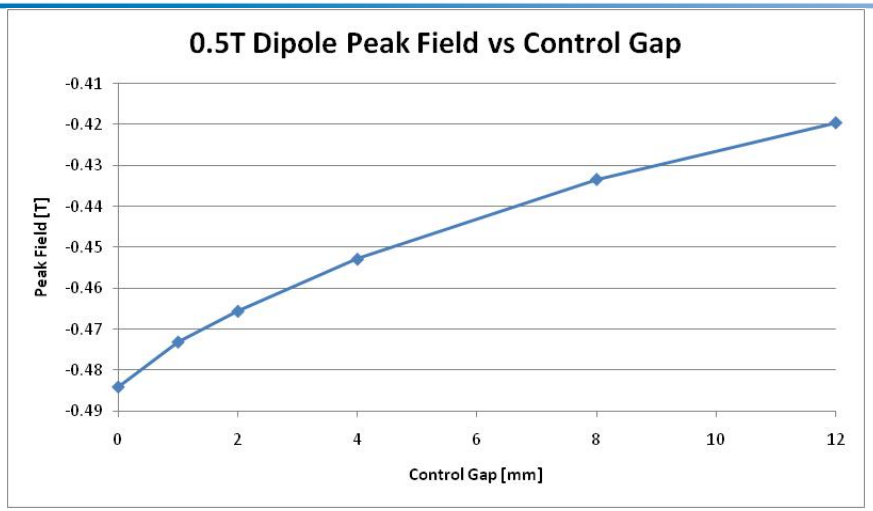
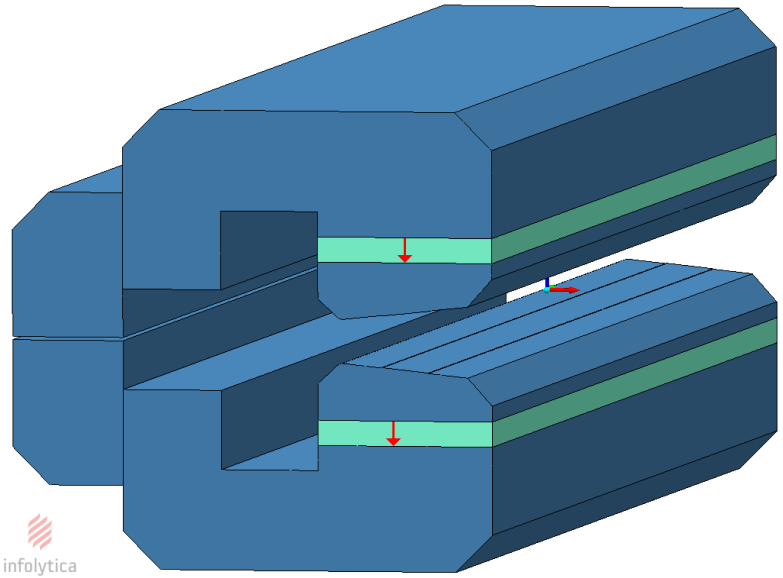
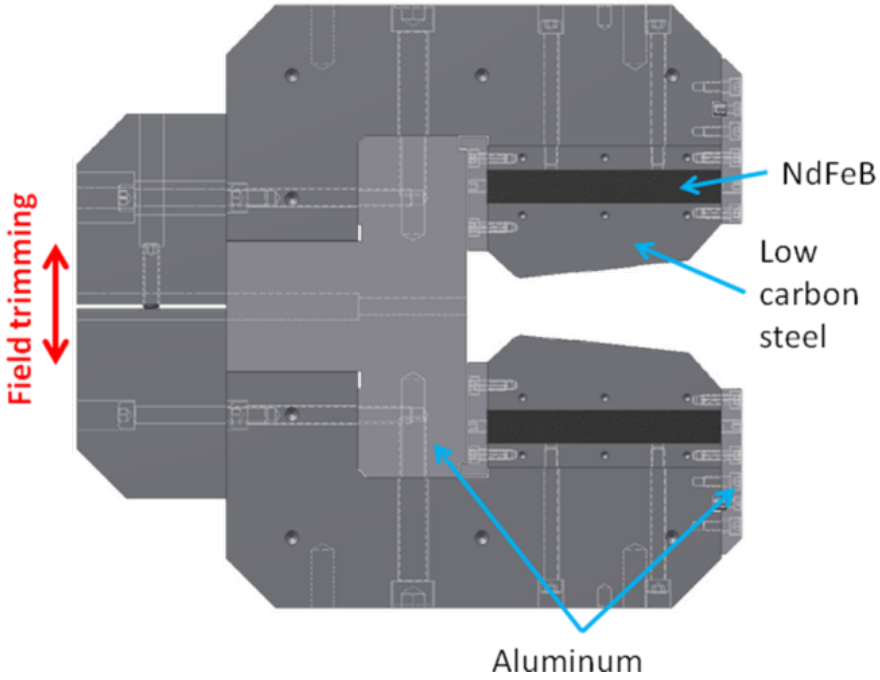
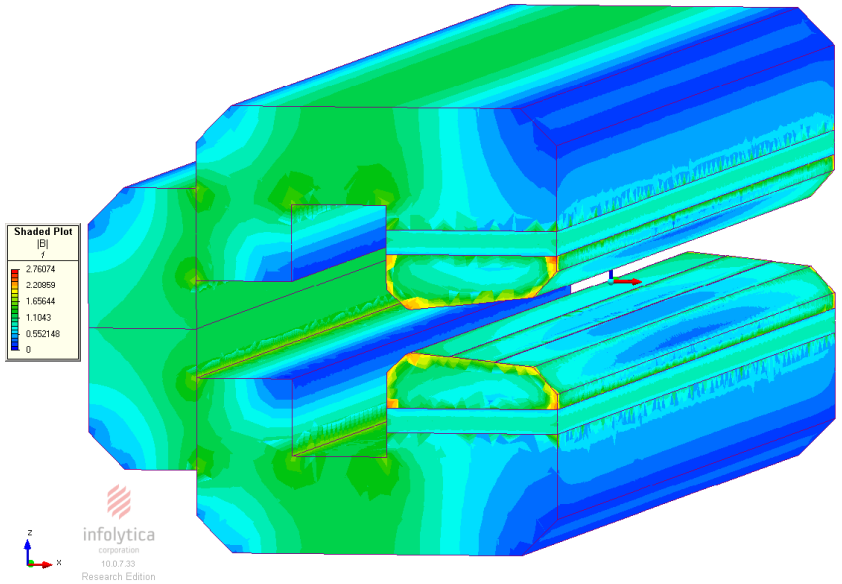


