

Main activities on NC magnets

Davide TOMMASINI (CERN)



LS2 DAYS

29-30 SEPTEMBER 2015

<http://indico.cern.ch/event/436424/>

BACKGROUND & MOTIVATION

- The PS Booster, PS and SPS Magnets for the next 25 years : EDMS 1057909 (2010)
- Upgrade on resistive magnets : IEFC 25-06-2010
- LS1 tests and inspections of the Booster and AD magnets: LSC15-03-2013 (Antony)
- SPS Magnet Test Campaign and Consequences for LS1: LSC 19-04-2013 (Jérémie)
- Outcome of the magnets tests from the PS, LEIR and transfer lines: LSC 31-05-2013 (Dominique)
- Consolidation programs for normal conducting magnets: IEFC 05-06-2013
- TE-MS-C-MNC: Highlights of 2013 activity. EDMS Nr: 1350969 January 2014
- Consolidation/spare programs for magnets: IEFC 18-06-2014
- List of magnets after the fixed targets requiring consolidation: IEFC 26-06-2015 (Antony)
- Consolidation/spare programs for magnets: IEFC 25-09-2015
- LIU TDR: (Antony, Dominique, Jeremie)
- PSB LIU: PSB Reference Magnet for 2.0 GeV upgrade PSB LIU 16th October 2014
- PSB Main Ring Bending and Quadrupole Magnets for 2.0 GeV operation: EDMS 1505902

Consolidation

Consolidation: under progress

SITE	DESCRIPTION	STATUS
L2-PSB	New BHZ20 (L2/L4 to DUMP/PSB)	<u>COMPLETED</u>
L2-PSB	Pulsed quadrupole magnets (LT/LTB/BI)	Under way @ Danfysik
L2-PSB	Pulsed corrector magnets (LT/LTB/BI)	Under way @ Scanditronix
AD	Spare coils for the main BHN magnets	<u>COMPLETED</u>
TT10	Spare coils for the QI lattice quadrupole	<u>COMPLETED</u>
PSB TL	New TBH (Switch ISOLDE/PS)	Design under approval
SPS	Spare coils for the SF sextupoles	To start
SPS	Spare coils for the SD sextupoles	To start
LEIR	Spare coils for the bending magnets	Under completion @ Sigmaphi
LEIR	Spare coils for the quadrupole magnets	Under completion @ Danfysik
ION LINES	Spare coils for different magnets (485 kCHF)	Under way, with delay

Consolidation: pipeline

1/2

SITE	DESCRIPTION	STATUS
PSB	Spare Multipole Correctors	Requested
PSB	Spare coils for special inj/ext dipoles	Requested
TT2	Renovation of 43 quadrupole magnets	Requested
PS	Procurement of 80 units of PFW	Requested
PS	Refurbishment of 44 main units with new PFW	Requested
SPS	Spare coils for MBB dipoles	Requested
SPS	Consolidation of HV test units	Requested
SPS	Spare bumper magnets	Requested
REX/ISOLDE	Spare bending magnet for REX	Requested
REX/ISOLDE	Spare coils for the 70° GPS separator	Requested
REX/ISOLDE	Spare coils for the 60° and 90° HRS separators	Requested
REX/ISOLDE	Spare quadrupoles for REX	Requested
AD-Target	Being treated separately (M.Calviani)	

Consolidation: pipeline

2/2

SITE	DESCRIPTION	STATUS
North Area	Replacement of magnet temperature interlock patch panels with identical solution (wires) or upgraded by PLC based solution (WIC)	To be discussed with TE-MPE and EN-EL, then presented in IEFC
North Area	Replacement of multiple manifolds in TCC2 and other cooling galleries	To be requested
North Area	Improvement of access control system (suppression of null-field probes)	To be requested

