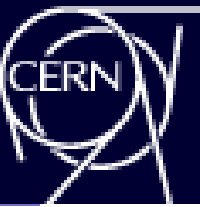




AD-ELENA



ADUC 7th February 2023

AD facility

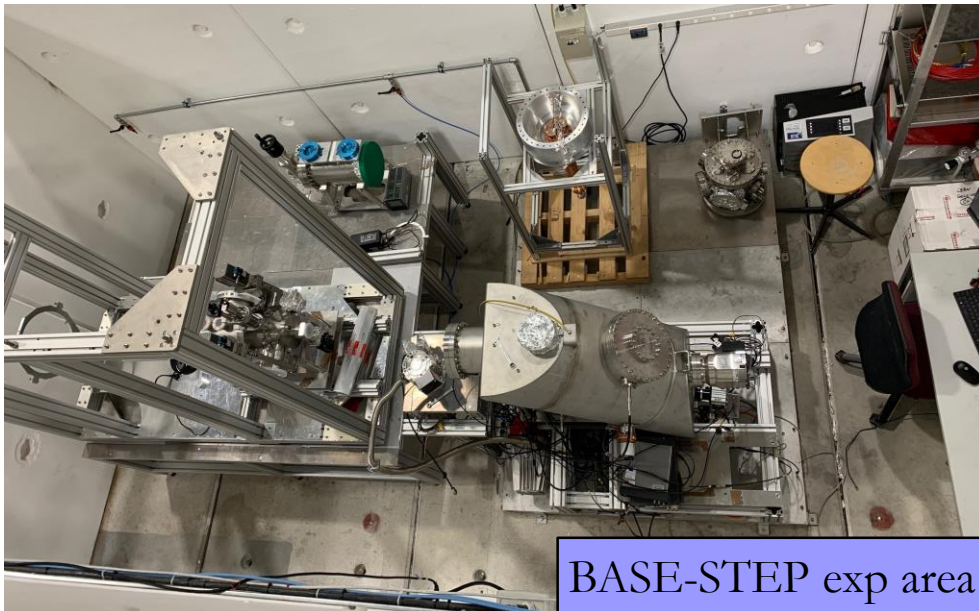
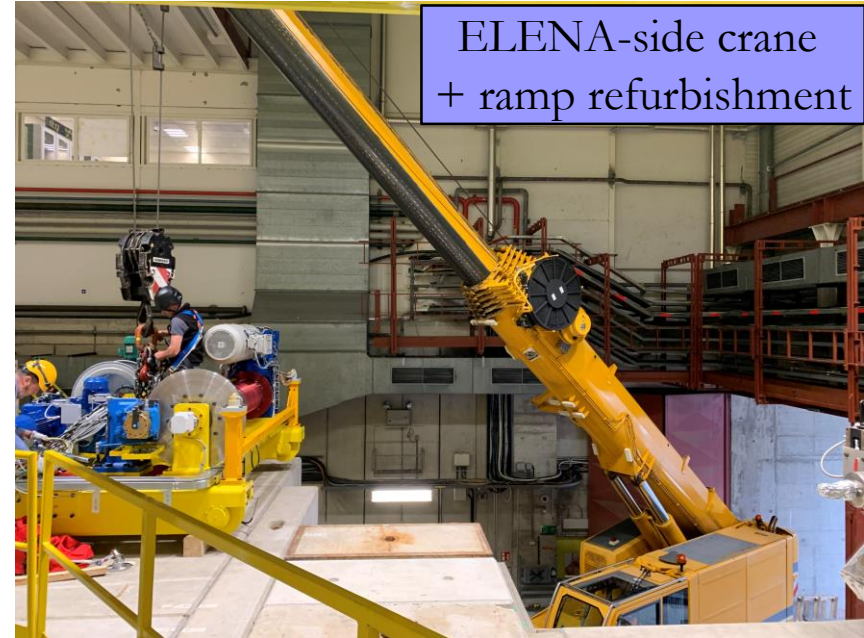
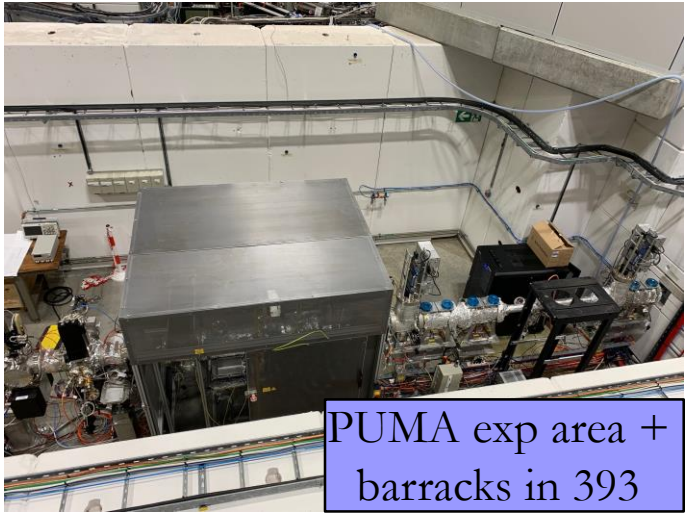
Developments - Consolidation