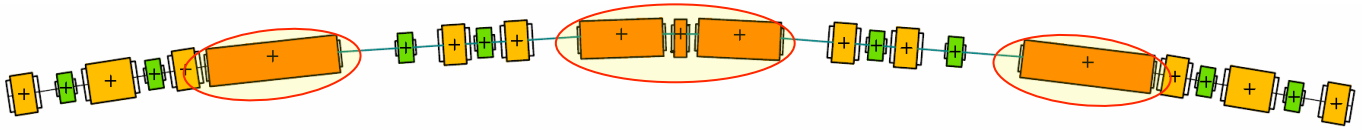


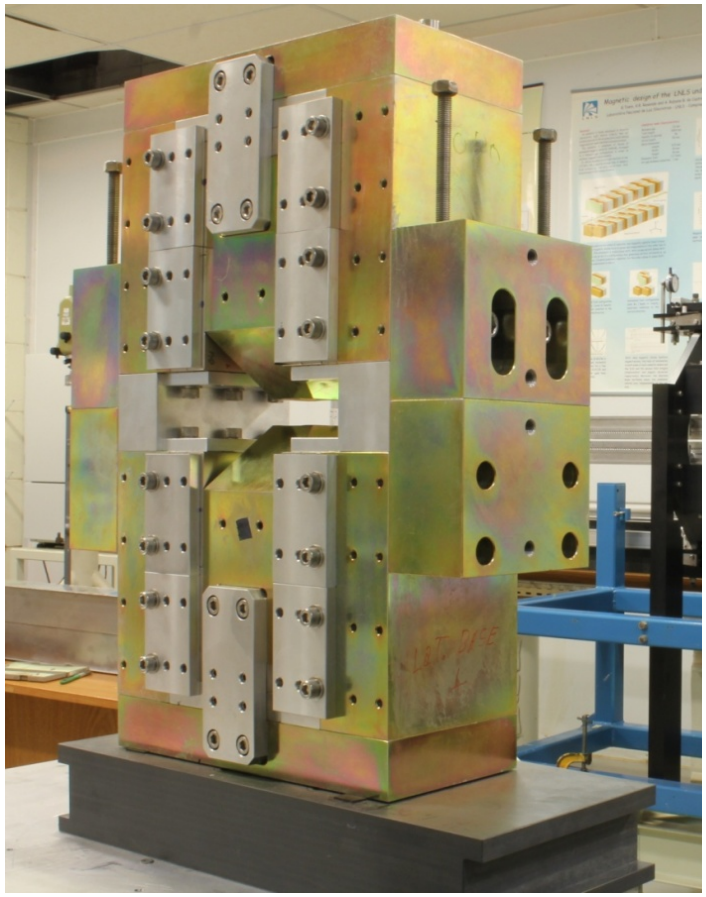




PM high field dipoles (will be used)

