SOME FACTS ABOUT CIEMAT

Public Research Institution (OPI) dealing with Energy and Environment pertaining to the Ministry of Science and Education

Annual budgeted expenses

about **70 million euros**

- 65% transferred from the State
- Remaining revenues from R&D activities and technical services

Human Resources

1,200 workers
about half of which have university degrees
30% civil servants 70% contracted

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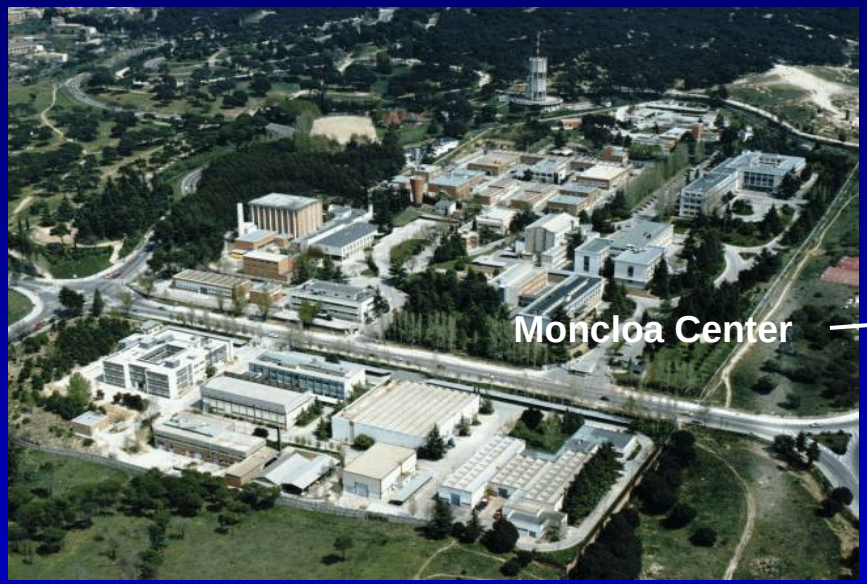
CIEMAT RESEARCH CENTERS



* Under construction

Luis Garcia-Tabarés
CTF3 Collaboration Meeting, 24/11/2004

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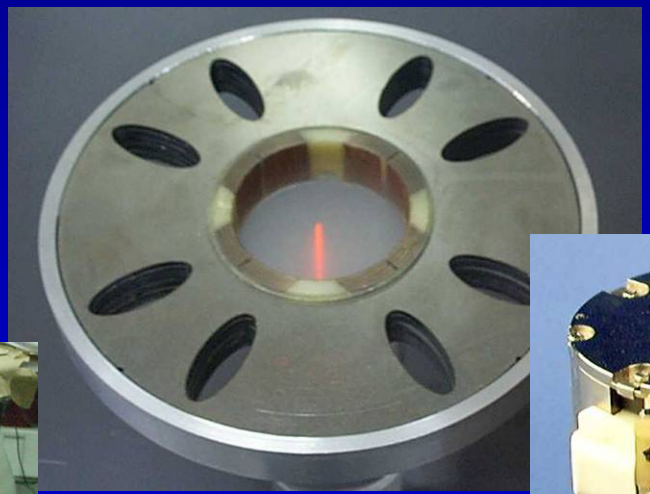
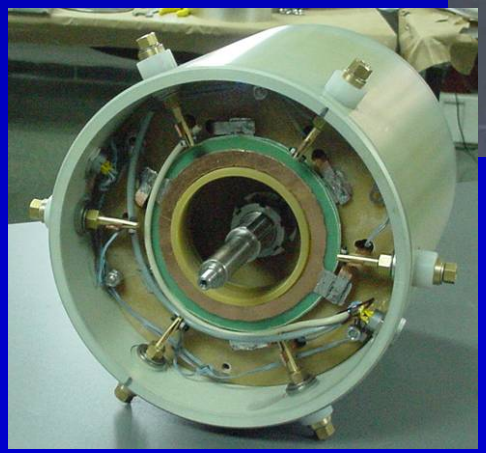
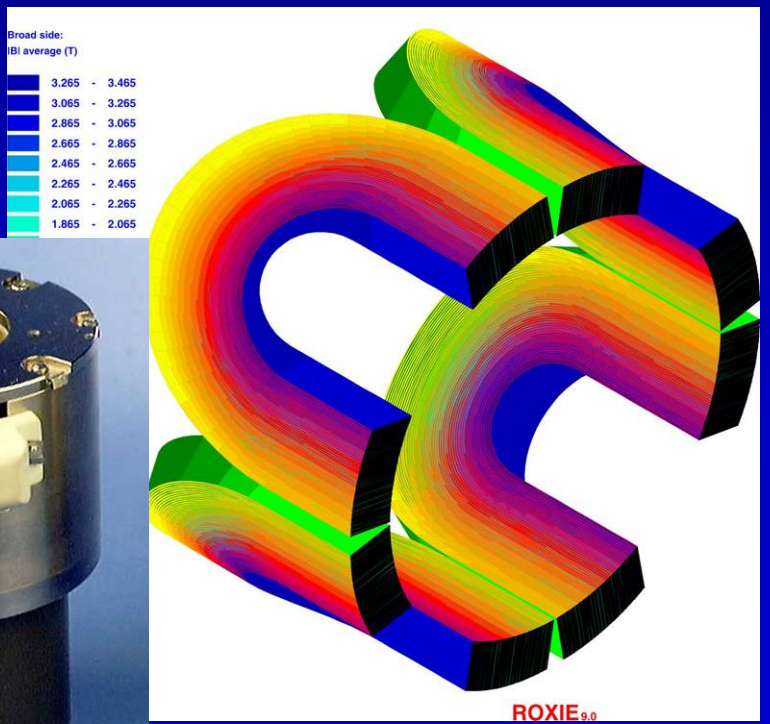
R&D ACTIVITIES AT CIEMAT

