



# Status of MPE-MI Systems in the LHC

244<sup>th</sup> Machine Protection Panel Meeting

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*on behalf of TE-MPE-MI*

8<sup>th</sup> March 2024

- **All 8 WIC systems operational**
  - **No changes done on the WIC side**
  - **Both Beam Beam Compensation wires in P1 and P5 are operational**
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- First WIC tests using py-wic-commissioning App started. Still under development.

The screenshot shows the 'py-wic-commissioning' application window. At the top, there is a 'Home' tab and a 'WIC selected configuration' dropdown menu. Below this, there are two dropdown menus: 'LHC' and 'CIW.UJ33.LR3', followed by a 'Load' button. To the right of these are a power button and a refresh button.

The main content area is divided into three stages, each with a 'Run' button (green play icon) and a 'Filter' button (funnel icon):

- Stage 0.2: Check WIC status before start**

Identification	Status	SUM
WIC Magnet Status	PENDING	PENDING
WIC PC Status	PENDING	PENDING
WIC->BIS output Status	PENDING	PENDING
- Stage 1: Check PC**

Identification	BIS in fault	SUM
WIC.RCBW4.R3B1	PENDING	PENDING
WIC.RQT4.R3	PENDING	PENDING
WIC.RCBW4.R3B2	PENDING	PENDING
WIC.RQ5.LR3	PENDING	PENDING
WIC.RCBW5.R3B1	PENDING	PENDING
WIC.RCBW4.L3B1	PENDING	PENDING
WIC.RQT5.L3	PENDING	PENDING
WIC.RQT4.L3	PENDING	PENDING
WIC.RCBW4.L3B2	PENDING	PENDING
WIC.RCBW5.R3B2	PENDING	PENDING
- Stage 2: Check Magnet**

Identification	PC(s) connected in fault	BIS in fault	SUM
WIC.MQWB.4L3	PENDING	PENDING	PENDING

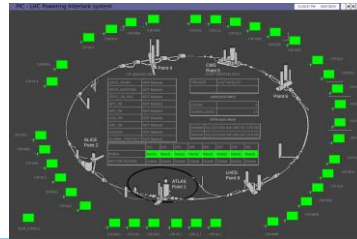
At the bottom, there is a 'Log Console' window showing the following message: '-07 10:54:22,192 - root - INFO - [WIC\_SELECTION] Successfully recovered all information about the WIC system CIW.UJ33.LR3'

## PIC

- **YETS 23-24:**
  - RQ4.LL1 & RQ4.LR1 super-locked
  - ECR: LHC-CIP-EC-0006 under approval ([EDMS 3035059](#))

RQ4.R1	Yes	Degauss cycle completed, switched OFF for 2024 operation
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- **Passed tests:**
  - Cryo Tests
  - All PIC2 tests (Thanks to AccTesting)
  - All PIC to BIC tests
  - Power Permit of the 60A circuits
  - SIS access conditions (done during DSO tests)
  - Software limits tests for RSS circuits (EE bypassed)
  - Global Protection Mechanism tests (excluding not critical Automated-GPM tests)
- **Remaining analysis:**
  - AUG tests
- **Tests not required:**
  - UPS / PIC tests
  - Hardware limits tests for RSS circuits (EE bypassed).



## FMCM

### Hardware Commissioning

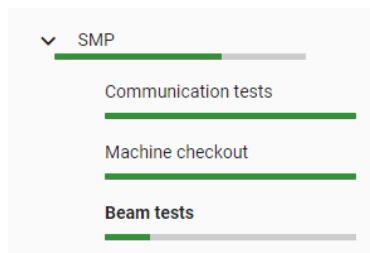
- Tests done on 06<sup>th</sup> March 2024
- All FMCMs have passed the tests

### Cold Checkout

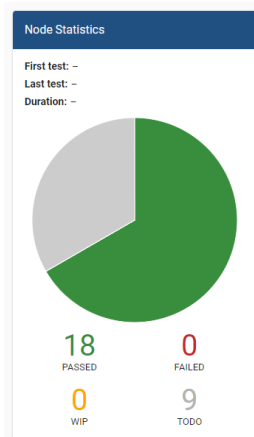
- Waiting for RD1.LR1 test to check the orbit with a pilot beam at 7 TeV

	FGC_STATE trigger
RQ4.LR3	
RQ5.LR3	
RD34.LR3	
RQ4.LR7	
RQ5.LR7	
RD34.LR7	
RD1.LR1	
RD1.LR5	
RMSI.L2	
RMSI.R8	
RMSD.B1	
RMSD.B2	
RBXWTV.L2	
RBXWTV.R2	
FMCM Circuit Summary	

# SMP

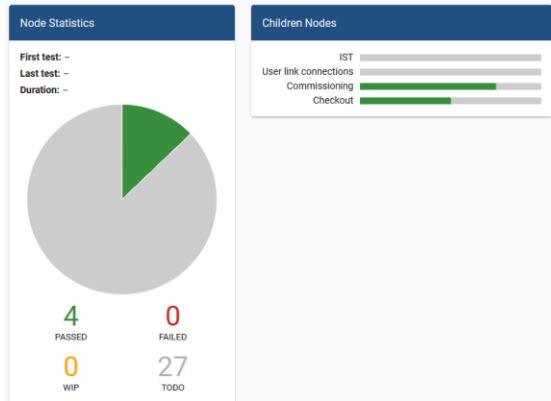


- **Intensity** and **Energy** tests passed
- **LHC-SBF** BIS reception tested
- **MDI** and **STB** flags tested with experiments
- GMT and Cross-Checker verified
- Pre-Op passed



## To Do:

- **T12** and **T18** TEDs moving in BEAM/DUMP
  - Relay modules were changed and then restored to previous version
- Commissioning with LHC Beams



Tests are reported in the EDMS document  
[1513541](#)

- BIS IST  
*Only impacted BICs have had to repass their IST tests*
  - ✓ BIC in Point 6 (return to active loop configuration after local loop tests)
  - ✓ BIC in US15 R1 (definitive disconnection of the ATLAS ALFA User on input 2 for B1 & B2)
- BIS commissioning
  - ✓ SIS to BIC
  - ✓ Setup Beam Flag to BIC
  - ✓ Propagation time from LHC BIS to INJ BIS
  - ✓ Propagation time from BIS to LBDS
  - ✓ Pre-Op check passed
- BIS Checkout
  - ✓ BIS internal pre-operational check
  - ✓ BIS IPOC (to be validated at the end ...)
- BIS User link connections
  - User link tests are under responsibility of equipment owners

