EP-DT
Detector Technologies

EP-DT-DD Section Meeting
01.12.2017

GIF Introduction -> Last DT-DD Section Meeting

GIF++ @ EHN1

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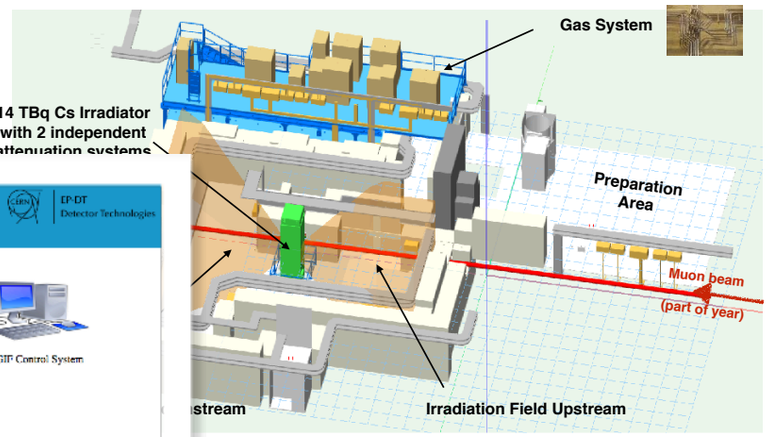

http://gif-irrad.web.cern.ch/

EP-DT-DD

- Overall GIF coordination.
- Deputy to SPS coordinator for the optimise the user schedule for all modes (beam, stand alone…), within the constrains of the SPS schedule.
- Future development of the facility

- Space management of the bunker & preparation zone
- Supervises user installation, installation of cables & electronics, rack space distribution, gas requests
- Collects all requests for infrastructure enhancements, helps with daily problems
- Contact to EN services

- One Experimental Safety Officer (EXSO) for all EP irradiation facilities

epartment CERN EP-DT Detector Technologies AIDA

a Irradiation Facility (GIF++) in EHN1 is a joint facility between the
Engineering partment (EN) and the Experimental Physics Department (EP).

here a high energy **muon beam** is combined with a
14 TBq ^{137}Cesium **gamma source** (30x higher intensity than previous GIF).

- The 100 m² GIF++ irradiation bunker has two independent irradiation zones
- Designed for testing real size detectors, of up to several m², as well as a broad range of smaller prototype detectors and electronic components.
- Both irradiation fields are equipped with independent attenuator systems, allowing to tune the photon flux individually (up to a reduction of ≈ 1/46000)
- **All year round operation** from Cs-Irradiator
- High energy Muon beam from T2 target, H4 (this year 9 weeks dedicated beam)
- Fixed installed beam-trigger & cosmic-trigger (still partly under installation)
- Central Control System : record of environmental parameters, beam parameters, filter settings, gas,… and provides interlocks (e.g. for wrong gas mixtures)
- Wide range of available gases (+ custom gases), gas patch panels in bunker & service zone

https://indico.cern.ch/event/618306/contributions/2511749/attachments/1429474/2195140/2017_03_GIF_Status.pdf

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- ☑ **Intense maintenance period last March**
- ☑ **Second cosmic trigger chamber installed**
- ☑ **Improved temperature & humidity control inside bunker & temperature stabilisation for gas rack area (tend)**
- ☑ **New central gas detection system installation & commissioned**
- ☑ **Central Control System improvements, with central archiving to CERN oracle DB, publishing via DIP**
- ☑ **Upstream XTDV (beam dump) installed, now we are independent for access & gamma irradiation**
- ☑ **Irradiation field markings**
- ☑ **Increased rack space in service area (+4 racks)**
- ☑ **Several new setups installed**
- ☑ **Additional set of scintillators, used as beam trigger during muon beam deflection (Goliath magnet)**
- ☑ **New web page, new logo, new web cams, publishing the bunker view once per day**
- ☑ **First Annual User Meeting with full set of presentations**
  https://indico.cern.ch/e/GIF-AUM-2017/

