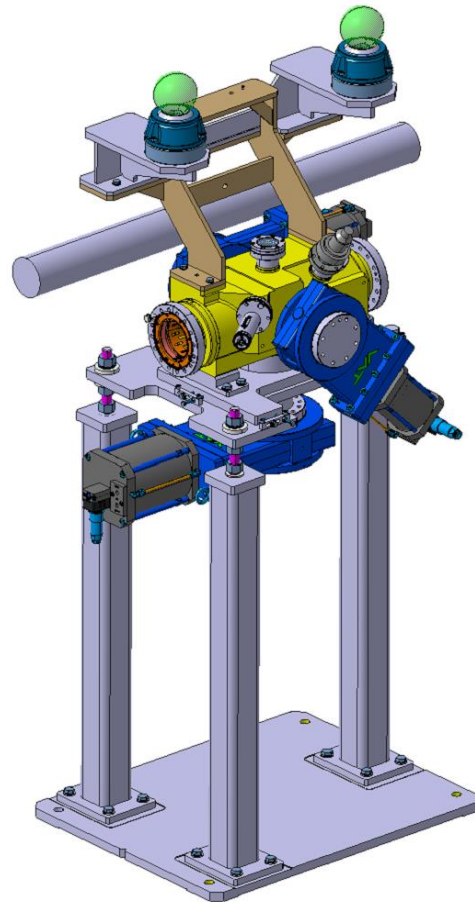


BGC Planning

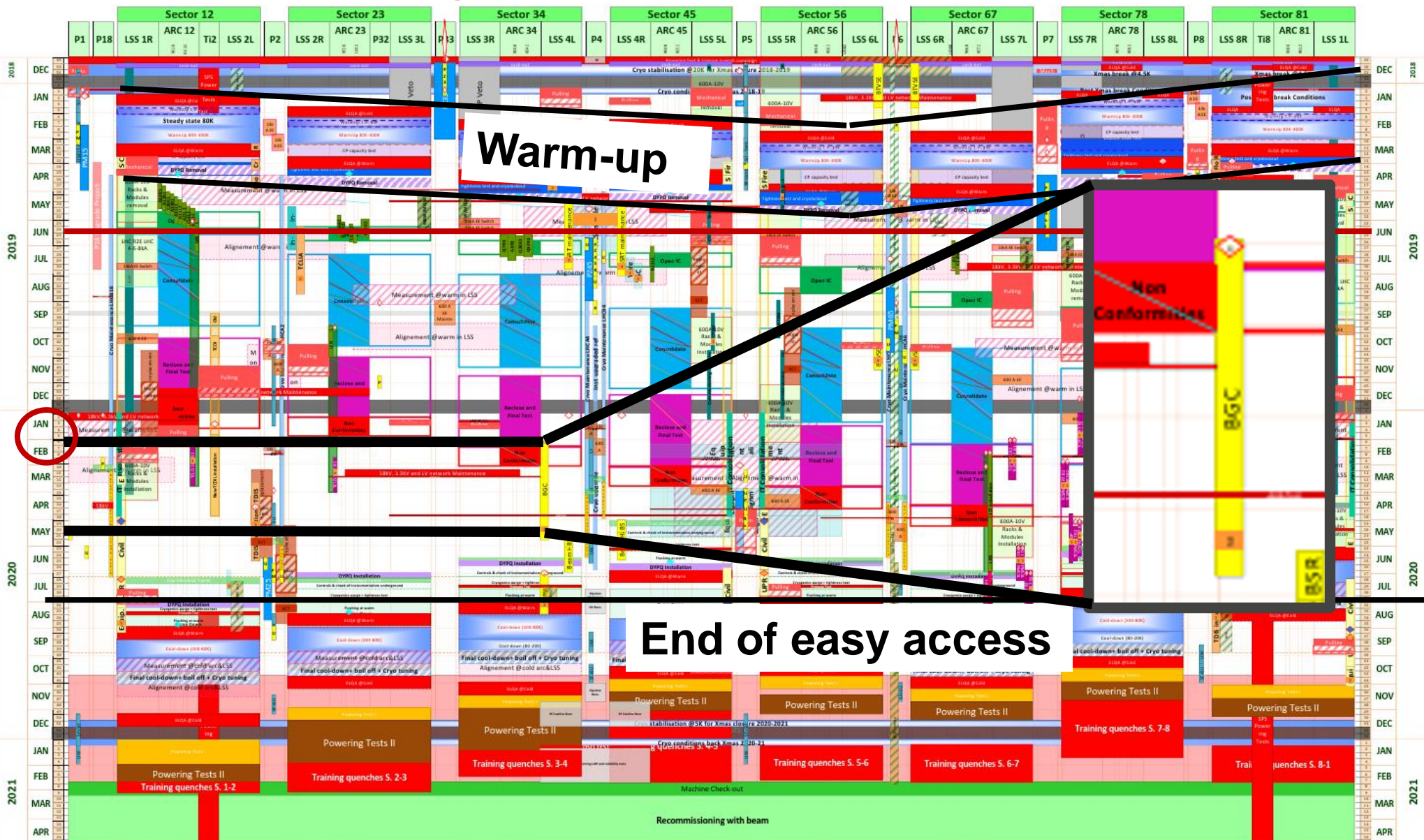
- **LHC LS2 Frame and BGC installations**
- **Stage 2 after LS2**
- **Test stand**
- **HEL version**

