SPS summary - week 24

H. Bartosik for the SPS team
Main achievements

- First acceleration of 72 bunches of the LHC beam to flat top
  - Gradually increased intensity from $4 \times 10^{10}$ p/b to monitor MKDV pressure
  - Reached up to $8.5 \times 10^{10}$ p/b when starting to see MKDV vacuum activity
  - Without 800 MHz, beam becomes unstable longitudinally for $> 5 \times 10^{10}$ p/b
Main achievements

- First acceleration of 72 bunches of the LHC beam to flat top
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  - Without 800 MHz, beam becomes unstable longitudinally for > 5e10 p/b
  - Vertical instabilities in the ramp for low intensity due to e-cloud (central stripe)
Other activities

- **Scrubbing on flat bottom during nights with 4 batches of 72 bunches with 1.45e11 p/b**
  - conditioning and reduction of pressure rise is clearly visible
  - MKP delays adjusted to reach 250 ns batch spacing

- **Correct MKP voltage balancing put in place for all cycles with injection at 26 GeV**

- **2 batches of the MTE beam could be successfully injected on the SFTPRO cycle**
  - RF capture of the 2nd batch worked nicely, and the abort gap was verified
  - RF gymnastics before the slow extraction was implemented with the latest LLRF firmware version
  - SPS ready to send beam down towards the targets as soon as the beam permit is active

- **EPC colleagues worked on the Quadrupole mains (mornings 8:30-10:00)**
  - Resolved the 150 Hz ripple on the QD by adding capacitors to ground
  - Issue with glitches on the ramp understood and solved (voltage probe at converter output)

- **RF commissioning**
  - Started hardware commissioning of the Fixed Frequency Acceleration
  - Commissioning of the 800 MHz system continued

- **A vacuum leak was found in sector 6 (at the chamber replacing the test-ZS) and fixed**
Outstanding issues

- **MKDV pressure rise**
  - Limits intensity of LHC beam on the ramp and prohibits simultaneous operation of SFTPRO beam – careful ramp-up with ABT experts ongoing

- **Several trips of the new LLRF (crashes of FEC for cavity controller, loss of frequency distribution, issue with phase loop pick-up analog front end)**
  - Crashes of the FEC for the cavity controller, sometimes related to cooling issue - additional cooling was installing in this crate

- **Loss of patrol in BA1**
  - ZORA communication problem: piquet had to manually reboot a card of the access system – the same issue had occurred end of last week in ECA5

- **BI made progress on the issue on spurious TT10 BLMs interlock triggers**
  - OK for most of TT10 BLMs, still 2 BLMs give unphysical readings due to interference with kickers