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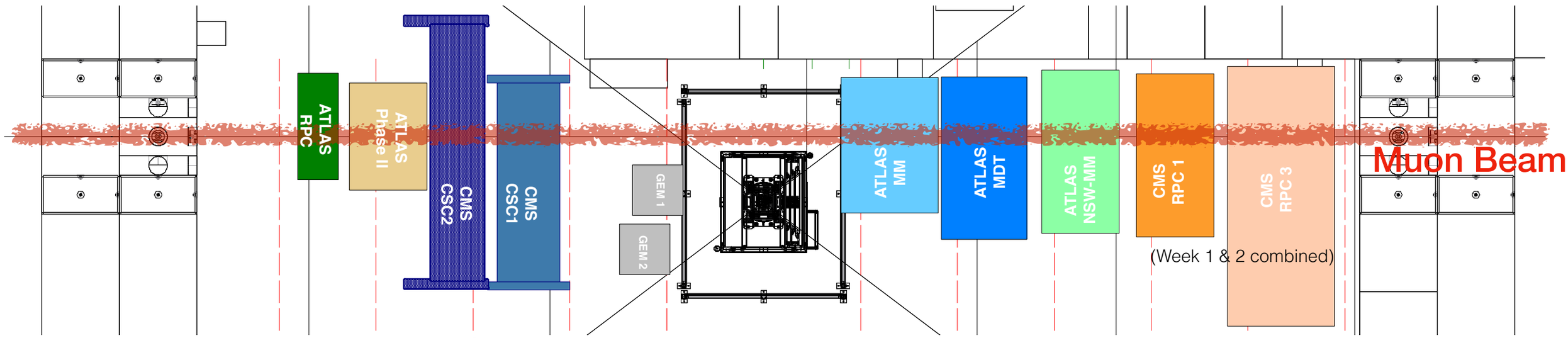
User Set-Ups for 2017

ATL-MDT detector	ATL-RPC	CMS-GEM1
ATL-Phase-II system test	ATL-BIS78-mod0	CMS-GEM2
ATL-MM	BE-BI-BL BLM	CMS-RPC1
ATL-NSW-MM-mod0	CMS-CSC1	CMS-RPC2
ATL-NSW-MM_resistive	CMS-CSC2	CMS-RPC3
ATL-NSW-MM-prod	CMS-CSC3	EP-DT1
ATL-NSW-STGC-mod0	CMS-DT-MB1	EP-DT2
ATL-NSW-STGC-prod	CMS-DT-bycells	RE21_CBM (FAIR)
ATL-NSW-STGC-ELX		LHCb

+ many short term or small size setups (from inside and outside CERN)

26 Set-ups requesting beam or long term irradiation !

Description of each set-up available at https://gif-irrad.web.cern.ch/gif-irrad/UserList.html



Setup during first beam time 2017

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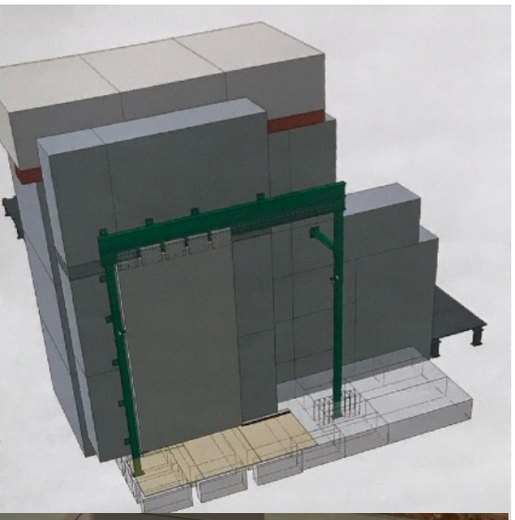

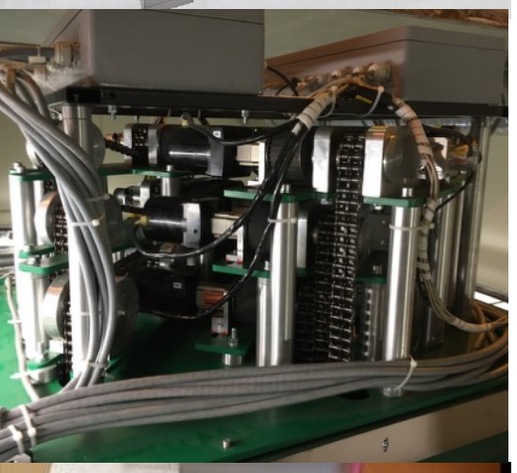

Upgrades under installation :