2T permanent magnet superbend

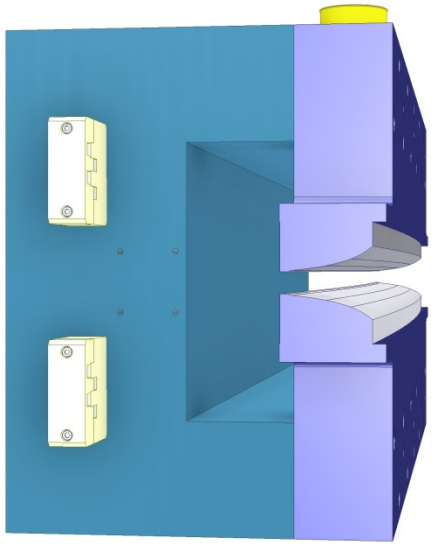


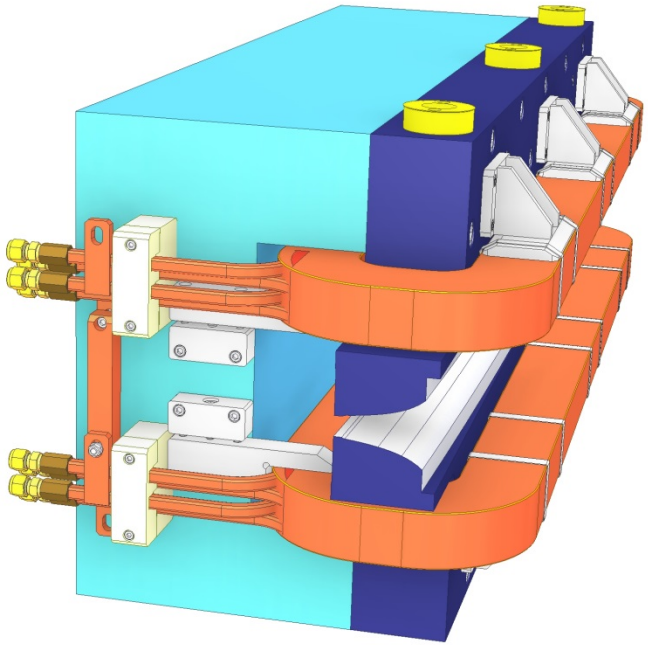


Storage Ring

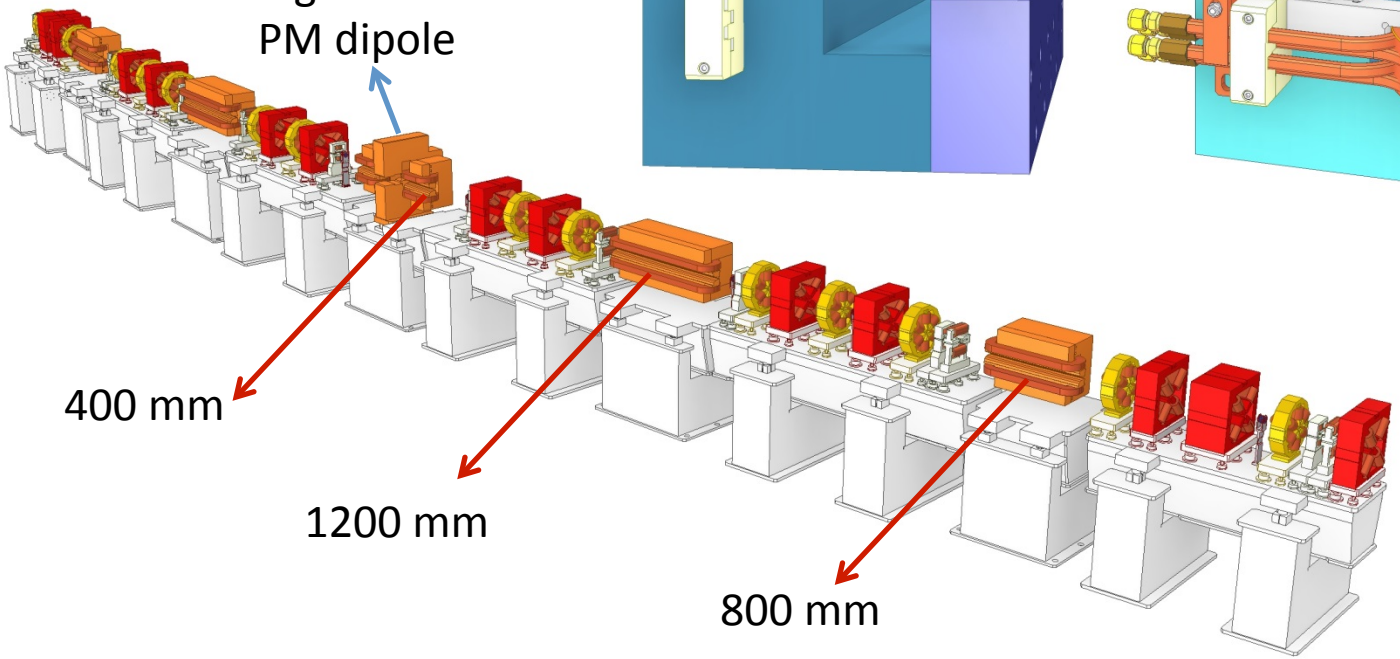
Extended poles magnets (Gupta style, BNL)

