



System overview and baseline design of the HL-LHC Cold Powering System

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International Review of the Conceptual
Design of the Cold Powering System for
the HL-LHC Superconducting Magnets

Outline (1/2)

- The Cold Powering Systems for HL-LHC
 - Scope
 - Systems and components overview (including Matching Sections – not part of the review). Strategy for spares
 - WBS (and who das what)
- Functionalities
 - Powering needs for Triplets and D1 (number of components, current ratings, requirements from powering layout, recent changes to meet implementation of powering requirements after circuits review)
 - Geometrical layout
 - Baseline cryogenic scheme
 - Rationale behind two variants of SC Link cryostats
 - Cable layout and cables (and changes after circuits review)
 - Current leads (design based on LHC, ITER and SM-18 design)
 - Definition of DFX and DFH
- Development status
 - Past work including 20 kA demonstrator, effort on MgB₂ wire and cables, available results from splices activity, start of industrialization

Outline (2/2)

- Plan and schedule to meet HL-LHC installation plan
 - Plan for validation of critical components (splices, protection)
- Strategy for procurement of series components
 - Industrial contracts, collaborations (on-going/discussed)
- Recent request of local powering of correctors (and impact on present design). Proposal based on LHC design
- Feedback from Cost&Schedule reviews
- Conclusions

Conclusions

- A baseline exists –and design modifications have been implemented in order to take into account recent changes in powering and recommendations from circuits review
- Variants under study (cryogenic cooling, local powering of correctors of Triplets) and open points (powering of Matching Sections) today not blocking development/design progress
- Final validation of full system by end 2018 (5 years before integration in LHC)
- Mention of on-going parallel work with BESTPaths activity