

# Beam Gas Curtain (BGC) Instrument Installation in Point 4 Stage 1

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**Big thank you to all from the teams from  
vacuum, impedance, design and integration**

# Content

- What is the BCG instrument for?
- Objectives
- Endorsement of the project
- Location
- What is it and how does it look like?
- Racks
- Will not cover gas injection and pumping of the next stages

# Beam Gas Curtain (BGC) Instrument

## **Objective for LS3:**

**Work as an overlap instrument for beam with Hollow Electron Lens (HEL)**

## **Objective for LS2:**

**Staged installation in view of a demonstrator BGC**

- **Location of HEL sector, what is today B5L4.B, will be split  
→ HEL must fit in this vacuum sector, double check tbd**
- **Staged approach allows for installation without breaking the beam vacuum**
- **Consider geometries, impedance, integration, vacuum, cabling and rack concerns**

# BGC Endorsement

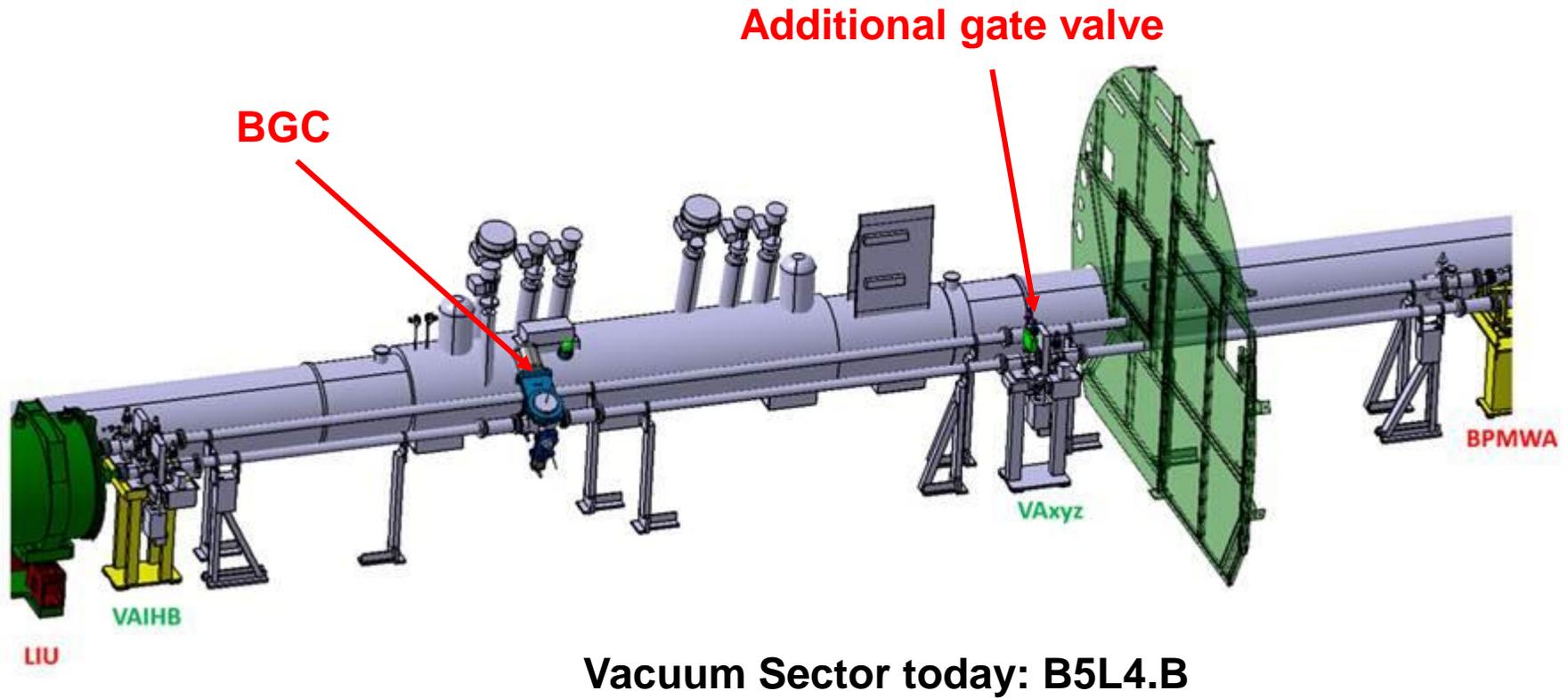
**WP13 meeting approved staged approach**

