

GIF++ gas system

Outline:

- Beam and cosmic trigger
- Gas distribution panels
- Gas detection (present and final layout)
- Conclusions

- Start-up version:
 - **2** mixing racks (cosmic and beam trigger)
 - **1** closed loop gas systems (cosmic trigger)
 - **2** analysis racks
 - **1** control rack

Construction procedure/design
as for LHC gas systems



RPC cosmic and TGC beam trigger

Connection to gas supply and distribution panels almost completed



- Gas mixture distribution:

Each distribution panel: 6 supply (outer diameter 8 mm) and 6 return (outer diameter 10 mm).

The gas distribution is divided in:

- panels for neutral mixtures (type A)
- panels for mixtures that might contain flammable gases (type B).

Gas service area

- **6** panels type A
- **2** panels type B

Irradiation bunker

- **6** panels type A
- **2** panels type B

Preparation area

- **3** panels type A
- **1** panels type B

Installation completed
Commissioning ongoing



- Installation ongoing for start up version based on (best guess)

<https://edms.cern.ch/document/1409741/1>

- Source of potential hazard identified for the start up phase
- **Same exercise need to be done very soon for the final operation:**
important to collect all info from detector communities
Now easier thanks to beam time request
- **New requirements to be submitted by beg-January**

Detector	Detector volume / Pressure (cm ³) / (mbar)	Mixture and Concentration (% vol)	Gas volume in racks /Pressure (cm ³) / (mbar)	Total mixture flow (l/h)
Required for commissioning fixed installations:				
Beam trigger TGC	2000 cm ³ @ 1 mbar	CO ₂ 55 % nC ₅ H ₁₂ 45 % (flammable mixture)	Liquid nC ₅ H ₁₂ 3000 cm ³ CO ₂ 500 cm ³ @ 50 mbar	1 l/h
Cosmic trigger RPC	20000 cm ³ @ 1 mbar	R134a 94.7 % iC ₄ H ₁₀ 5.0 % SF ₆ 0.3 % (non-flammable mixture)	Supply (iC ₄ H ₁₀): 30 cm ³ @ 1.5 bar Mixture: 3000 cm ³ @ 30 mbar	30 l/h
Optional for 2014. Most probably required from beginning 2015:				
User CMS-GEM	5000 cm ³ @ 1 mbar	Ar 45 % CO ₂ 15 % CF ₄ 40 % (non-flammable mixture)	Mixture: 3000 cm ³ @ 30 mbar	10 l/h
User ATLAS/CMS-RPC	20000 cm ³ @ 1 mbar	R134a 94.7 % iC ₄ H ₁₀ 5.0 % SF ₆ 0.3 % (non-flammable mixture)	Same rack as Cosmic trigger Additional: Mixture: 3000 cm ³ @ 30 mbar	20 l/h
User CMS-CSC	20000 cm ³ @ 1 mbar	Ar 40 % CO ₂ 50 % CF ₄ 10 % (non-flammable mixture)	Mixture: 3000 cm ³ @ 30 mbar	20 l/h