LIU

LIU: activities

1/2

SITE	DESCRIPTION	Status
PSB	New BI.BVT10 magnets	Under completion @ Elytt
	New BI corrector magnets	Under completion @ Scanditronix
	New BHZ MAIN INJ & EXT magnets	Yoke components order, coil specification underway
	New BHZ MAIN upgraded shimming and saturation reduction side plates	Prototype testing complete
	New BT.BHZ10 magnet	Design under approval
	New BTM.BHZ10 magnet	Design under approval
	New BT/BTP Quadrupoles	Design under approval
	New BT vertical bending magnets	Study underway

LIU: activities

2/2

SITE	DESCRIPTION	Status
PS	New corrector for IPM HZ detector 1 magnet	Design underway
	New corrector for IPM VT detector 1 magnet	Preliminary study underway
	New orbit correction quadrupoles 3 magnets	Preparation of the Call for tender
	New vertical correctors 12 magnets	Preliminary study finished
	New injection bumper 5 magnets	Preliminary study underway
	New injection normal quadrupoles 23 magnets	Preliminary study underway
	New injection skew quadrupoles 28 magnets	Preliminary study underway
TT2	Conversion of 2 HB2 to HB1 magnets for power converter upgrade	Certification underway
SPS	Coating of MBB (+ quads?)	Implementation to start

LS2

Machine activities during LS2 1/5

SITE	DESCRIPTION	Other Teams	Duration
Linac 2	Tests & Inspections (including commissioning of new equipment)	TE/EPC, BE/OP, TE/MPE	~2 d
	General Maintenance (unforeseen from now to LS2)		~1 w
	Install new LT.BHZ20 'L4 connection' (unless performed before)	TE/VSC, EN/HE, EN/EL, EN/MEF	~2 w
Linacs to PSB	Tests & Inspections (including commissioning of new equipment)	TE/EPC, BE/OP, TE/EPC, TE/MPE	~1 w
	General Maintenance (unforeseen from now to LS2)		~1 w
	Install new magnets for L4 connection (10 units) (unless performed before)	TE/VSC, EN/HE, EN/EL, EN/MEF	~4 w
	Install new magnets for consolidation (24 units)		~4 w
PSB	Tests & Inspections (including commissioning of new equipment)	TE/EPC, BE/OP, TE/MPE	~1 w
	General Maintenance (unforeseen from now to LS2)		~4 w
	Installation of the new BHZ main INJ and EXT magnets	TE/VSC, EN/HE, EN/EL, EN/MEF	~4 w
	Upgrade of coil shimming and installation of the new saturation reduction side plates	EN/HE	~12 w

Machine activities during LS2

2/5

SITE	DESCRIPTION	Other Teams	Duration
BT from PSB	Tests & Inspections (including commissioning of new equipment)	TE/EPC, BE/OP, TE/MPE	~1 w
	General Maintenance (unforeseen from now to LS2)		~1 w
	Install new magnets for 2.0 GeV operations (14 units), including the dismantling of the BTM.BHZ10 magnet into manageable pieces.	TE/VSC, EN/HE, EN/EL, EN/MEF	~8 w
ISOLDE	Tests & Inspections (including commissioning)	TE/EPC, BE/OP, TE/MPE	~1 w
	General Maintenance (unforeseen from now to LS2)		~1 w
PS	Preliminary Tests & Inspections	TE/EPC, BE/OP, TE/MPE	~1 w
	General Maintenance (unforeseen from now to LS2)		~1 w
	Removal and re-installation of 44 main magnets	TE/VSC, EN/HE, EN/EL, EN/MEF	~1 y
	Installation of 55 new magnets including the removal of obsolete magnets	TE/VSC, EN/HE, EN/EL, EN/MEF	~12 w
	Commissioning of all PS magnets	TE/EPC, BE/OP, TE/MPE	~8 w
East Area	Tests & Inspections	TE/EPC, BE/OP, TE/MPE	~1 w
	General maintenance with usual unforeseen magnet replacement from now til LS2		~4 w
TT2	Tests & Inspections	TE/EPC, BE/OP, TE/MPE	~1 w
	General Maintenance (unforeseen from now to LS2)		~1 w
	Commissioning of 43 renovated magnets	TE/EPC, BE/OP, TE/MPE	~2 w

