



HL-LHC WP3 Meeting Documentation HO correctors – D1

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Acknowledgments to:

Jose Luis Asensio Riquelme, Hector Srividya Ganesh, Garcia Gavela, Tsvetelin Krastev, Tatsushi Nakamoto, Marco Statera, Michinaka Sugano... and many more...



July 5th, 2017

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 - Same for magnetic measurements
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HO Correctors & D1 Magnets

Do we have manufacturing drawing ? Where are stored ? Is this in the CERN system?

YES... and NO

At this stage the drawings are available from both Institutes but they are not stored in CDD.

Nevertheless the main drawings are attached in MTF (please note that they are in Japanese and Italian)

Why? => They are models and it is not the final design yet; these magnets will never be affected to the LHC.

As soon as the final version is available they will be imported in CDD with CERN Stamp (already agreed with them)

HO Correctors & D1 Magnets

Do we have assembly procedures written ? are they stored in CERN system ?

NO

The Institutes will sub-contract the manufacturing to private companies; it is the duty of these companies to write the procedures, and at this stage of the project it is too early (no contract assigned yet for the series)

=> Before to produce the series the manufacturer will write the procedures both in native language and English, and they will be stored in EDMS system

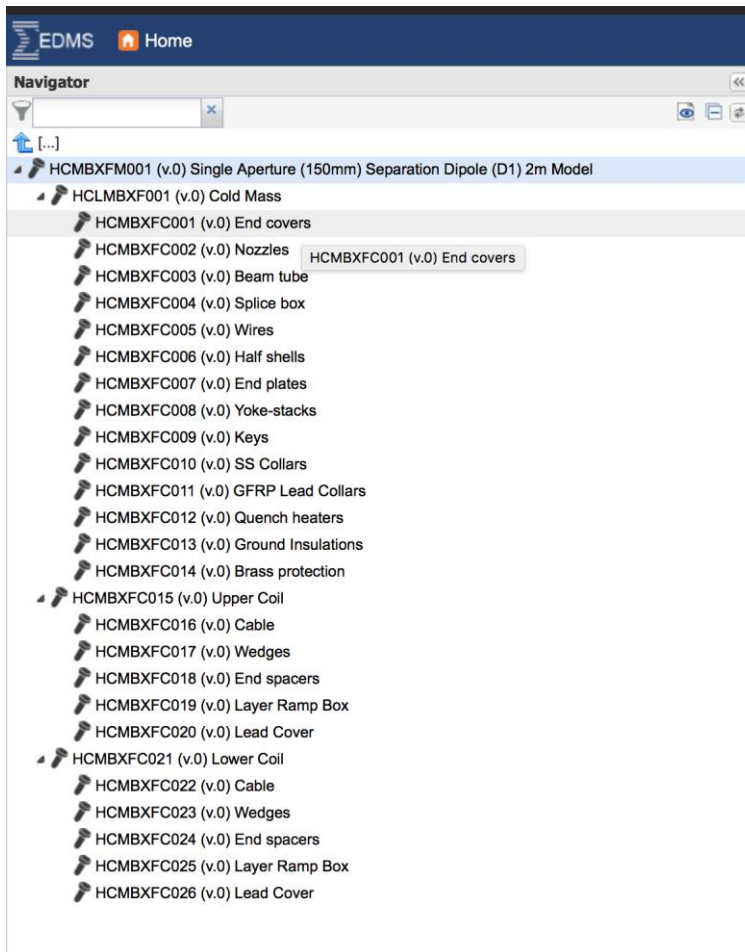
HO Correctors & D1 Magnets

For magnets done until now:

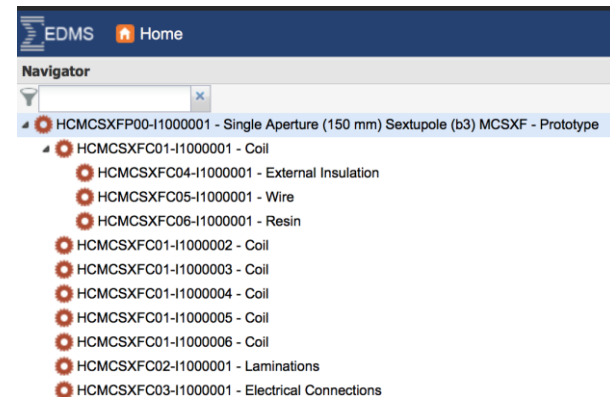
- Do we have an official name for the magnet(s)?
 - Yes of course...
 - HCMBXFM => D1
 - HCMCSXF => Sextupole
 - HCMCOXF => Octupole
 - HCMCDXF => Decapole
 - HCMCTXF => Dodecapole
 -

HO Correctors & D1 Magnets

- Is there a MTF folder?



