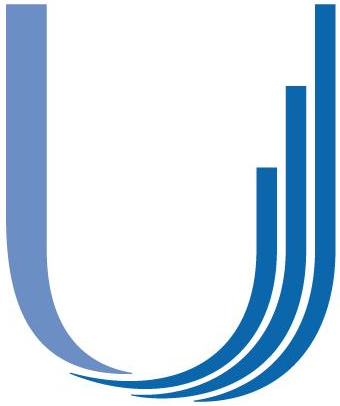

LHC Injectors Upgrade

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PSB and PS
DC/Intermediate Current Transformers

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CERN

PSB Ring DCCT specifications

Devices: 4 monitors, BRi.TDC.9L1

Derived parameter: total beam intensity evolution in the ring over the cycle

- Intensity range: 5E9 to 2.5E13 charges
- Acquisition sampling: 1 ms
- Accuracy: 1% of measured value + offset/noise
- Resolution: 5E8 charges

PSB DCCT status and plans

- LS1:
  - New electronics derived from LHC DCCT (front and back end) ready to be installed by Jan.2014 in replacement of the original electronics installed in 1993
  - New 16 bit ADC (replace 12 bit) to be installed by Jan. 2014
- After LS1:
  - Increase of the full range for the L4 beam
  - Modification of the ß normalisation (2 GeV + new “B train”

PSB Ring intermediate Transformer specifications

Devices: 4 monitors, BRi.TMD.8L1

Common housing with TFA and TSW

Derived parameter: injection efficiency and SW watchdog

- Analog turn by turn acquisition up to 100 turns
- Intensity range
  - Min : 5 E9 charges
  - Max : 2.5 E13 charges
- Resolution: Detect 1% loss from turn to turn
- Noise~ 10^9
- Accuracy : 2%
- Watchdog: comparison with BIi.BCT20 after 100 turns

PSB Ring Intermediate Transformer status and plans

- Status:
  - Devices present in the PSB since 1971, windings, electronics and cables are to be modified/replaced
  - 1 partial spare available for a test bench
  - 4 replacement chambers fabricated (without ceramic gap), requested by TE/VSC

- Plans after LS1:
  - Fabrication of spare vacuum chambers (with ceramic gap) since there is currently no spare!
  - Pulling of new cables (20 coax + 4 multi-conductors; DIC already sent on May 2012)
  - New windings. 3 months required for dismantling, refurbishment in the BI radioactive workshop and reinstallation
  - New front and back end electronics to be built
  - New acquisition chain (TRIC card) to be installed

PS Ring DCCT specifications

Device: 1 monitor, PS.TR34

Derived parameter: total beam intensity evolution in the ring over the cycle

- Intensity range: 2E9 to 4E13 charges
- Acquisition sampling: 1ms
- Accuracy: 1% of measured value + offset/noise
- Resolution: 5E8 charges

confirmation needed

PS Ring DCCT status and plans

- LS1:
  - New electronics derived from LHC DCCT (front and back end) ready to be installed in replacement of the original electronics installed in 1992
  - 16 bit ADC (replace 12 bit) to be installed by Jan.2014
  - New Base Line Restoration based on VME modules (higher sampling rate, more base lines memorized, selection by SW)
  - For info: monitor temporary dismantling to permit the renovation of bending magnet #34 (Oct.-Nov.2013)
- After LS1:
  - Increase of the full range for the L4 beam
  - Modification of the ß normalisation for the new system of B value distribution (White Rabbit). Waiting for specifications

Budgetary Requirements

PS DCCT is Funded (CONS 64275)

PSB DCCT/intermediate CT are funded (LIU 64021)

Spending Profile [kCHF]:

	2012	2013	2014	2015	2016	2017	2018	2019	total
PSB DCCT	7	11	10	10	10	10	0	0	58
PSB inter. CT	7	10	30	40	50	54	40	20	251

Conclusions

A new electronics, derived from the LHC DCCT, will be installed before end of LS1. Acquisition improved.

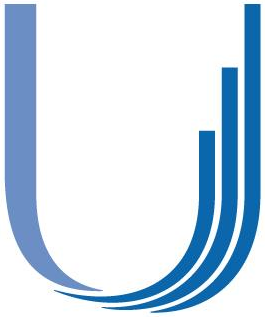
We need confirmation of the maximum intensity value in the PS.

The PSB intermediate Current Transformer project is postponed due to cabling issue.

The upgrade of PSB and PS DC/intermediate Current Transformers is funded.

The planning and therefore the spending profile are floating waiting for LS 1.5/2 decision.

We are still waiting for the specification of the new system to replace the B train distribution.



LHC Injectors Upgrade

THANK YOU FOR YOUR ATTENTION!