LHC BWS Mechanics

BWS project team meeting

2/5/2023

Some ‘definitions’

- Hybrid design
  - 2 instruments currently installed in the LHC
  - Compatible with the LIU control system
  - Using the existing support and infrastructure
  - 0/90 measurement configuration
  - Ball screw drive and encoder
  - All vacuum components (bellows, fork assemblies, feedthroughs) unchanged

- Hybrid+ design
  - Nothing currently installed in the LHC
  - Compatible with the LIU control system
  - Using the existing support and infrastructure
  - 0/90 measurement configuration
  - Ball screw drive and encoder
  - Re-design fork assemblies and feedthrough
  - Magnetically coupled drive depends on ongoing development

- Full Consolidated design
  - Nothing currently installed in the LHC
  - Compatible with the LIU control system
  - New support design
  - 45 degree measurement configuration?
  - Drive and fork position system to be decided
  - Fork assembly and feedthrough to be decided
  - Drive coupling (bellows/magnetic?) and (linear?) motor to be decided

Current list of ‘urgent’ questions

- Do we agree on the hybrid strategy that:
  - We aim to consider the 2 ‘Hybrid’ instruments as available for operations by end 2023
  - We aim to build and install 2 additional ‘Hybrid+’ designs, replacing 2 ‘legacy’ designs for YETS 23-4
- As a strategy for the Fully consolidated design…
  - We design and build a linear motor test bench
    - Procure one or more linear drives to test technology
  - We design and build a 45° tank
    - Do we install it in the SPS, LHC in YETS23-4 or just on a test bench?
  - Position sensor R&D
    - Depends on magnetically or bellows coupled