François BUTIN – BE-EA



ANTIMATTER
FACTORY





-AD machine:

-2 magnets extracted for refurbishment (BHW48 and QFN16): due back W7

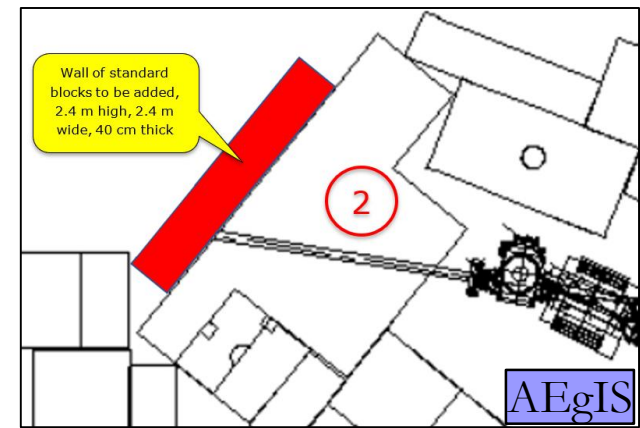
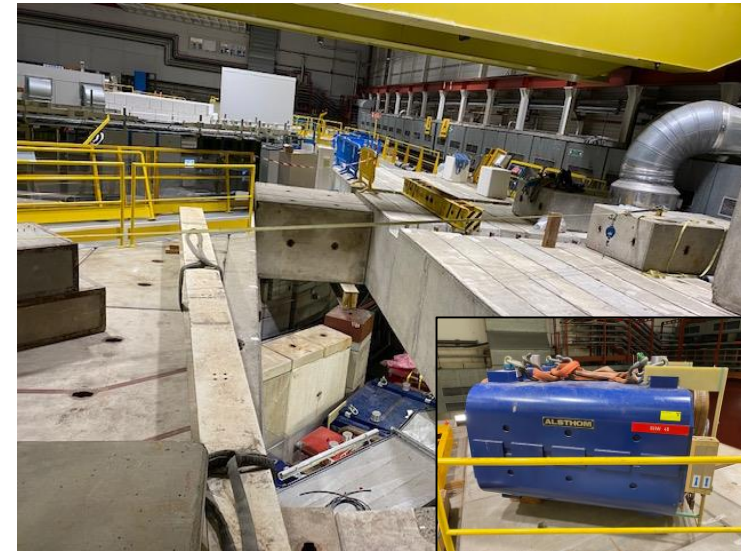
-e-cooler maintenance, replacement of water cooling pipes

-BCCCA repair

-C10 cavities cryo pumping replacement by NEG pumps

-Improvement of AEGIS shielding

-Installation of slits + collimator in target area to reduce radiation at injection (in approval)