- Renewable Energies
- Fusion by Magnetic Confinement
- Radiation Protection and Radiation Dosimetry
- Materials Behaviour in Power Plants
- Radioactive Waste Management
- Environmental Behaviour of pollutants
- Molecular and Cellular Biology
- Combustion and Gasification Technologies
- Computing and Communications Technologies
- Experimental High Energy Physics
  - ✓ International collaborations at:
    - CERN
    - DESY: Mark-J at PETRA & TESLA500
    - NASA
  - ✓ Applied Superconductivity Laboratory CIEMAT-CEDEX

SUPERCONDUCTIVITY AND ELECTROMAGNETIC POWER APPLICATIONS







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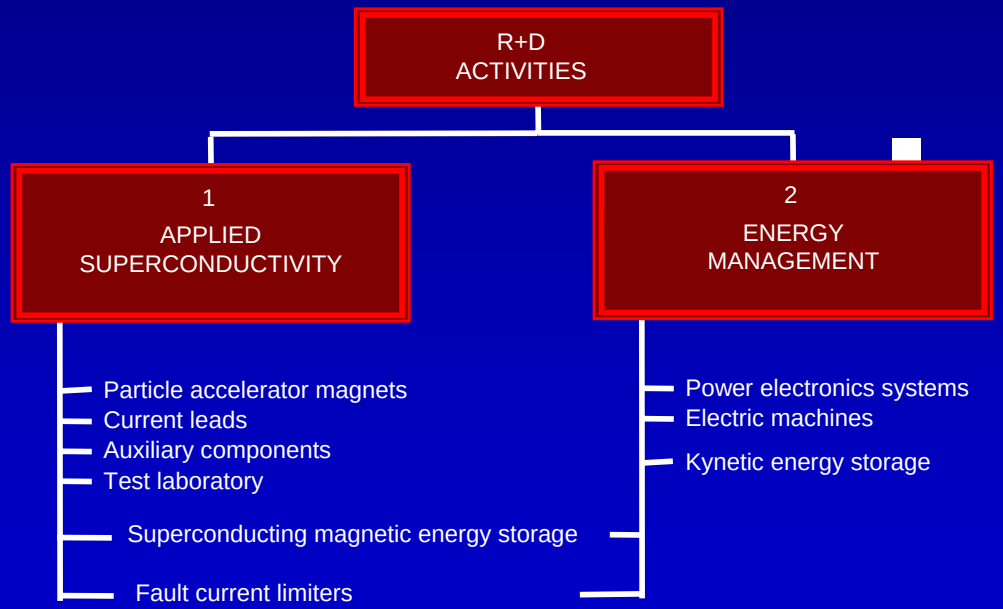
OBJECTIVES

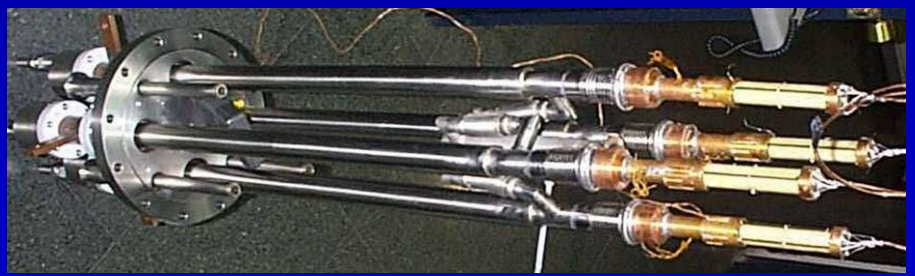
To develop know-how, techniques and applications of superconductivity and electric power systems.