G. Schneider, J. Glutting, T. Dodington, R. Veness

LHC L2 Planning, BGC Stage 1



Global planning: Start 03.12.18



Warm-up

Non Conformance
BGC

End of easy access

Powering Tests II
Training quenches S. 1-2

Powering Tests II
Training quenches S. 2-3

Powering Tests II
Training quenches S. 3-4

Powering Tests II
Training quenches S. 4-5

Powering Tests II
Training quenches S. 5-6

Powering Tests II
Training quenches S. 6-7

Powering Tests II
Training quenches S. 7-8

Powering Tests II
Training quenches S. 8-1

Recommissioning with beam

LS2 Planning -Infrastructure

- **CERN Internal document to allow for BGC Stage1 installation approved: EDMS 2025553, but already preparing for Stage2:**
 - **Cables and fibres under installation (very costly):**
 - For BGC optics and mechanics: DIF: [RQF0968681](#), DIC: [RQF0968668](#)
 - For BGC vacuum: [RQF0966942](#)
 - **Racks: 2 Racks in UL44**
 - **Gas Bottle Rack (done)**
 - **Gas Piping (waiting for offer from EN-EA)**



LS2 Planning – Must have installation

➤ Long list

➤ On the critical path:

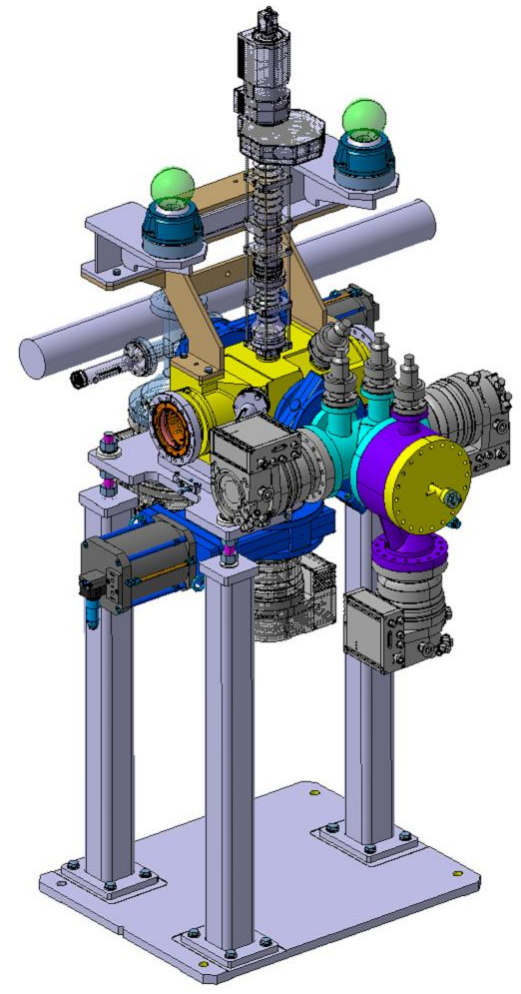
- **BGC steel body and copper liner**
 - Material on order
 - Manufacture agreed at CERN
 - Drawings to be finalised
 - Delivery Sept/Oct 2019
 - To be blacked Cr-Oxide for body and amorphous carbon + multilayer coating for liner
- **Linear bellow drive with optical target**
 - Drive to be ordered
 - Optical target to be agreed on and to be produced
- **Valves – ready to be ordered**
- **Supports – drawings to be signed and part to be ordered**

