

Manufacturing and Assembly – Preliminary Aspects

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Manufacturing and assembly - I

- Different options are being considered for the manufacturing and assembly of the multiplet magnet. A detailed work plan will be prepared once the Spanish contribution to FAIR is officially agreed.
- If our contribution finally includes a series of fully assembled magnets, CIEMAT will carry out the engineering design and will find an industrial partner for manufacturing and assembly.

Manufacturing and assembly - II

- Phase I at Ciemat: engineering design + manufacturing of a prototype magnet (main candidate = short quadrupole)
- Phase II – Ciemat +Industry : manufacturing and assembly of a single multiplet
- Phase III – Industry: manufacturing and assembly of the series

Manufacturing and assembly - III

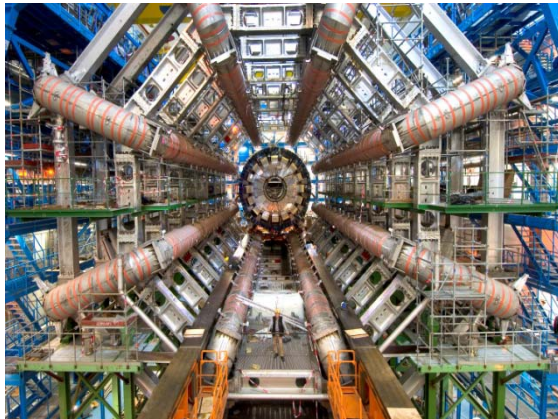
- Potential industrial partners in Spain have been identified. We have started contacts for manufacturing magnets, cryostats and the full assembly of the multiplets.
- First contact with Felguera Construcciones Mecánicas (FCM), a company that has built equipment for CERN and is a candidate for some contracts at XFEL.
- Other companies under consideration are Antec (magnets) Elytt (magnets), Trinos Vacuum (vacuum vessels) , ENSA (Assembly)

Manufacturing and assembly - IV

- FCM works for CERN:
 - Cryostats for the Atlas Toroid Barrel Magnets
 - 106 service modules for the Cryogenic Ring Line (QRL) of the LHC
 - 403 vacuum vessels for the LHC dipoles
 - Wedge for the Hadronic Calorimeter of CMS
- Other works for Physics Companies
 - Gantry and cyclotron Dee's for IBA

Manufacturing and assembly - V

- FCM works for Physics Labs and Companies



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Manufacturing and assembly - VI

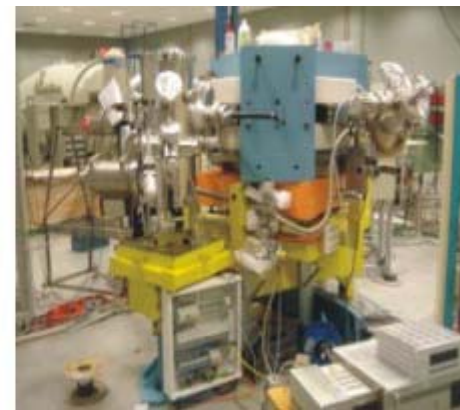
- Antec:
 - two Superconducting magnet series of 1500 Sextupoles and 200 Octupoles for the LHC
 - Several Current Leads of 600 A have been manufactured with BiSCO HTS elements (ceramic) prototype for the LHC



Manufacturing and assembly - VII

- Elytt:

- Superconducting dipole with CICC cable for the NESR ring of the FAIR project. (D)
- Superconducting dipole for EFDA (D)
- Septa magnets for CTF3 (D & M)
- Spectograph Dipole for CMMA (D & M)



Manufacturing and assembly - VIII

- Conclusions:
 - CIEMAT is ready to advance with the project as soon as a decision is made.
 - Industrial capabilities are available in Spain to manufacture the magnets and assembly the multiplets.