- Material access door finalised, installation next week (!)
- ☑ Web interface (beta available) to retrieve GIF data from Oracle DB (Timber)
- ☑ Upgrade of Control System for 12 RADMON sensors, including Berthold probes readout
- ☑ Inclusion of GAS system values into Central Control System
- Display in Control System in GIF control room (PC arrived)
- New gas system exhaust line
- Improved irradiation field usage
- Modification of GIF top enclosure to make annual maintenance easier (order send out, installation during next maintenance)
- Connection of Irradiator Control Rack to UPS (order send out)
- Installation of additional interlock key on Irradiator (first part of order send out)
- Next GIF maintenance March 2018 (Week 11)
  - Time for a field mapping campaign ?

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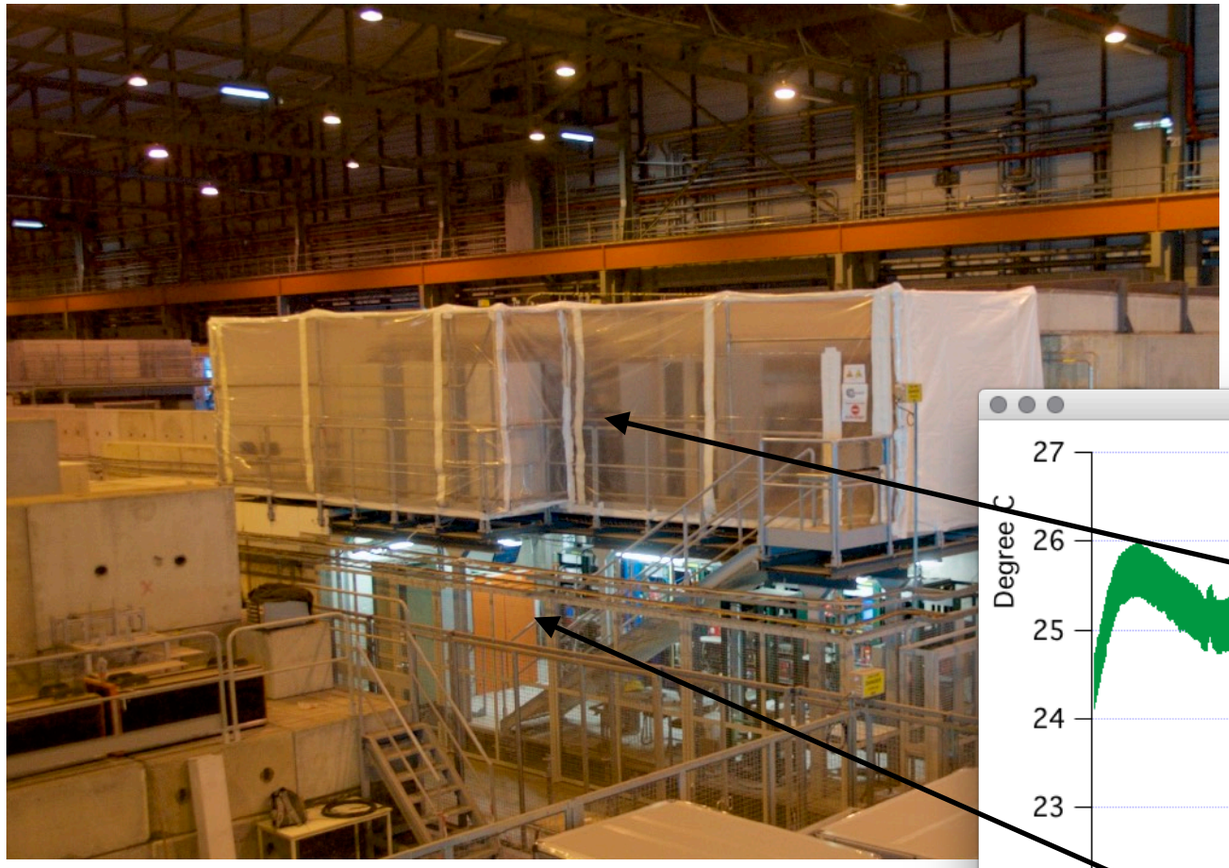
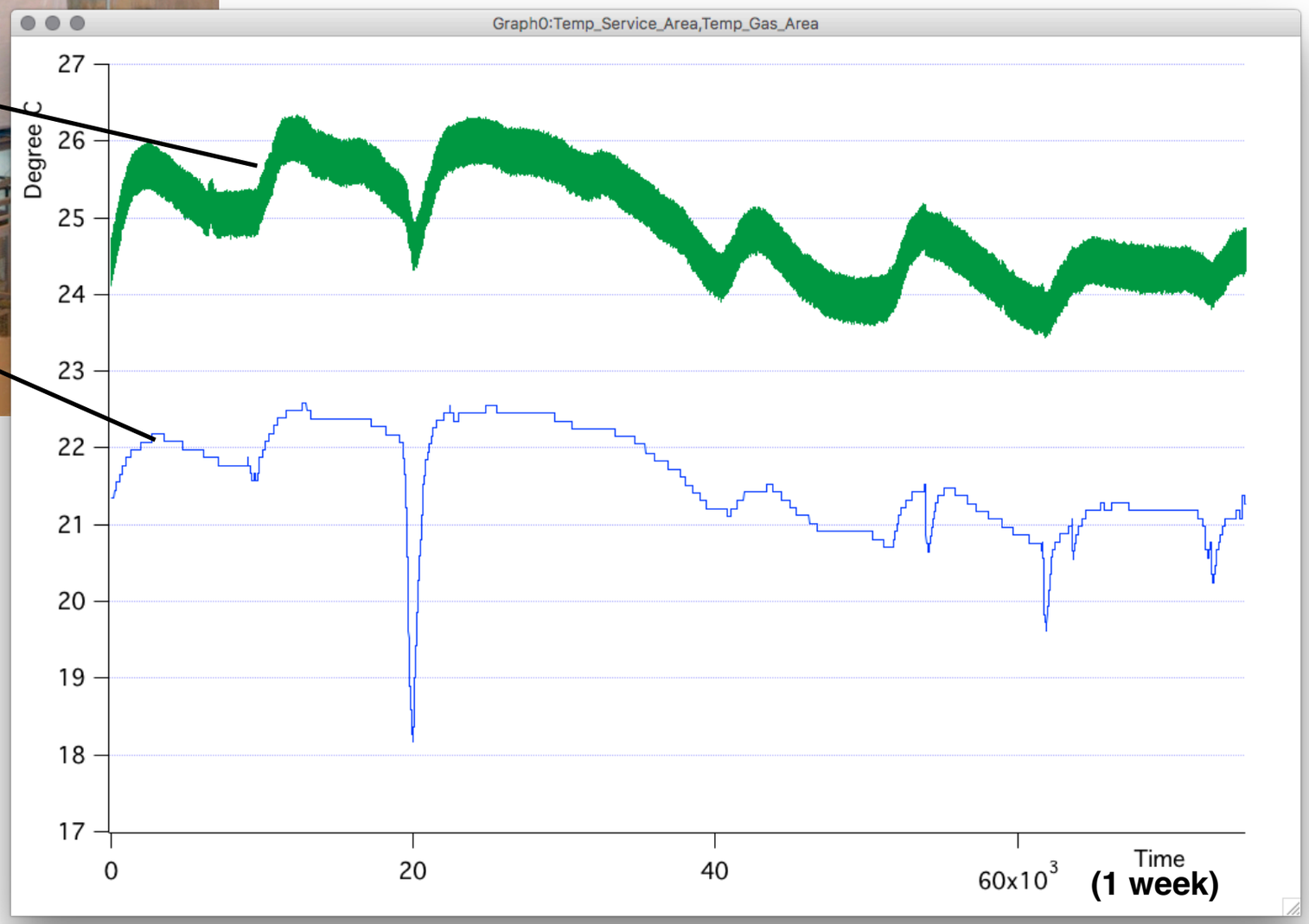
Gas-Rack Tent : First Real Test



Last year we lost irradiation time for some detectors (using flammable gases) due to very low temperature.
This year, the additional tend around the gas area seems to buffer short disturbances effectually.

Can be heated if needed.