Low field dipoles





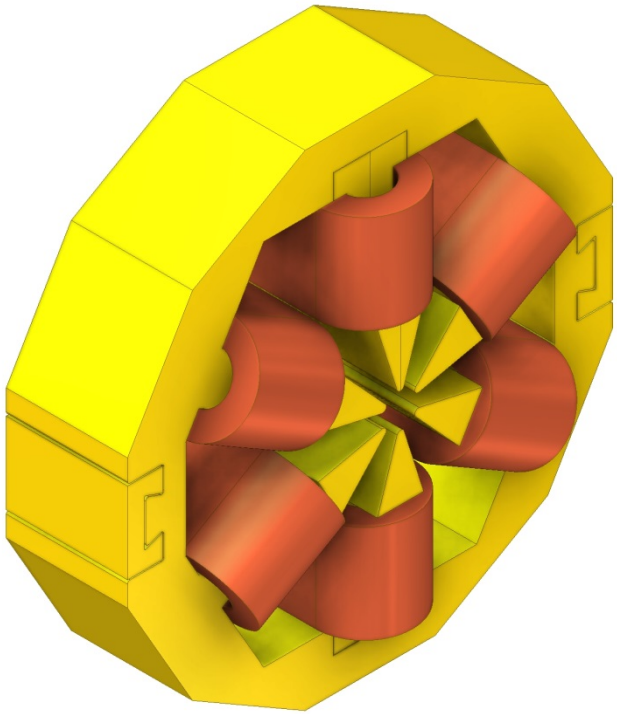
Superbend with the high field PM dipole



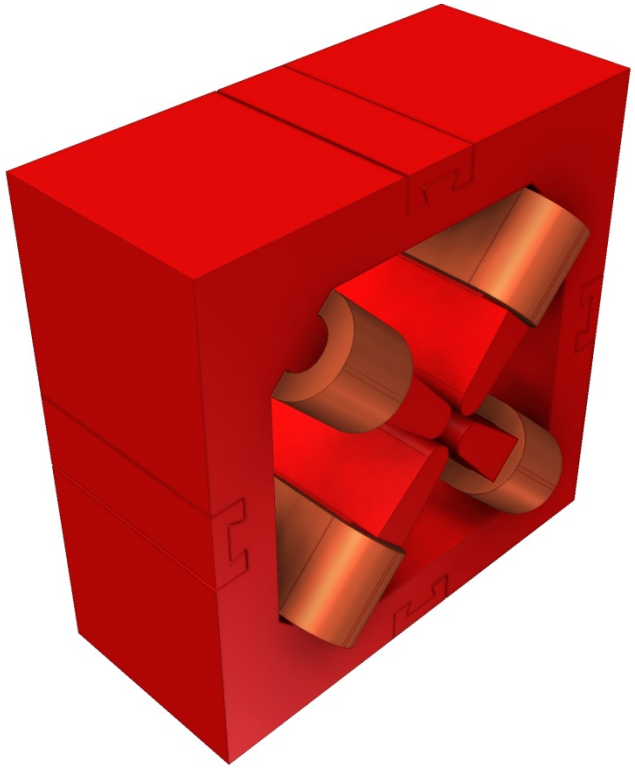
- 0.58 T bending field
- 7.8 T/m gradient
- 28 mm gap
- 120 units total

Storage Ring

Just an artistic view. No idea how to produce it !