**Staged approach was presented to the 37<sup>th</sup> HL-LHC Technical Coordination Committee**

**We will make another presentation to the HC-LHC-TTC, possibly in March 2018**

**ECR written by BE-BI will be issued in March 2018**

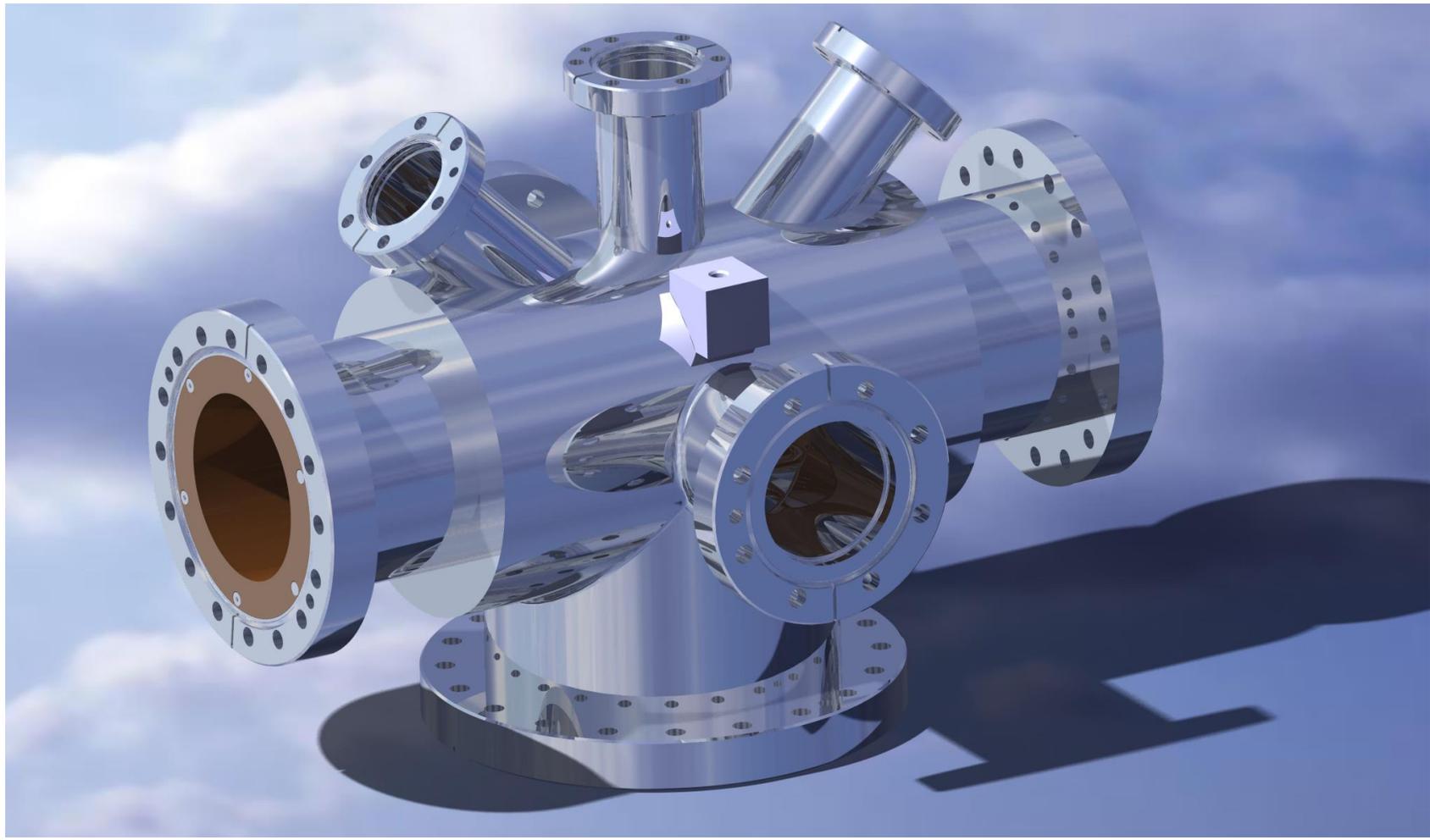
# Vacuum Sectorisation



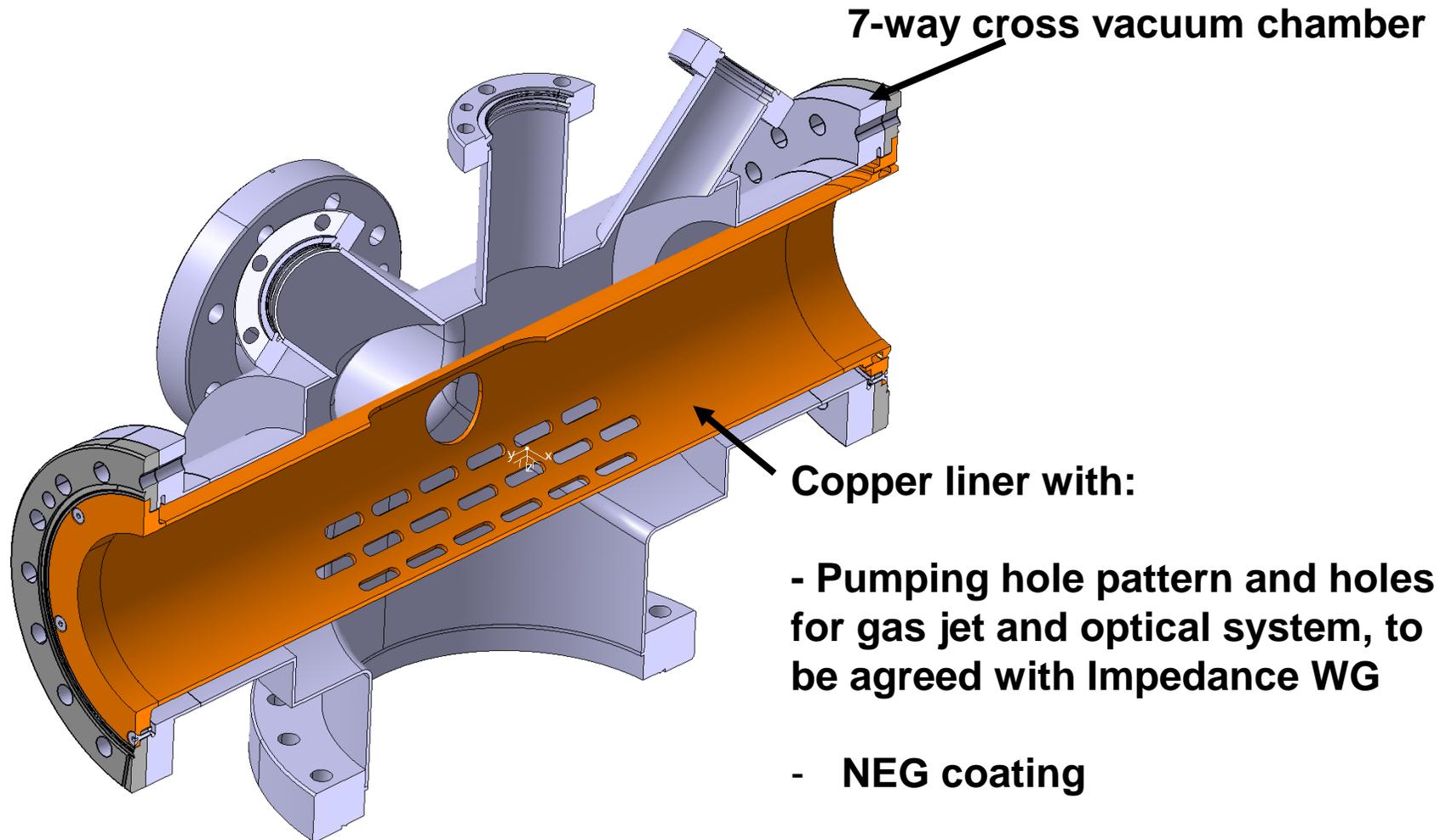