Yes sure, this was created together with Hector and Jose Luis



HO Correctors & D1 Magnets

- Do we have components associated to the magnet (traceability) ?
 - Yes, of course, for most of them...

Assembly Tree

- HCMCOXFP00-11000001 - Single Aperture (150 mm) Octupole (b4) MCOXF Protol
- HCMCOXFC01-11000001 - Single Aperture (150 mm) Octupole (b4) MCOXF**
- HCMCOXFC01-11000006 - Single Aperture (150 mm) Octupole (b4) MCOXF - C
- HCMCOXFC01-11000007 - Single Aperture (150 mm) Octupole (b4) MCOXF - C
- HCMCOXFC01-11000008 - Single Aperture (150 mm) Octupole (b4) MCOXF - C
- HCMCOXFC01-11000009 - Single Aperture (150 mm) Octupole (b4) MCOXF - C
- HCMCOXFC01-11000010 - Single Aperture (150 mm) Octupole (b4) MCOXF - C
- HCMCOXFC01-11000011 - Single Aperture (150 mm) Octupole (b4) MCOXF - C
- HCMCOXFC01-11000012 - Single Aperture (150 mm) Octupole (b4) MCOXF - C

Equipment Folder: Documents

Equipment Identifier: HCMCOXFC01-11000001
Other Identifier: M08-01
Description: Single Aperture (150 mm) Octupole (b4) MCOXF - Coil

Main Made of Equipment data Manufacturing Operation Documents History Map

Assembly Tree

- | Actions | Attach document | Equipment data |
|-------------|-----------------|----------------|
| 1742638 v.1 | M08-0 | Bobini |
| 1810696 v.1 | Dimen | HCMCO |
| 1811624 v.1 | Windir | dimen |
| 1811630 v.1 | Impre | coil-M |
| 1811661 v.1 | Electri | R_HV |
- HCLMBXF001-KJ000001 - Single Aperture (150mm) Separation Dipole (D1) 2m M
 - HCLMBXF001-KJ000001 - Cold Mass
 - HCLMBXF015-KJ000001 - Upper Coil**
 - HCLMBXF016-KJ000001 - Cable
 - HCLMBXF017-KJ000001 - Wedges
 - HCLMBXF018-KJ000001 - End spacers
 - HCLMBXF019-KJ000001 - Layer Ramp Box
 - HCLMBXF020-KJ000001 - Lead Cover
 - HCLMBXF021-KJ000001 - Lower Coil
 - HCLMBXF022-KJ000001 - Cable
 - HCLMBXF023-KJ000001 - Wedges
 - HCLMBXF024-KJ000001 - End spacers
 - HCLMBXF025-KJ000001 - Layer Ramp Box
 - HCLMBXF026-KJ000001 - Lead Cover
 - HCLMBXF004-KJ000001 - Splice box
 - HCLMBXF005-KJ000001 - Wires
 - HCLMBXF006-KJ000001 - Half shells
 - HCLMBXF008-KJ000002 - Half shells
 - HCLMBXF007-KJ000001 - End plates
 - HCLMBXF007-KJ000002 - End plates
 - HCLMBXF008-KJ000001 - Yoke-stacks
 - HCLMBXF009-KJ000001 - Keys
 - HCLMBXF010-KJ000001 - SS Collars
 - HCLMBXF011-KJ000001 - GFRP Lead Collars
 - HCLMBXF012-KJ000001 - Quarter-headers
 - HCLMBXF013-KJ000001 - Ground Insulations
 - HCLMBXF014-KJ000001 - Brass protection

Equipment Folder: Documents

Equipment Identifier: HCLMBXF015-KJ000001
Other Identifier: None
Description: Upper Coil