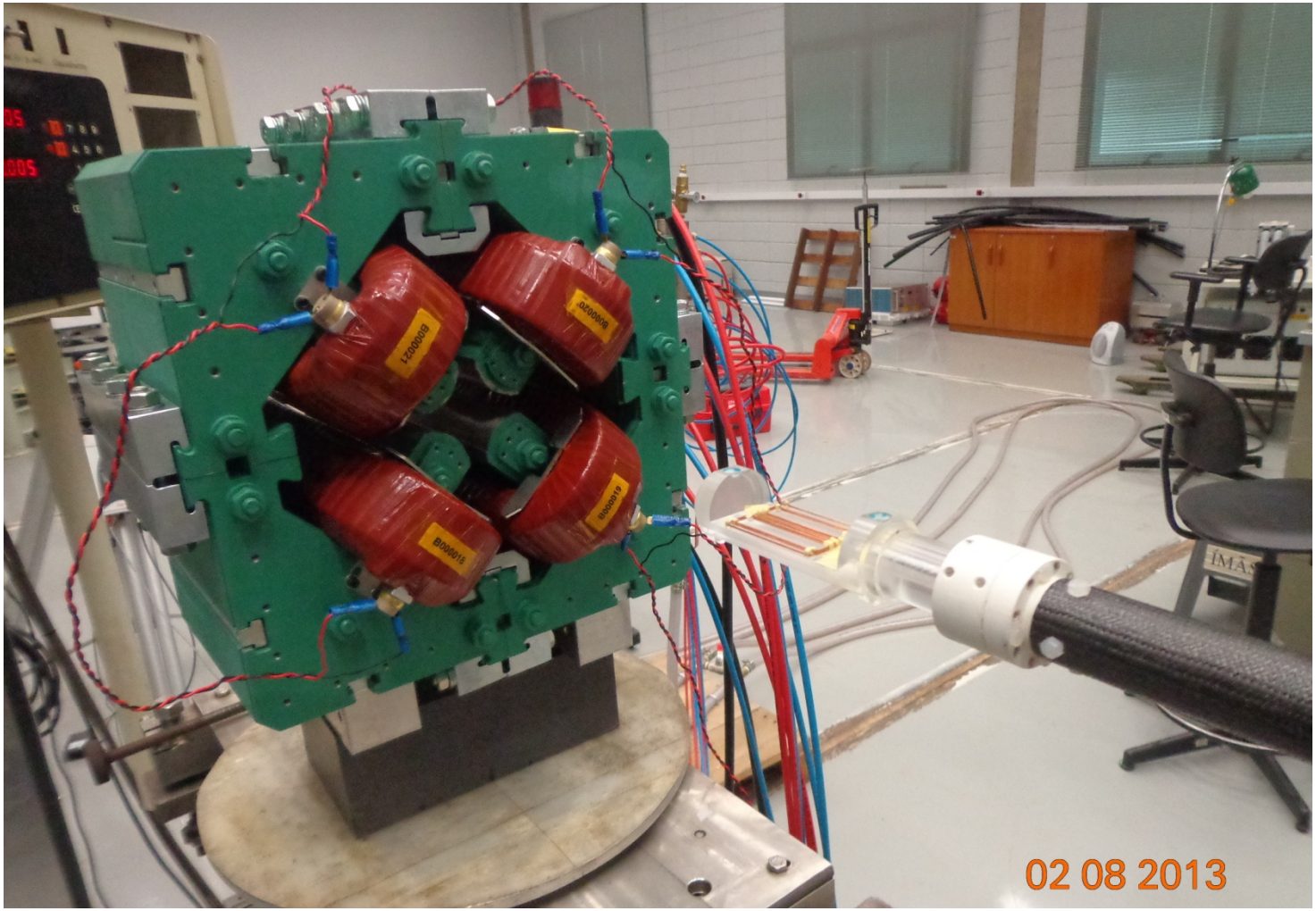


- 2400 T/m2 gradient
- 28 mm bore diameter
- 15 cm length
- 280 units



- 40 T/m gradient
- 28 mm bore diameter
- 3 sizes: 14, 25 e 34 cm length
- 260 units total