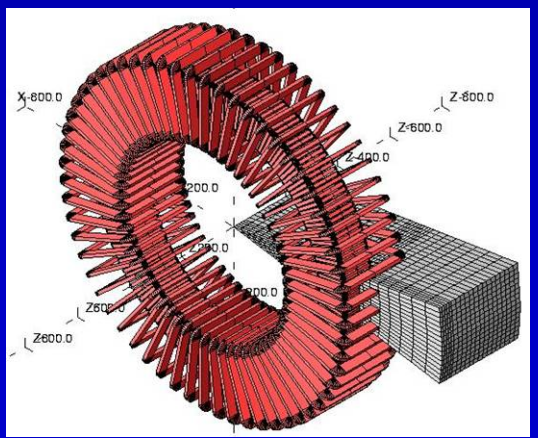
APPLIED SUPERCONDUCTIVITY

- ✓ Particle Accelerator Magnets and Associated Components.
  - ➢Calculation and design of particle accelerator magnets and accessories.
  - ➢Prototype fabrication.
  - ➢Characterization and testing.
- ✓ Electric Power Systems: Fault Current Limiter.
  - ➢Characterization of high critical temperature superconductors.
  - ➢Design and fabrication of current limiters prototypes.

Combined Magnet for TESLA500 (DESY)



600 A hybrid current lead for LHC corrector magnets



Inductive current limiter model

LHC sextupole training test at 4.2 K

ENERGY MANAGEMENT

- Design, fabrication and tests of prototypes on...
  - ✓ ... power electronics and its control systems.
  - ✓ ... electric machines.
  - ✓ ... kynetic energy storage systems.
  - ✓ ... superconducting energy magnetic storage units (SMES).

Switched reluctance machine parts

Modular control system based on µPs CAN network

Kynetic energy storage unit and its power converter

1 MJ SMES tests

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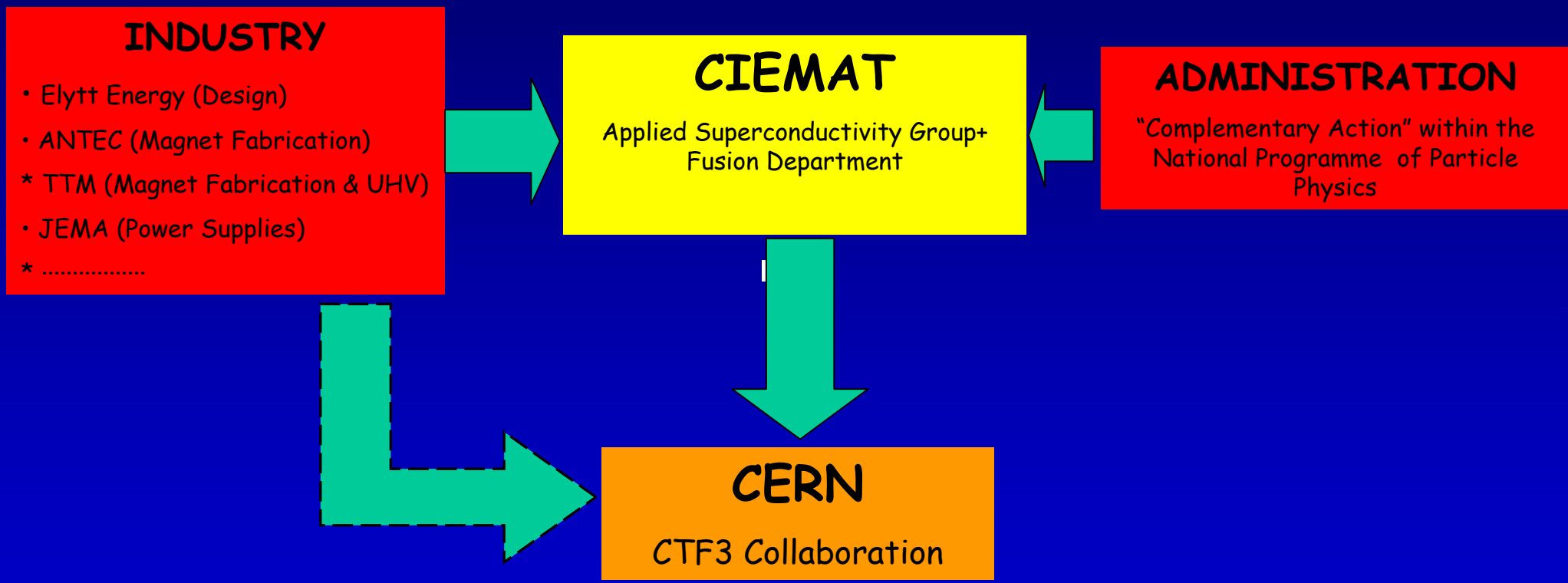
SPANISH COLLABORATION SCHEME FOR CTF3



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SPANISH COLLABORATION DELIVERABLES TO CTF3

ITEM	DESCRIPTION	DEADLINE	COST ESTIMATE
Correctors	33 H/V Orbit Correct Magnets for the Delay Loop and Transfer Lines. (Existing design)	July -2005	97.300 €
Septa	2 Double Septa Magnets for the Delay Loop (Only a reference design)	Dec-2005 ???	321.500 €
Kickers	2 “Stripline” Extraction Kickers (Only a reference design)	Oct-2006 ???	181.500 €
TBL Quads	15 Quadrupole Magnets with motorised support structure for the Test Beam Line	Mid-2007	390.000 €
PETS	1 Power Extraction Transfer System Prototype	Dec-2006	221.500 €

SPANISH COLLABORATION WORKINGPLAN