Vacuum Sector today: B5L4.B

Courtesy: Pablo Santos Diaz

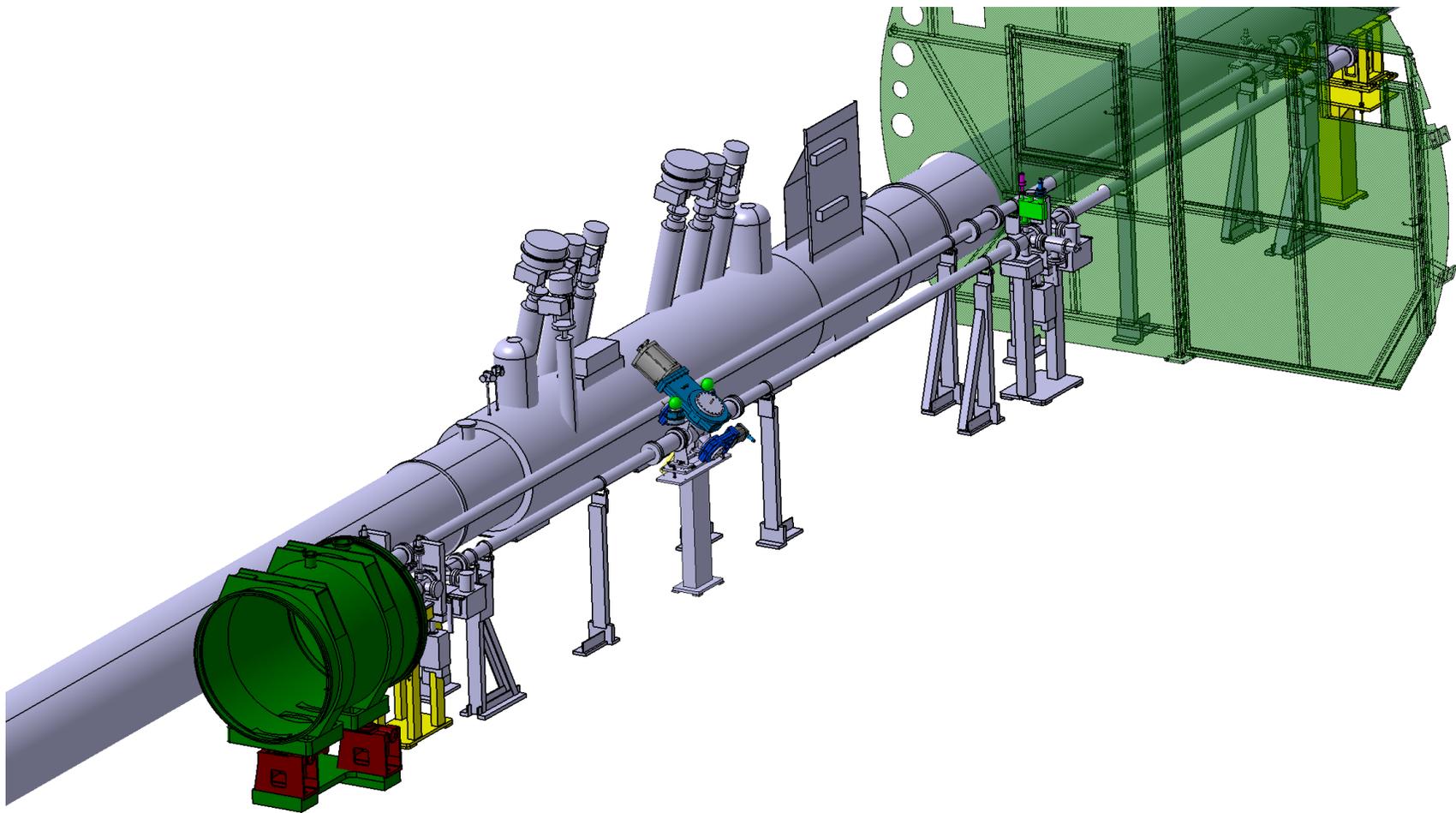
# BGC Vacuum Chamber



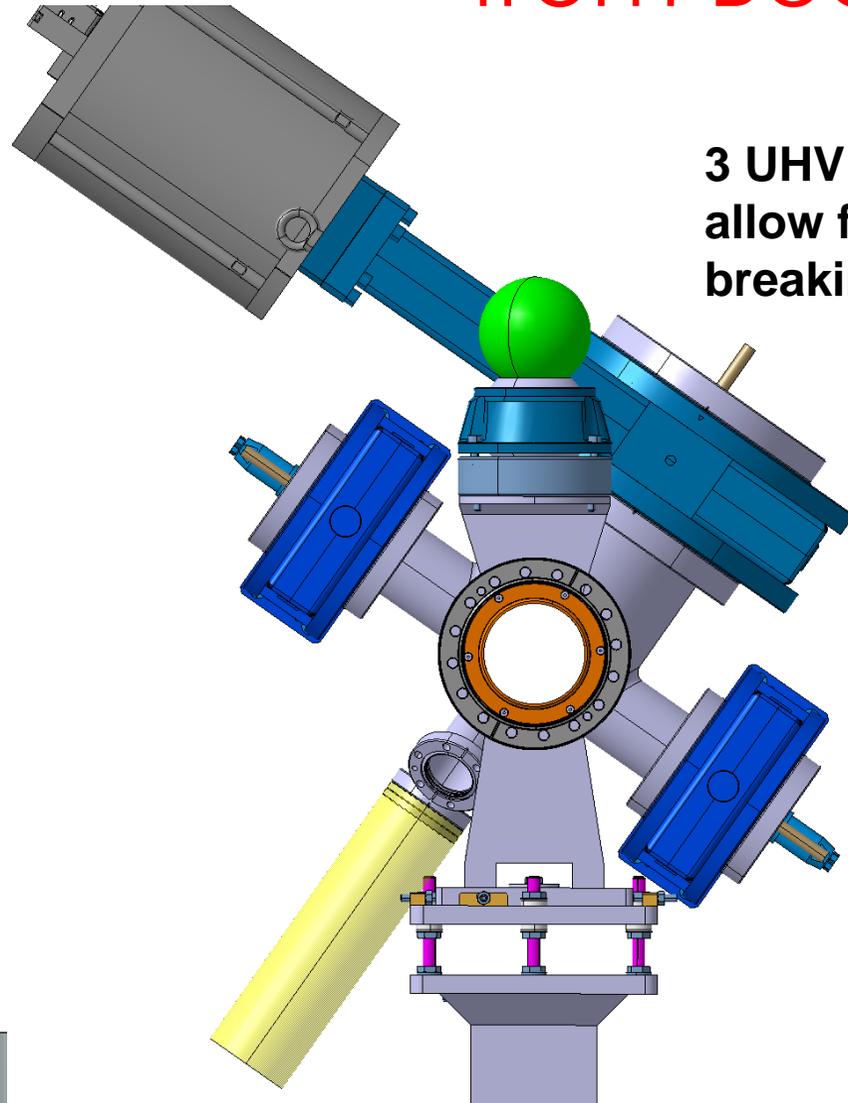