Magnetic Measurement

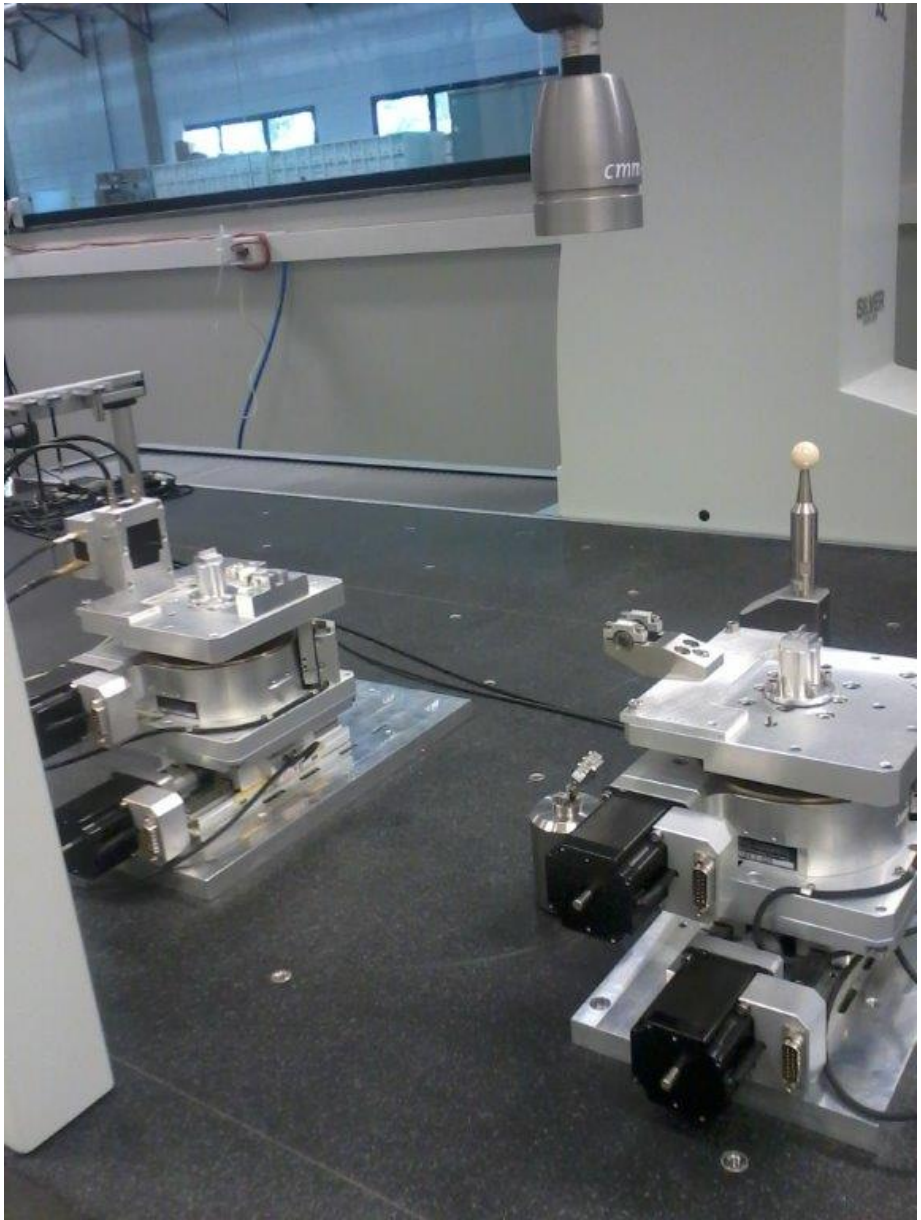


Measurement of the Booster quadrupole prototype with mini rotating coil

Magnetic Measurement

MMB from Kugler – to be delivered next December 12th

Fiducialization