Machine activities during LS2

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SITE	DESCRIPTION	Other Teams	Duration
Linac 3, Ion Beam Lines	Tests & Inspections	TE/EPC, BE/OP, TE/MPE	~1 w
	Replacement of LBS.DVT10 magnet		~1 w
	General Maintenance (unforeseen from now to LS2)		~1 w
LEIR	Tests & Inspections	TE/EPC, BE/OP, TE/MPE	~1 w
	General Maintenance (unforeseen from now to LS2)		~1 w
AD	Tests & Inspections (including commissioning of new equipment)	TE/EPC, BE/OP, TE/MPE	~2 w
	General Maintenance (unforeseen from now to LS2)		~4 w
	Continued refurbishment of the main BHN/BHW magnets	TE/VSC, EN/HE, EN/EL, EN/MEF	~ 18 m (maximum duration depending on advancement during YETS)

Machine activities during LS2

4/5

SITE	DESCRIPTION	Other Teams	Duration
TT10-20-40-41-60-66, incl. HiRadMat and AWAKE	Tests & Inspections, incl. heat runs (similar to LS1 program)	All services available, machine closed, BE-OP	~2 w (in parallel with SPS ring)
	General maintenance (based on inspection results)		~4 w
SPS ring	Tests & Inspections, incl. heat runs (similar to LS1 program)	All services available, machine closed, BE-OP	~3 w (in parallel with SPS transfer lines)
	General maintenance (based on inspection results)		~4 w
	Corrective/preventive replacement of main magnets (typically 15 to 20 units)	EN/HE, TE/VSC, EN-MEF	~3 w
	Refurbishment of all main magnet busbar connection brazing's in all water-cooled-cables-to-busbars connection panels	EN-CV, EN-EL	~2 w
	LIU: Removal / reinstallation approx. 250 magnets installed on 216 SSS for ex-situ aC coating of their vacuum chambers (Pending coating strategy validation during Run 2)	EN/HE, TE/VSC, EN-MEF	To be defined after validation
	LIU: Removal / reinstallation 18 QD magnets for ex-situ aC coating of their vacuum chambers (Pending coating strategy validation during Run 2)	EN/HE, TE/VSC, EN-MEF	To be defined after validation

Machine activities during LS2 5/5

SITE	DESCRIPTION	Other Teams	Duration
North Area	Tests & Inspections, incl. heat runs (similar to LS1 program)	All services available, BE-OP	~2 w (at the end of LS2 for TCC2 area)
	General maintenance (based on inspection results)		~3 w
	TCC2 and other cooling galleries: replacement of multiple cooling supply distribution manifolds	DGS-RP, EN-CV, EN-STI	~6 w
	Replacement of magnet temperature interlock patch panels with identical solution (wires) or upgraded by PLC based solution (WIC)	TE-MPE, EN-EL, TE-EPC	To be checked if approved consolidation budget / resources
	Upgrade of null-field probes safety system to standard EIS system	DGS-RP, GS-ASE, TE-EPC, EN-EL	To be checked if approved consolidation budget / resources
TI2-TI8	Tests & Inspections, incl. heat runs (similar to LS1 program)	All services available, machine closed, BE-OP	~1 w (in parallel with SPS inspections)
	General maintenance (based on inspection results)		~2 w
LHC	Tests & Inspections, incl. heat runs	All services available, BE-OP	~2 w
	General maintenance (based on inspection results)		~1 w
	Insertion of tungsten shielding blocks in MQW apertures (LSS3 and LSS7)	DGS-RP, TE-VSC	~10 w
	Removal of two MQW and replacement by absorbers due to new radiation requirement	DGS-RP, EN-HE, TE-VSC, EN-MEF	To be defined with other teams



LS2 DAYS

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