# BGC Vacuum Chamber



# BGC Demonstrator installed



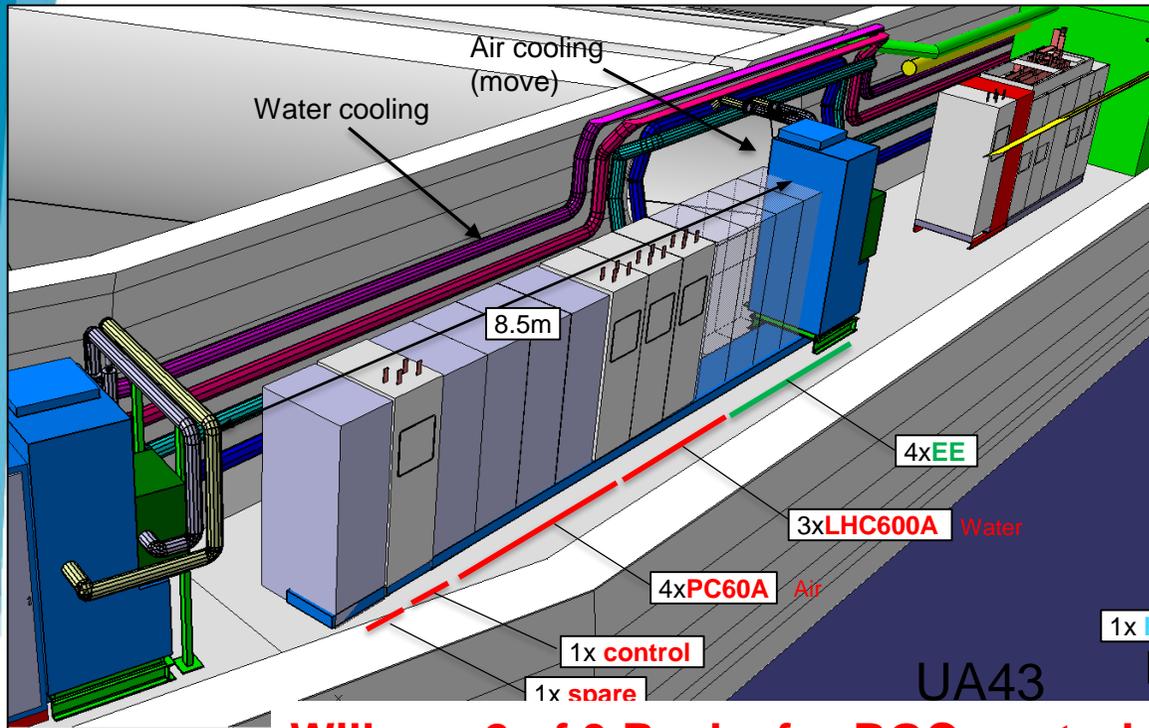
# BGC Demonstrator installed, view from Beam 1.