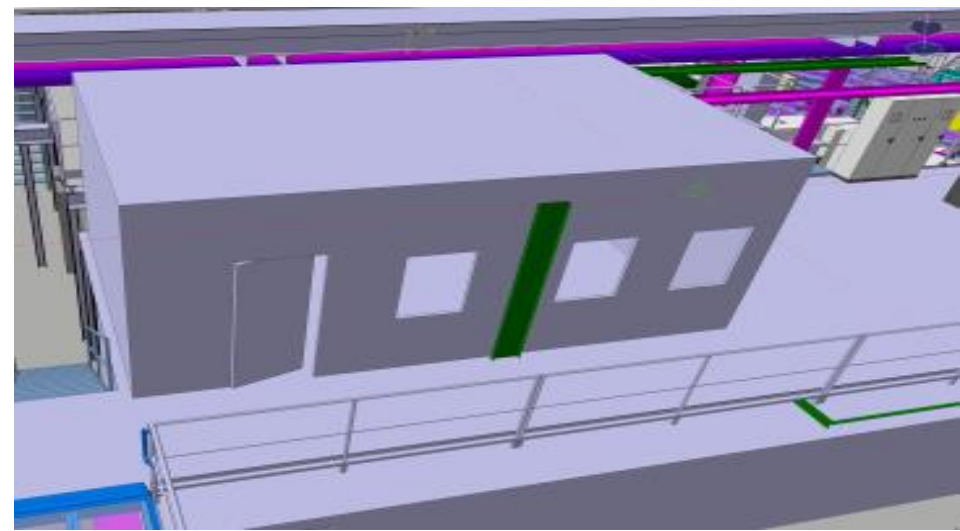


-ELENA ion source:

- Maintenance + replacement of vacuum pumps

-Infrastructure

- ASACUSA barrack replacement (in progress)
- Electrical switchboards maintenance (complete)
- Decabling campaign (in progress)



New ASACUSA barrack



YETS + run services disruptions



YETS is a maintenance period, disruptions to services are unavoidable !

-Cooling water stopped every Xmas break + 1 week end of winter for maintenance (20-24 Feb this year)

-Cryogen fluids distribution stopped during Xmas break + 1 week end of winter or early spring: date still to be confirmed by TE-CRG

-Power distribution stopped for annual mandatory AUG and secured networks tests. This year also refurbishment of ERD5 and ERD6 switchboards caused additional disruptions. Announced early

-Access on the shielding perturbed by magnet extraction / installation

Coming up:

-Major refurbishment of experiments side 50t crane (18th Dec 2023 – 23rd Feb 2024) – lHe delivery for BASE will be arranged

-ALPHA barrack replacement (during next YETS, exact dates TBC)

LHe situation:

- Cryoplant can only deliver 20 dewars a week
- Management gave strict rules in terms of quantities and conditions of deliveries to AD experiments

GHe situation:

- Last year global situation drastically limited the amount of available GHe available CERN-wide
- This year availability will approximately be half of «normal» year
- New supply source could be accomodated using gHe recovered from Cryo group
- Billing system could be put in place in case of excessive consumption



AD-CONS project status



-Magnets refurbishment:

- status: Will continue till LS3 included
- Planning: 1-2 magnets extracted for refurbishment every YETS
- Financing: secured

-RF systems:

- Status: C10 cryo pumps vacuum system replaced by NEG pumps
- Next: LLRF + HLRF systems to be upgraded
- Financing is secured

-AD e-cooler:

- Status: project was completely re-organized in 2022, magnetic and vacuum systems designs are complete. Gun and collector designs being improved
- Next: enter call for tender phase for main / long lead items, installation planned LS3
- Financing is secured, but cost increases have to be considered

-Stochastic cooling:

- Status: New kickers have to be engineered and produced – no design available yet
- Financing: New estimate is needed, not secured yet

-Cooling and ventilation:

- Status: Planned for LS3, not much activity yet.
- Next: Studies expected to start in 2024, and works to take place during LS3
- Financing: Ventilation secured, cooling remains to be secured

-Power convertors:

- Status: ongoing. Injection line optimization proposed (new simpler magnets and power supplies), tender expected to proceed soon
- Next: bulk of spending/installation work in 2023-2024 and after LS3 (mains)
- Financing: only partially secured yet



AD-CONS WP's (continued)



-AD cranes refurbishment:

- Status: experiment side planned for YETS 2023-2034
- Financing: secured

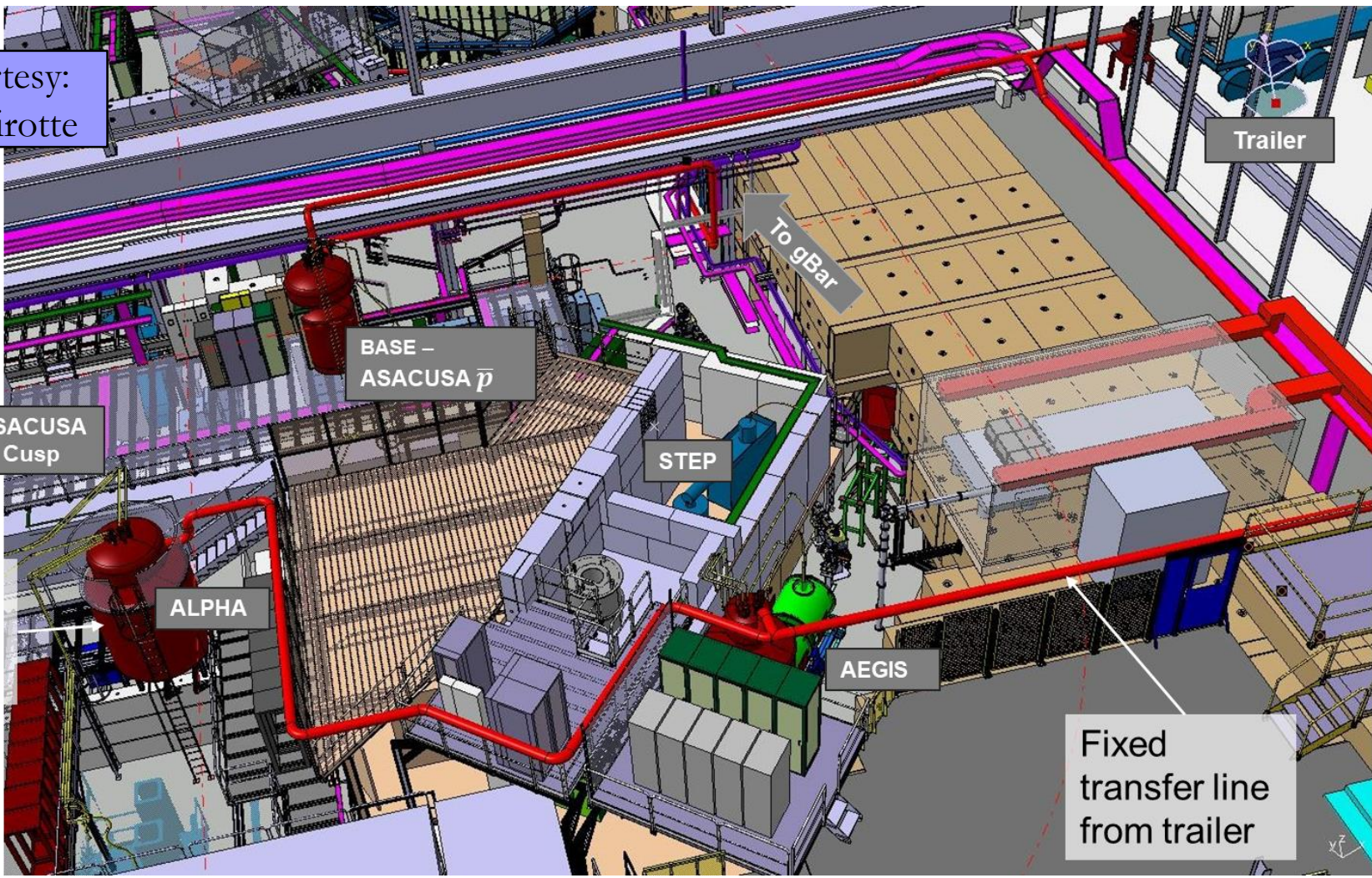
-Magnetic Horn:

- Status: complete
- Next: power cables and transmission line were mentioned as additional work for 2028-2030
- Financing: to be secured in due time

-Cryo fixed distribution system:

- Status: design showed that LHe consumption would be increased to unacceptable level. Project is stalled, looking for alternatives
- Next: study “light” version, in parallel to a “full Monty” one, with new liquefactor to be installed on AD site
- Financing: secured for “light” version. Liquefactor solution to be studied and costed

Courtesy:
O. Pirotte



With such a distribution scheme, 45 % of the transferred liquid would be evaporated into gas
--> not affordable for the LHe central liquefier

- CERN management requested the organization of a **WS** to review the detailed status and prospects for AD/ELENA systems, including main AD-CONS project WP's.
- Priorities should be established **in the light of the anticipated physics program of AD experiments beyond LS3**, and the corresponding anticipated needs of AD/ELENA machines operation.
- Date proposed for **16th March**, with following agenda:
 - **Introduction: M. Lamont** (as ATS director)
 - **Physics program prospects beyond LS3:** ADUC chairman, reporting for all existing AD experiments collaborations
 - **Operation views on consolidation and upgrade needs, a new test line for CERN and experiments**
 - **Follow-up on JAPW, beam line optics from target to ejection, potential gains**
 - **Operation/YETS planning till LS3, Infrastructure, decabling campaign, IHe and gHe distribution limitations**
 - **AD/ELENA systems status, improvement needs, consolidation WPs status (including finance situation and timeline)**
 - **Overview of AD-CONS finances, details of approved and non-approved**



THANK YOU