

FROM RESEARCH TO INDUSTRY

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CEA UPDATE

TECHNICAL PROGRESS

9 JANUARY 2020

650 MHz All-Partners Meeting

■ HB650 Design

PIP-II 650 MHz High Beta Cryomodule Preliminary Design Review

held at Fermilab the 11 & 12th December 2019

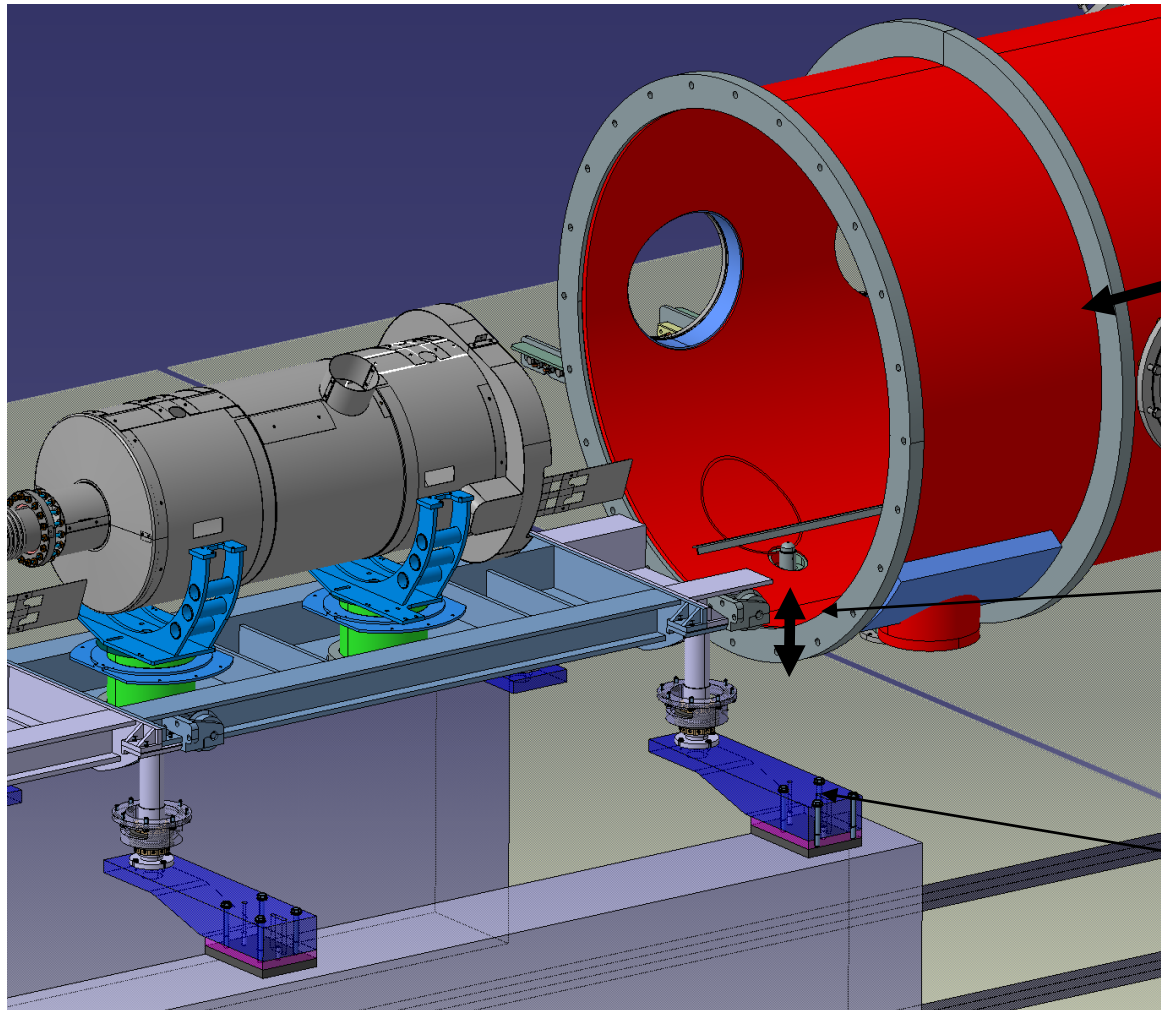
- Design of a strong-back system and strong-back assembly process for HB650 CMs presented by M. Lacroix
- Strategy for roll-over assembly of VV (wheels/rails)
 - Better understanding on string displacements tolerance during assembly and the impact on strong-back rigidity
 - Specifications of wheels. vs. rails machining accuracy (R1)
- Common responses to Review recommendations R2 (cool-down stresses) and R6 (vibration modal study).