**3 UHV all metal gate valve with pinch-off will allow for extensions to the BGC without breaking the beam vacuum.**

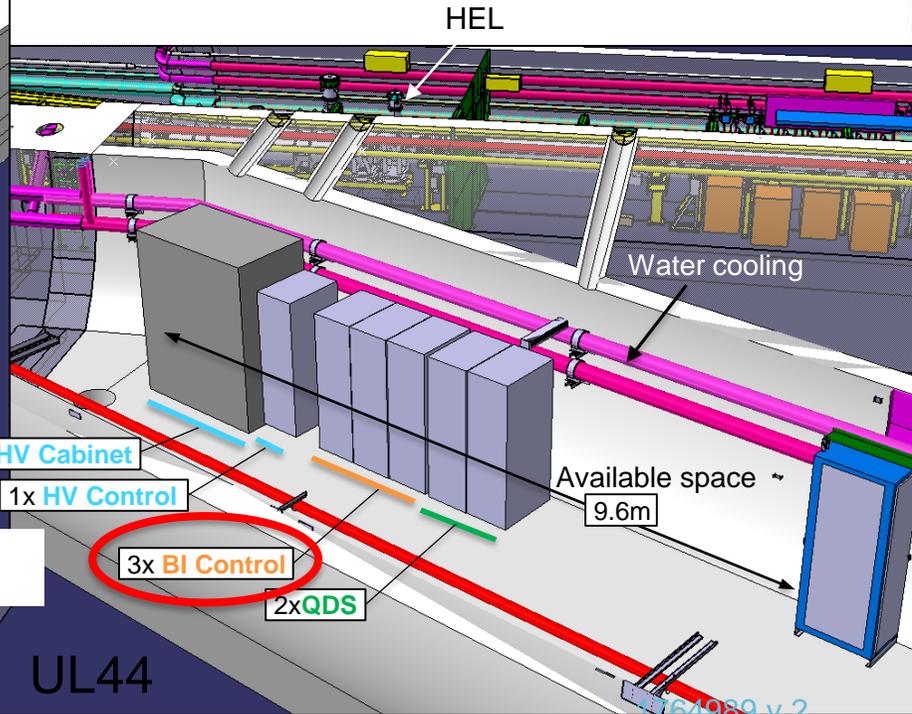
# Racks- Location

## Option 1: UA43 & UL44 (P4L) / UA47 & UL46 (P4R)



### Constraints:

- EE racks (if needed): to be placed together with PCs
- Cooling system required
- HV cabinet and Control rack: to be placed together