Main Made of Equipment data Manufacturing Operation Documents History Map Display: Extended

Actions	Attach document	Equipment data	Manufacturing	Operation	Documents	History	Map	Display: Extended
1824700 v.1	Winding - HCLMBXF015-KJ000001							In Work
Doc. page	TopCoil.xlsx (63 Kb)							
1824701 v.1	Curing - HCLMBXF015-KJ000001							In Work
Doc. page	TopCoil.xlsx (764 Kb)							
1824703 v.1	Dimensional Measurement - HCLMBXF015-KJ000001							In Work
Doc. page	TopCoilSize.pdf (71 Kb) txt (3 Kb)							

Work is still in progress but 80% of information is already updated


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HO Correctors & D1 Magnets

- Are cable data stored or linked to the magnet page?

I wish but...

I cannot find any cable in MTF with the reference I've got from the shipping documents.

Organisation Européenne pour la Recherche Nucléaire European Organization for Nuclear Research		FACTURE PRO FORM	
		CH- 1211 - GENEVE 23 SUISSE Telephone : +41 22 767 37 01 ou : 767 40 02 Telefax : +41 22 767 85 40	
		Numéro de con (A rappeler dans l	
		Code budgétair	
Tech. contact : CANARD Tel: 76.79176		Destinataire / Consignee KEK, HIGH ENERGY 1-1 Oho-Machi Tsukuba-Shi	
Transporteur / Carrier :		JP- 305-0801 IB JAPON Prof. Tatsushi :	
CCM :		Phone: +81-29-	
Expédié par / Sent by :		LDV / Waybill :	
Détails de départ :			
Date de départ : 23/04/2014		Conditions de livraison / Delivery conditions : DAP IBARAKI-KEN	
Marques et numéros		Qté	Colisage / Packages
EM 5641494		1	PALETTE 120x80x78 cm
Quantité	Unité	Description	
232.00	MT	Supraconductor cable references: 02 G00346 B 232 metres on one turet	
678.00	MT	Supraconductor cable references: 02 G00346 . 4 lenghs 228m, 225m, 225m on one turet	

HO Correctors & D1 Magnets

- Do we have coil dimensional measurements?
 - Yes! They are stored in MTF attached to the manufacturing step

Equipment Identifier: HCMBXFC015-KJ000001
Other Identifier: None
Description: Upper Coil

Main Made of Equipment data Manufacturing Operation Documents History Map

Actions : Attach document Display: Extended

1824700 v.1	Winding - HCMBXFC015-KJ000001	In Work
Doc. page	TopCoil xlsx (63 Kb)	
1824701 v.1	Curing - HCMBXFC015-KJ000001	In Work
Doc. page	TopCoil xlsx (764 Kb)	
1824703 v.1	Dimensional Measurement - HCMBXFC015-KJ000001	In Work
Doc. page	TopCoilSize pdf (71 Kb) txt (3 Kb)	

HO Correctors & D1 Magnets

- Do we have the prestress measurements stored somewhere and or linked to the magnet page in MTF?
 - Yes, they are also stored in MTF attached to the manufacturing step, BUT:
The quality of the measurement relies on the equipment (strain gauges, position etc...)

This work is in progress...

HO Correctors & D1 Magnets

- Do we have quench performance stored somewhere and or linked to magnet page
 - They will be stored in MTF attached to the manufacturing step

HO Correctors & D1 Magnets

- Same for magnetic measurements
 - Same for magnetic measurements... not yet stored but it will be available soon 😊

HO Correctors & D1 Magnets

- When are we planning to have the first magnet/model/prototype with the standard MTF filled?
 - Uhmhhh... Let me see... **DONE!**
 - And... (also the electrical measurements, that are not in the list)

Conclusions

- Models and prototypes are a good training field to start the approach to traceability and in general Quality Management System
- For HO Correctors the data are available starting from the Octupole (i.e. only the first sextupole is missing)
- For the D1 the data are available from the 1st model magnet
- This exercise is also useful to the external Institute to learn CERN approach and in the future they will be able to transfer the knowledge to the manufacturers'

Thank you...



**"I am not disorganized — I know *exactly* where everything is!
The newer stuff is on top and the older stuff is on the bottom."**