■ LB650 Design

PIP-II 650 MHz $\beta=0.61$ Jacketed Cavity Prototype Final Design Review

held at Fermilab the 7-8th November 2019

- Cavity-CM interfaces to be finalized and approved (R2).
- Helium tank compliance with CEA to be checked (R7).



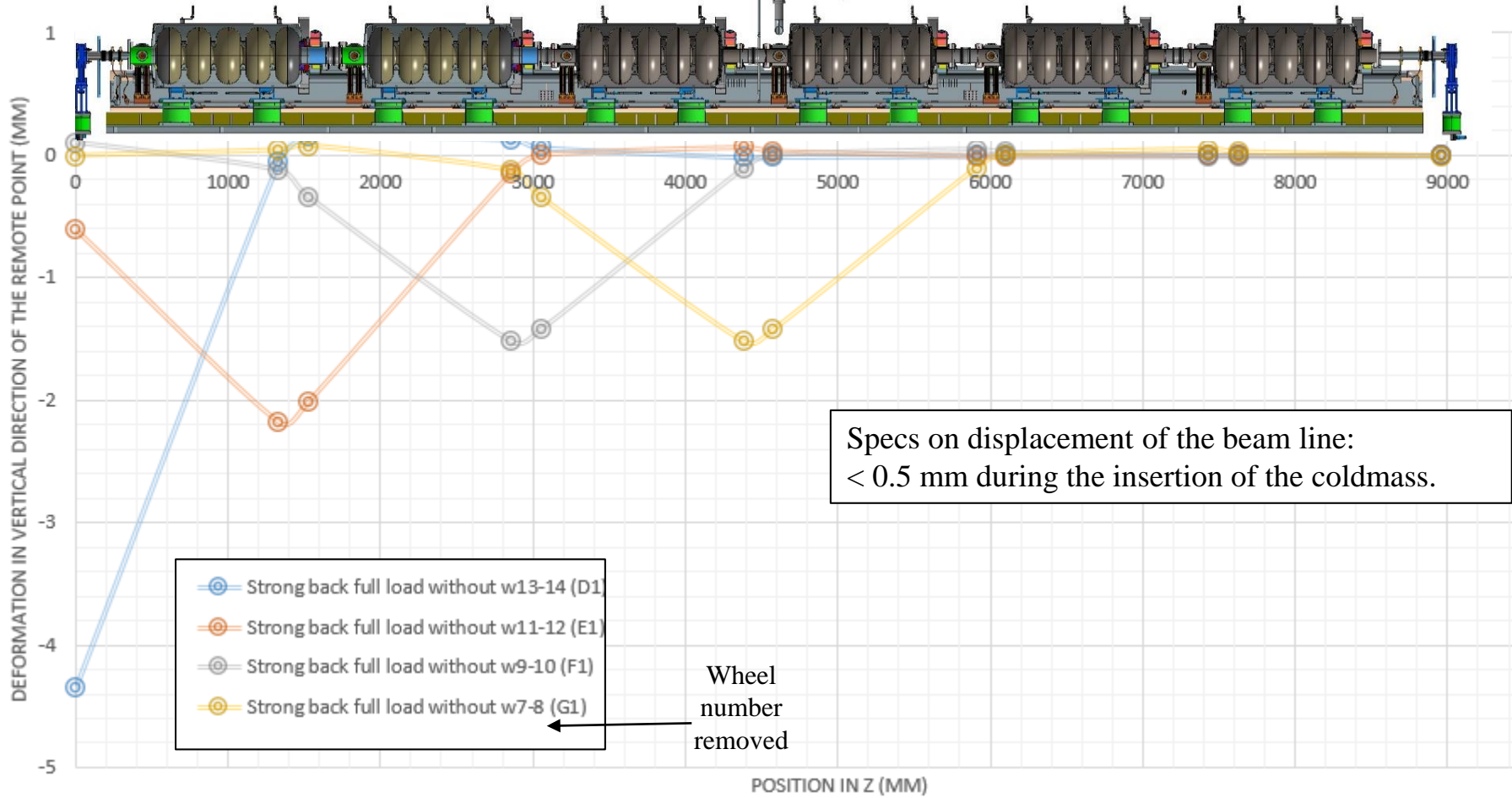
Wheels are adjusted to touch the rails

Blue parts & pillars are removed

STRONGBACK ANALYSIS: WHEELS OR PILLARS CONTACT LOSS

worst case: on its wheels

Displacement of the cavities

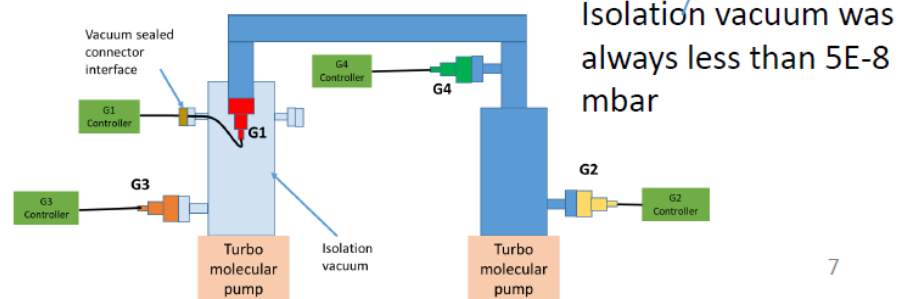
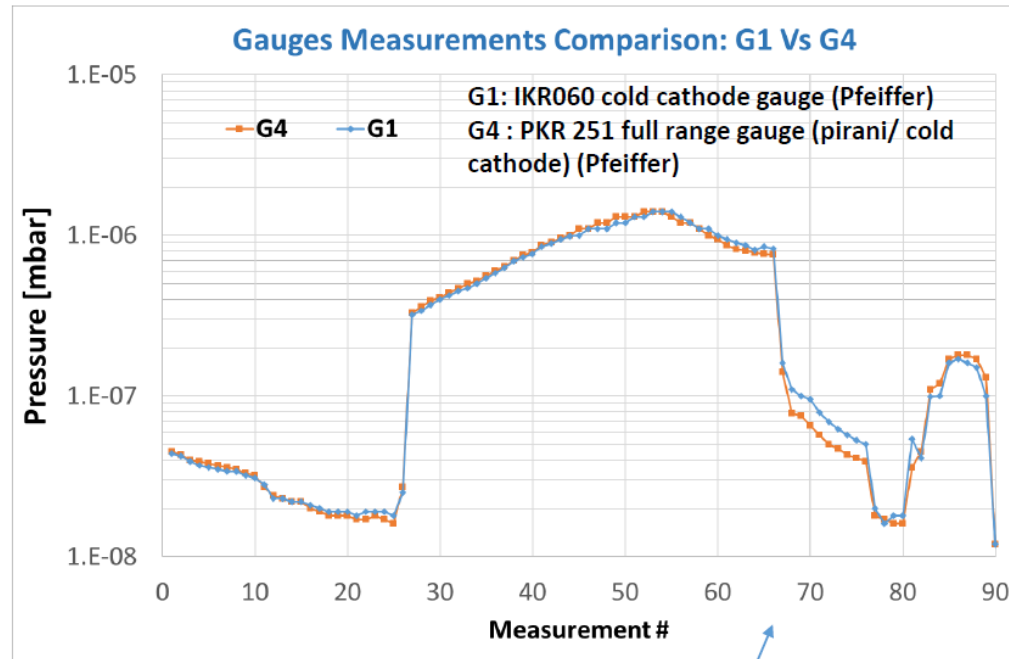


All the supports are needed at any time to fulfill the requirements

Summary of the IKR060 gauge measurement results

- The data presented below corresponds to measurements performed during 7 days (Dec 10th to 16th, 2019).
- The minimum measured pressure we can obtain with the current pumping arrangement is around 10⁻⁸ mbar.
- The vacuum was intentionally degraded in order to follow the behavior of the two gauges G1 and G2 for 2 orders of magnitude pressure range.
- The experimental conditions can not give a proof of accuracy of these measurements. However, it can show that the behavior of the G1, with body under vacuum, is identical to the G4 which body is in the air.
- The guaranteed general accuracy of the used gauges is about +/-30%. The measurements values are also influenced with other factors like the positions of the gauges.
- A better gauge configuration setup will be proposed

hassen.jenhani@cea.fr



- Further verification plan
 - Measure temperature rise from gauge at higher pressures
 - Switch-off gauge to avoid arcing at intermediate pressures (Paschen's law).
 - Evaluate impact of gauge magnetic field.

- Host the HB650 Prototype Coupler FDR on 10-11 February, at Saclay.
 - Please communicate to me the participation list.