Part	Qty	Supplier	Material	Type	Price per piece	approx. Price in CHF	Number of pieces	Coating	Procurement stage	Comments
							37960.4			
Central assembly (stage one of the installation)	1						1			
Interaction chamber	0.1	CERN Central Workshop	316LN				1	Black chromium oxide		
Black chromium coating	0.1.1	mix Color			400 (€)					
Support to the floor with alignment stage assembly	0.2						1	Protective coating		
Support for geometers and optics assembly	0.3						1	protective coating		
Main support (optics)	0.3.1						1			
Screws	0.3.1.1									
Nuts	0.3.1.2									
Washers	0.3.1.3									
Pins	0.3.1.4									
Geometers support	0.3.2						1			
Optics support	0.3.3						1			
Motorisation	0.3.3.1									
Geometer targets	0.4						2			
Copper liner	0.5	CERN Central Workshop					1	amorphous carbon coating		
Perforated Copper tube	0.5.1		Copper							
Connection ring	0.5.2		Copper							
RF spring	0.5.3	Feuerherdt		Spira Shield 04.8						
Screws	0.5.4									
Black insert	0.6	?	304L, 316L or 316LN				1	Polyteknik coating		
Screw	0.6.1							Screw head Black Chromium oxide		
Nuts	0.6.2							Silver		
Optical Target assembly	0.7		Glas?				1	?		to be designed at CERN
Optical Target	0.7.1									
Linear Bellow Drive	0.7.2	LHV Design			1133 (GBP)	1491.8	1		Quotation	
Holder for Optical Target	0.7.4						1			to be designed at CERN
Full Metal Gate Valve DN63	0.8	VAT			10748.3 (CHF)	21496.6	2		Quotation	Protection before the assembly of further parts
DN 63 cover for valves	0.8.1									Protection before the assembly of further parts
Full Metal Gate Valve DN100	0.9	VAT			14972 (CHF)	14972	1		Quotation	with CF-F40 port for gauge on the pump side (not protected vacuum side)
Nuts	0.9.1							Silver		
Nuts	0.9.2							Silver		
Washers	0.9.3									
DN 100 cover for valves	0.9.4									Protection before the assembly of further parts
Window Flange DN40	0.10						1			
Screw	0.10.1							Silver		
Nut	0.10.2							Silver		
Washers	0.10.3									
Gauge	0.11	Pfeifer		Penning			2			Penning Pfeifer (no Pirani combination)
Screw	0.12.1							Silver		
Nut	0.12.2							Silver		
Washers	0.12.3									

LHC L2/BGC Planning

- All vacuum related parts must be ready for vacuum acceptance test by end 2019 including respective coatings

Stage 2 after LS2



Stage 2 after LS2

- **Agree on Nozzle and Dump chamber**
- **Start gas – Prepare for Nitrogen?**
- **Vacuum controls – must be checked before installation – HEL test stand (ready when)? Resources available towards end of LS2 – assume ready to be tested in 15 month from now**
- **Purchase of vacuum chambers and standard industrial components- no issues expected**
- **Administration for BGC ECR Part 2 including safety aspects**
- **Installation in very end of LS2 or Year End Technical Stop 2021/22.**

HEL Version left and right IP4

- **Installation issues to be solved**
- **Left side LHC Point 4 beam 1 inner line significantly easier**
- **Right side LHC Point 4 beam 2 outer line squeezed between beam 1 and QRL – design choices to be made**
 - **Mirrors for optical system**
 - **Difficult assembly**
- **Common design for both sides?**
- **Production can be made within 1 year after technical design is made – assure test time with HEL**

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