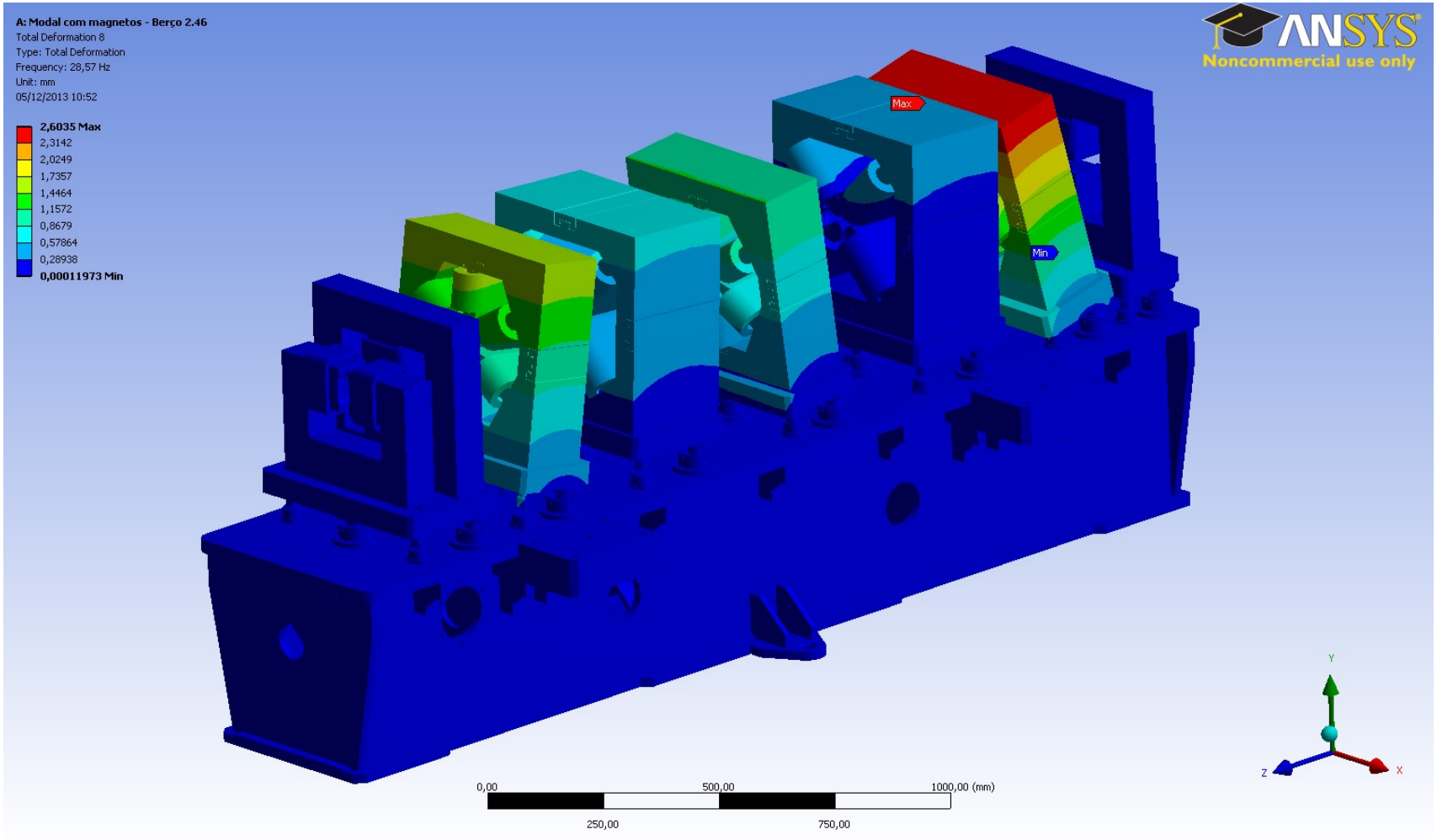


CMM + stretched wire

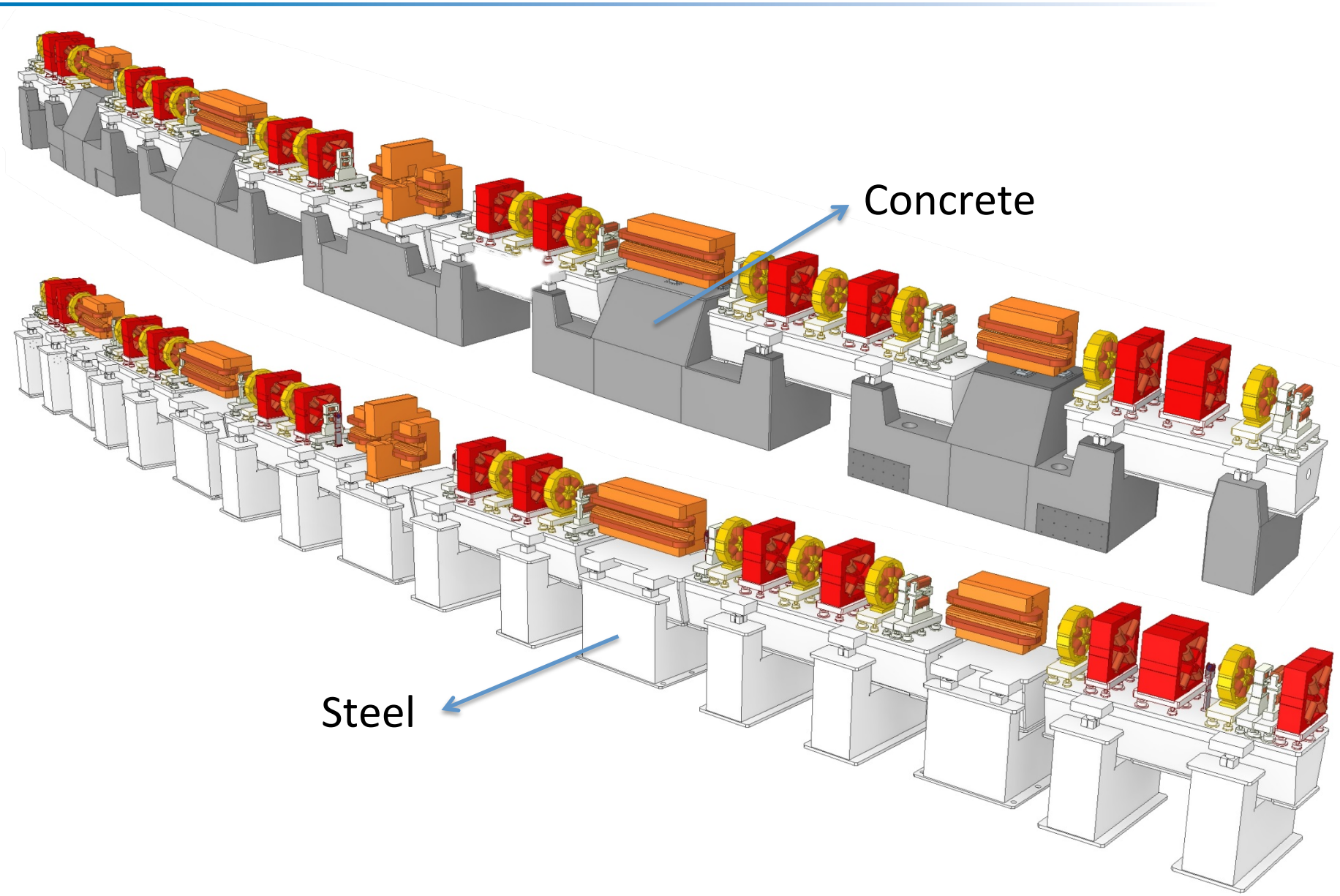
Quadrupoles and Sextupoles

- Short wire with small sagitta
- Wire position given by CMM camera
- Magnetic axis and reference surfaces established with automatic routines
- Final assembling of the magnet on the top of the girder using also the CMM

Storage ring supports



Storage ring supports



Laboratório Nacional de Luz Síncrotron

LNLS sirius

CNPEM

Storage ring supports