**Will use 2 of 3 Racks for BGC control**

It could be the other way around

19/10/2017

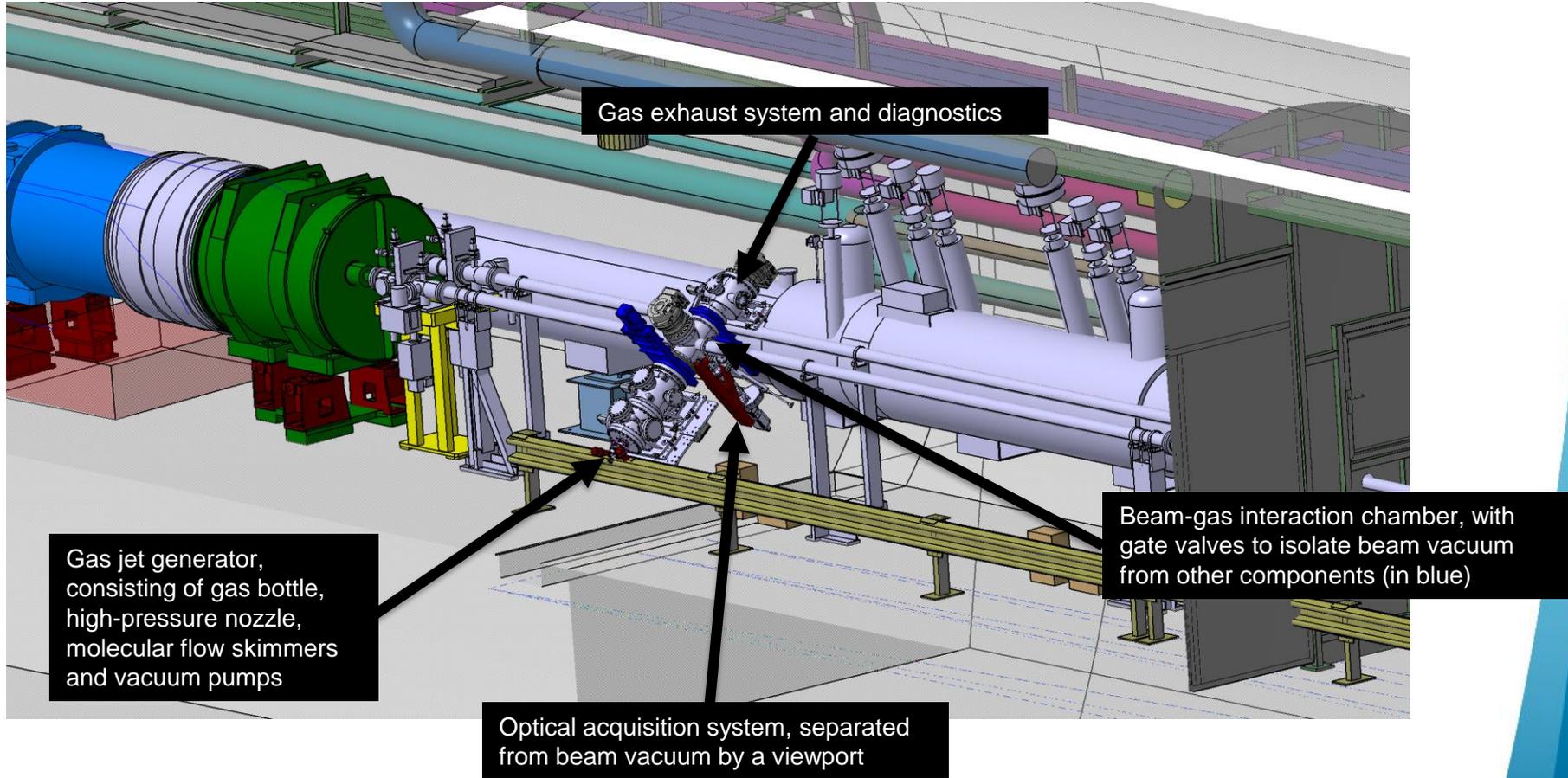


Courtesy: Maria Amparo Gonzalez De La Aleja Cabana

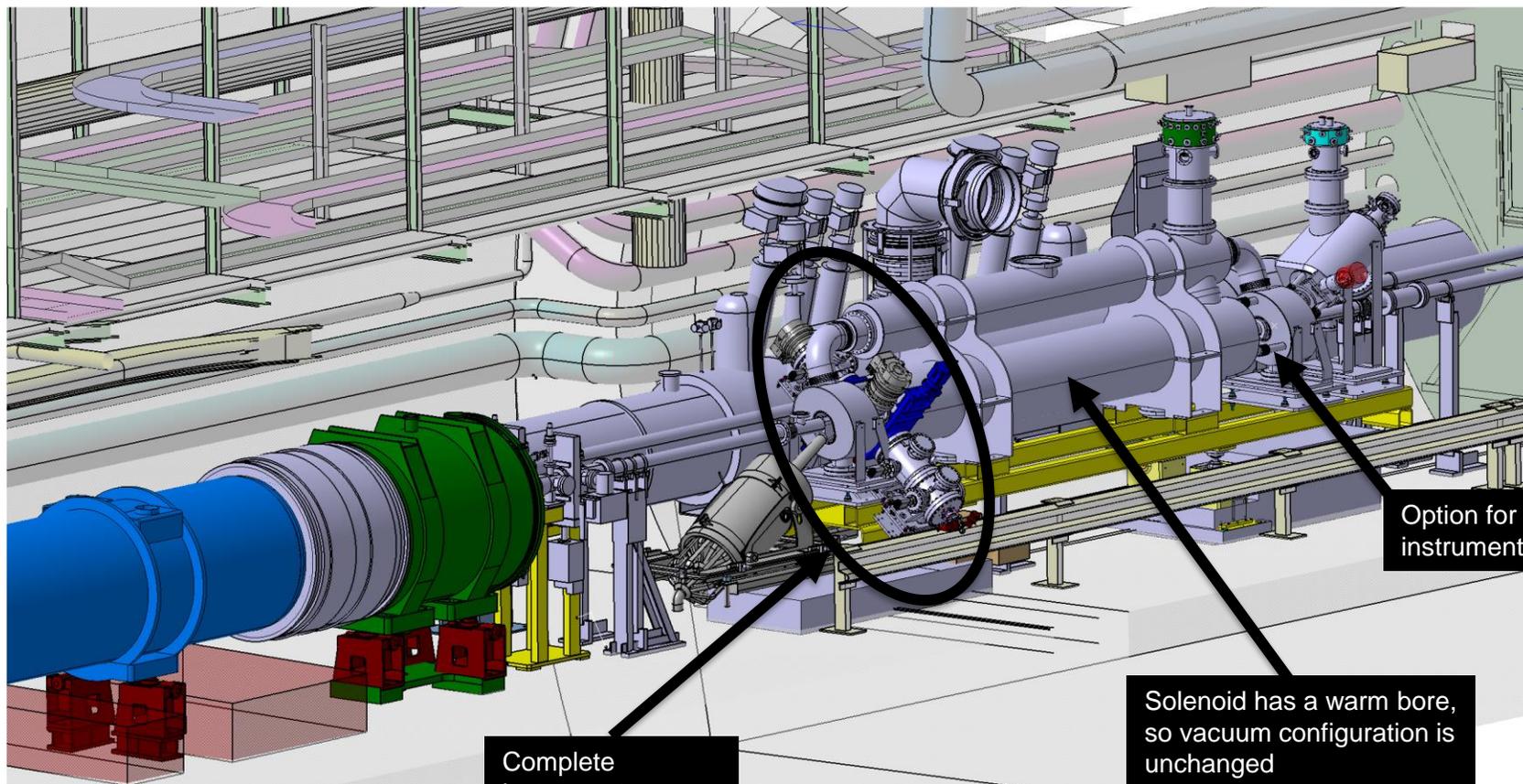
Thank you

# Beam-Gas Curtain: Instrument Components

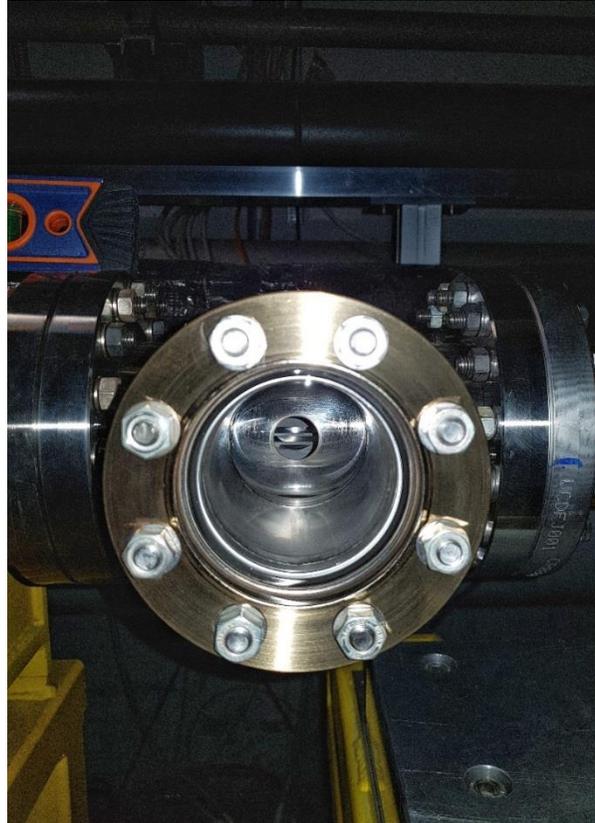
Note: This shows an integration of a laboratory prototype (v2), NOT an instrument designed for the LHC



# BGC (laboratory, version 2) integrated in LSS4 with a candidate e-lens solenoid



# Fluorescence Monitor Installation



**Slide from T.Dodington shown in BGC project meeting of 20/12/17**  
**<https://indico.cern.ch/event/686987/>**  
**[see also presentation from S.Mazzoni in same meeting]**