SPS Injection BIS and MSDH interlocking

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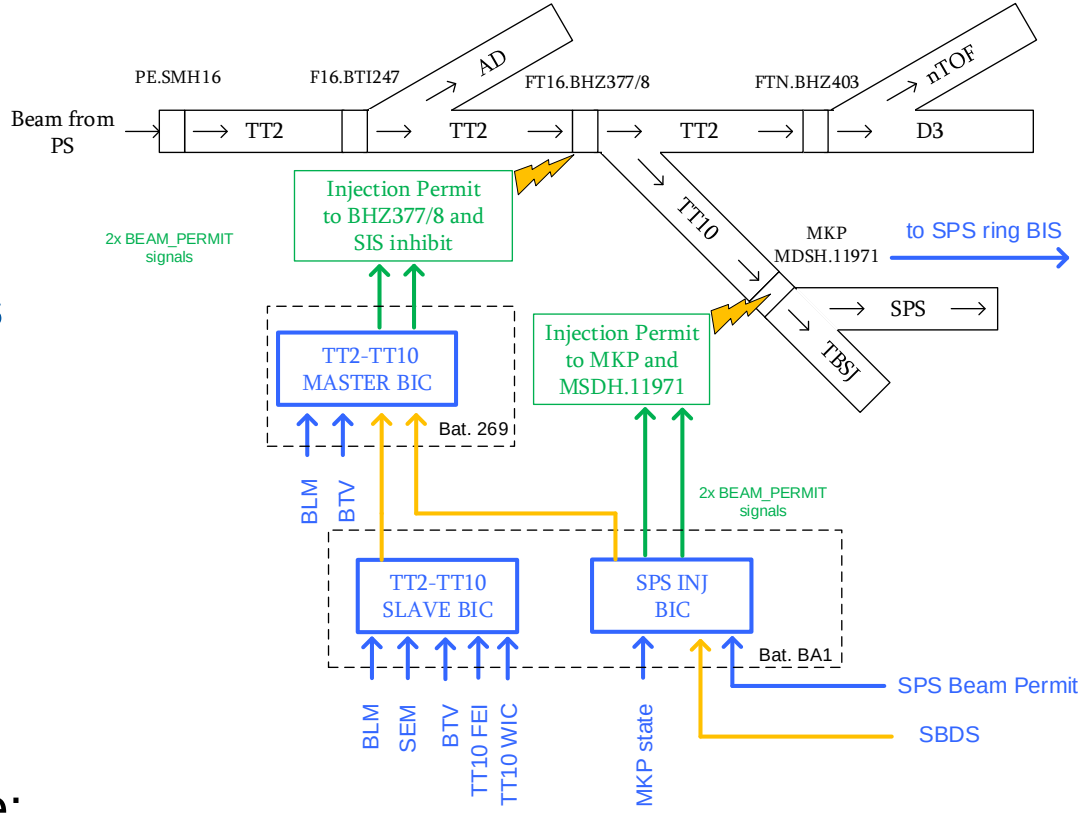
New SPS injection BIS

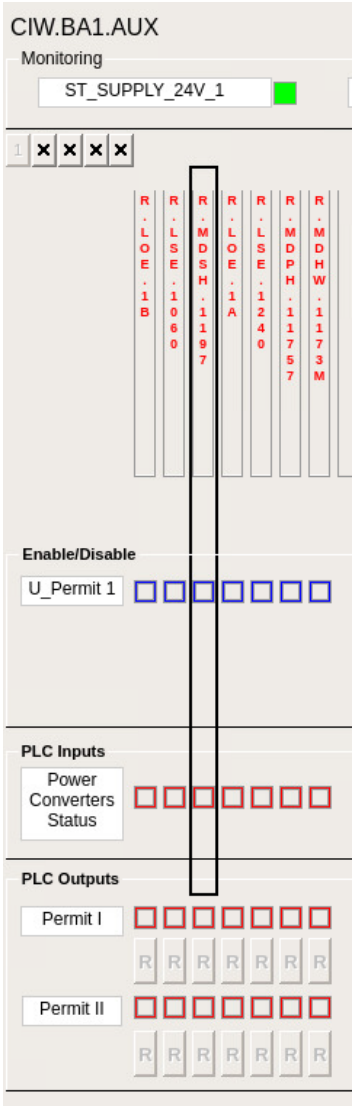
- The new Beam Interlock System **replaces the local link in BA1** between the SBDS and the MKP
- It inhibits SPS injection depending of the **status of the MKP, SBDS, Ring BIS and TT10 interlocks**
- Actuators: **MKP, MDSH.11971 and BHZ.377/8 PCs**
- Details of the implementation can be found here: EDMS 1934839



MDSH powering interlocks – Pre-LS2

- MDSH powering was **interlocked through the Ring-WIC in BA1**

  - The WIC will **switch off the power converter** in case of magnet overheating
  - The WIC can request **beam dump/inhibit** if the power converter is off –> functionality was not required without injection BIC

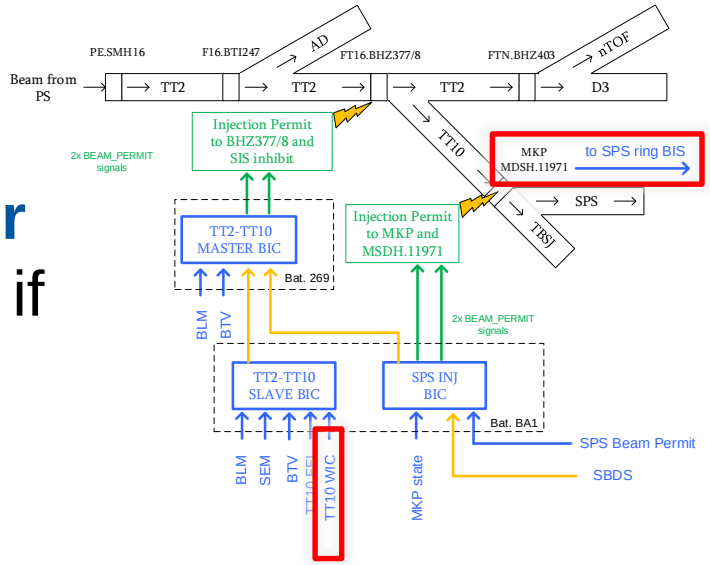


Power converter widget in WIC-BA1

MDSH powering interlocks – Post-LS2

- Following the deployment of the new SPS Injection BIC and WIC in TT10, the full WIC functionality can be used, therefore we propose:
  - **to move the MDSH powering interlocks from the Ring-WIC to the TT10-WIC** (both in BA1) in order to **inhibit TT2 extraction when the MDSH is OFF or in FAULT**

- In addition, **the MDSH power converter will monitor the current and interlock the** SPS circulating beam if $I_{MDSH} > 0$ A.



Modification proposed

- Connect the magnet and PC interlock cables of circuit MDSH.11971 to WIC TT10 - **ACTION (TE-MPE)**
- Re-generate the configuration files to apply the changes for both WIC BA1 and WIC TT10 - **ACTION (TE-MPE)**
- Upload and test the new configuration files for the PLC and WinCC_OA supervision – **ACTION (BE-ICS, TE-MPE)**
- Update Engineering Specifications for SPS and TT10 WICs – **ACTION (TE-MPE)**