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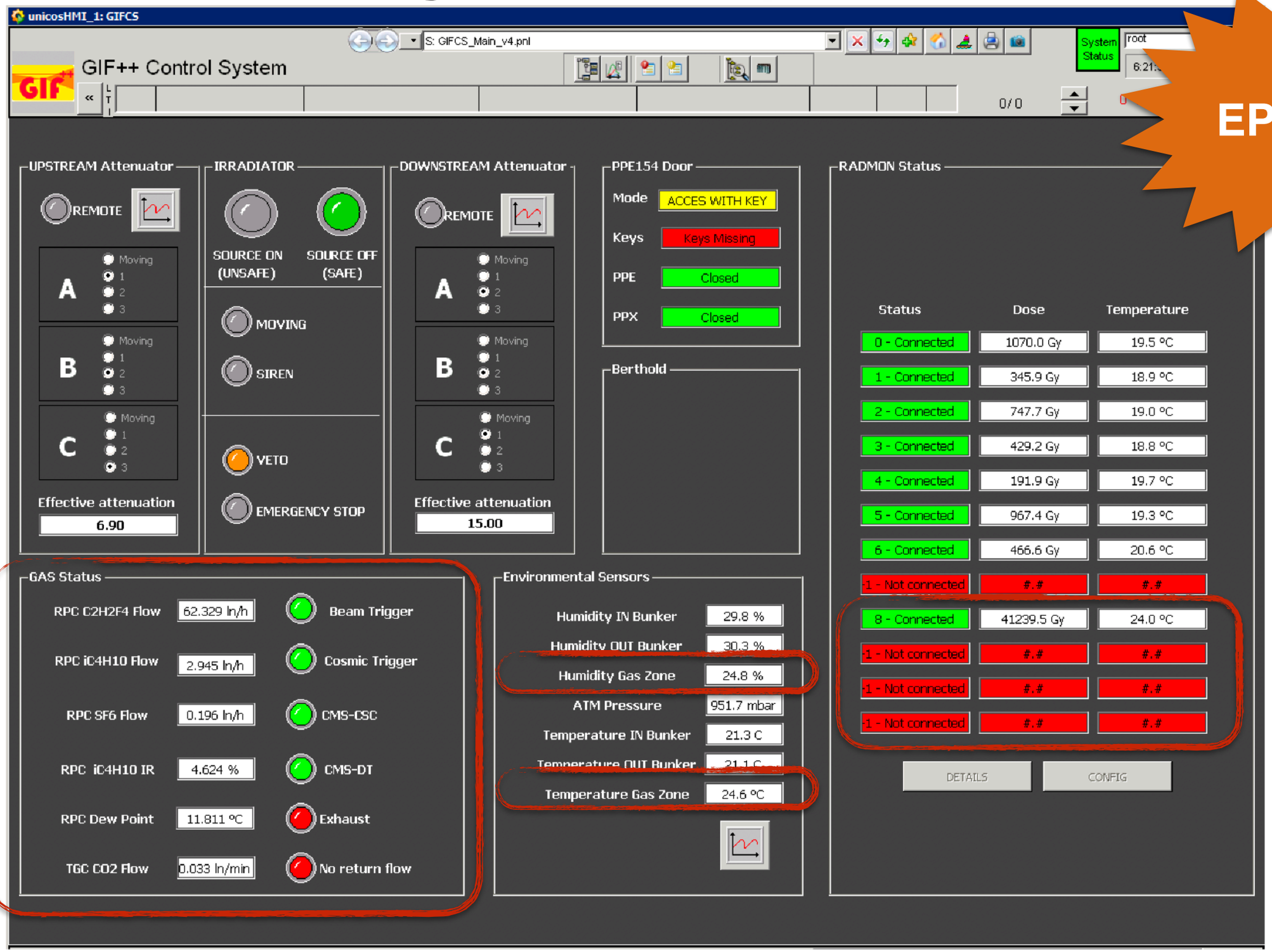
Control System Improvements

More to come !

EP-DT-DI



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Outlook 2018

- **Again a very intense beam time**
  - **3 x 3 weeks requested (April, July, November)**
  - **≈ 20 Setups requesting beam time**
  - **Last muon beam until ≈ May 2021**

ATL-MDT
ATL-MM
ATL-sTGC
ATL-RPC
CMC-CSC
CMS-DT
CMS-RPC
EP-DT
RE21(CBM)
LHCb-Muon

- **In addition : Multiple setups for irradiation only**
- **Start of mass-production test campaigns**
  - **Stress on material access and scheduling**
  - **Hundreds of real size muon chambers**
- **The bunker is getting small again….**

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