

Recap: SPS injection interlocking

- The SBDS relocation from LSS1 to LSS5 in LS2 will require a reconfiguration of the existing BIS in SPS-ring and **revise the injection inhibit mechanism** (currently done by a private link between SBDS and the MKP)
- Few discussions on this topic:
 - [Progress review of the SPS beam dump upgrade project](#) (B. Puccio, 17/11/2016)
 - Two informal meetings between TE-MPE, TE-ABT and BE-OP (1/09/2016 and 1/11/2016)

Present situation

- **Private link from the SBDS in LSS1 to the MKP to inhibit injection**
- **In case of a beam inhibit on the BIS loop (taken from the SBDS) OR a fault on the MKP => time shift of the MKP pre-pulse**, so the kicker will pulse when there is no beam. At same time a signal is sent to MDSH power converter to send beam on the SPS injection dump

After LS2

- The proposal is to **replace the existing injection inhibit link (ABT) by a dedicated SPS Injection BIS**
- Possible Injection **BIS user clients** identified:
 - SPS ring BIS
 - SPS injection kicker (MKP)
 - PS / TT10 extraction
- Injection **BIS to be connected to:** MKP, MDSH, PS D3 switching magnet, timing ..?
- Open questions:
 - Study **delay between detection of internal SBDS fault and injection inhibit** and determine if can lead to dangerous situation due to increased time response
 - **Action on the MKP need to be reconsidered.** Delay the pre-pulse or avoid pulsing all together by pulling the dump switch of the MKP
 - **Power converter of MDSH** magnet driven by MKP or SBDS or ...? Define future strategy

Aim of our meetings / working group

- **Functional and Technical Spec** of the future SPS injection BIS to be installed in LS2 by 2017
 - We assume that we will NOT have a PS extraction BIS nor PS ring BIS before LS3
 - Refer to questions on the previous slide
- Other possible related topics
 - **Can the SPS injection dump take the LIU beam repetitively?** Any constraints, does it have an impact on the interlocking?
 - **How to stop the beam from the PS?** S2Pi card (EDMS #1703058)
 - **Timing interlocks implemented inside the SBDS** (Economy cycle, Missing 1kHz, CBCM watchdog) - Meeting 16/09/2016. Not related to SPS injection BIS, but same people. Do we want to deal with it?
 - **How to arm the SBDS** and close the SPS BIS loop