



HFM
High Field Magnets

RD3 – Nb₃Sn Magnets Introduction

Diego Perini (CERN), Fernando Toral (CIEMAT)



From the HFM web site: <https://hfm.web.cern.ch/> we read:

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The HFM Programme – broad goals are:

- Explore the performance limits of LTS accelerator magnets with a focus on robust large-scale implementation
- Explore the HTS magnet technologies for accelerator application beyond the limits of Nb₃Sn
- Develop the next generation of **accelerator magnets** for future colliders

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We should remember that an accelerator foresees the industrial series production of many dipoles at affordable price.

- **Focus on sound and robust solutions.**
- **Achievable tolerances, and simple manufacturing procedures must be considered from the beginning.**

If it works only with nominal pieces, and it must be assembled by PhD personnel, probably we are on a wrong way ... Industry is different ...



09:00 → 12:30 **RD3 - Nb3Sn Magnets**

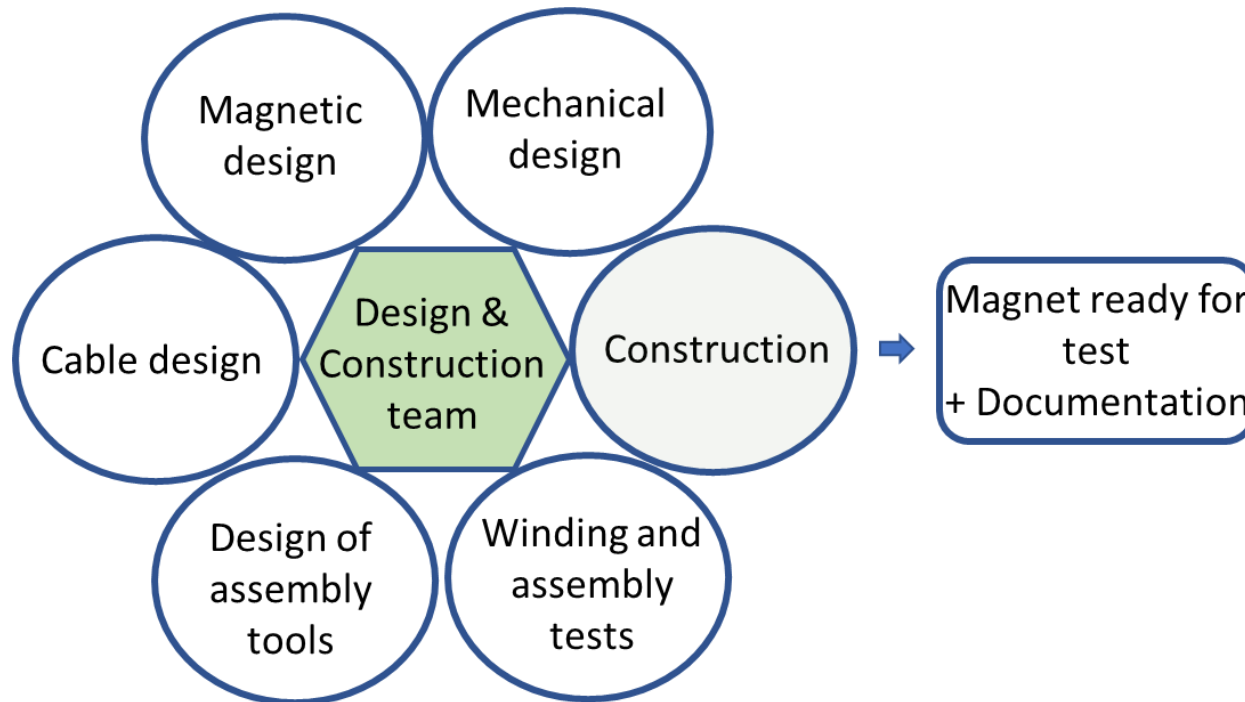
Conveners: Diego Perini (CERN), Fernando Toral (CIEMAT - Centro de Investigaciones Energéticas Medioambientales y Tec. (ES))

09:00	RD3 - Introduction Speakers: Diego Perini (CERN), Fernando Toral (CIEMAT - Centro de Investigaciones Energéticas Medioambientales y Tec. (ES))	🕒 10m	
09:10	WP3.4 - Nb3Sn magnet Technology Development Program (TDP) - CERN Speaker: Diego Perini (CERN)	🕒 15m	
09:25	WP3.2 - Nb3Sn single aperture cosθ bladder & keys 12T FALCON D dipole model - INFN Speaker: Stefania Farinon (INFN e Universita Genova (IT))	🕒 15m	
09:40	WP3.1 - Nb3Sn robust performance double aperture 12T cosθ dipole models - CERN Speaker: Lucie Baudin (CERN)	🕒 15m	
09:55	WP3.5 - Nb3Sn ultimate performance dipole models - CERN Speaker: Juan Carlos Perez (CERN)	🕒 15m	
10:10	coffee break	🕒 30m	
10:40	WP3.6, WP3.12- Nb3Sn ultimate performance R2D2 racetrack dipole demonstrator - CEA Speaker: Dr Etienne Rochepault (Université Paris-Saclay (FR))	🕒 15m	
10:55	WP3.7 - Nb3Sn ultimate performance common coil dipole demonstrator - CIEMAT Speaker: Fernando Toral (CIEMAT - Centro de Investigaciones Energéticas Medioambientales y Tec. (ES))	🕒 15m	
11:10	Progress Report on the PSI CHART LTS and Hybrid HFM Roadmap - PSI Speaker: Douglas Martins Araujo	🕒 15m	
11:25	14-16 T dipole costheta magnets - INFN Speaker: Massimo Sorbi (Università degli Studi e INFN Milano (IT))	🕒 10m	
11:35	US MDP high-field Nb3Sn cos-theta dipole magnet with stress management Speaker: Alexander Zlobin	🕒 15m	
11:50	RD3 Discussion and summary	🕒 30m	



- Nb_3Sn magnets are complex.
- Design tools are more and more complicate to use. Need of experts.
- Construction techniques are sophisticated and specialised. Need of experts.

ISO/IEC/IEEE 15288: 2015 System Engineering



The success, is the result of a teamwork.

