



Ghent GE21 Production Readiness

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- **The Ghent assembly site contribution to GE1/1:**
 - Assembly of 30 GE1/1 Long chambers
 - QC of 20 GE1/1 chambers
 - 10 GE1/1 chambers sent for QC to Aachen
- Start: 21 Nov. 2017; completion: 06 Nov. 2018 (including holidays and other interruptions)
- With an experienced crew, managed to fully assemble a chamber within 2 hours without any problem
- Assembly and full validation of a chamber within 4-5 working days; when needed, even qualified chambers within 3 days
- GEM facility and all required space still fully available

Michael Tytgat	Physicist	GE1/1 experience	
Christos Roskas	PhD student	GE1/1 experience	Finish PhD by end of 2020
Philippe van Auwegem	Technician	GE1/1 experience	Retires by end of 2020, but replacement foreseen
Patrick Sennesael	Technician	GE1/1 experience	
Christophe Schuerens	Technician	GE1/1 experience	
1-2 service workers	PhD students	Will need training	

- Colleagues from Aachen are of course still welcome to join chamber assembly in Ghent

Ghent Production Site - Facilities

Cleanroom (certified & operational)

- inside dedicated, climate controlled room
- assembly area 4.6x7m² (ISO6)
- additional gowning area (ISO7)
- material pass-through (ISO7)
- furniture (tables, chairs, assembly table)
- MET One HHPC particle counter
- Oregon Scientific WMR89 weather station



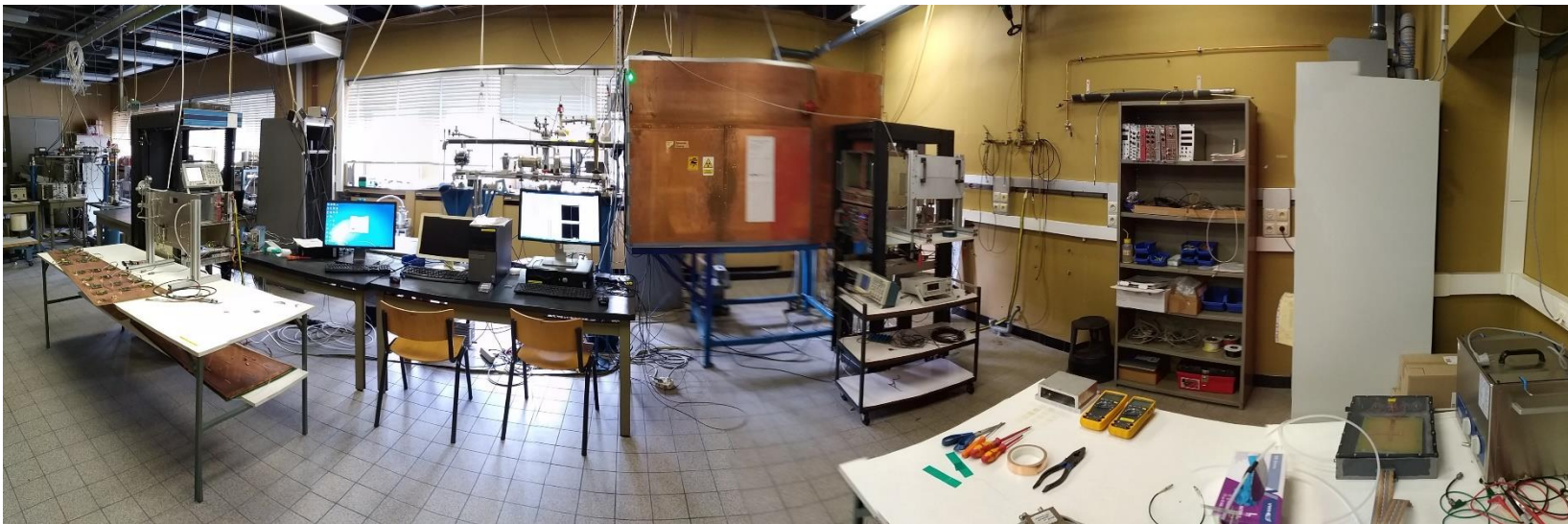
Pre-assembly room

- ❑ Preparation of the drift and readout boards
 - Soldering/cleaning/attaching pull-outs
- ❑ Special Jig in order to insert the brass flanges for the internal frames
- ❑ This room might be merged with our GEM QC room soon



Quality Control Room (GEMLab)

- Amptek Mini-X Ag source X-ray gun
- 2 Dedicated NIM crates for QC3, QC4 and QC5
 - HV power supplies N1470, N1470A
 - Preamplifier: ORTEC 142PC, ORTEC 142IH, Amplifier: ORTEC 474, Discriminator: ORTEC 935, Scaler: ORTEC974, ORTEC994, FIFO: CAEN N401, LeCroy 428F , Dual Timer: CAEN 2255A
- 30 Panasonic-to-LEMO Connectors
- SRS Crate
 - 2 FECs v1.3 (Operational)
- 27 APV chips
 - 3 are not properly working
- 1 SLC6 (core-i7) PC to work with SRS, 2 Windows PCs for QC3, QC4, QC5



- Restart GEM lab and check all setups after completion of GE1/1 production
- Train any new people in the team (service workers)
- Acquire all GE2/1 specific tools and materials:
 - Hirose to Panasonic connectors
 - New assembly jig, protective plate, grounding plate, fixation bars, HV clips
 - Mechanical support structure for the GE2/1 module in the Copper x-ray box
 - Transport box

Will be ready in time for the start of the production