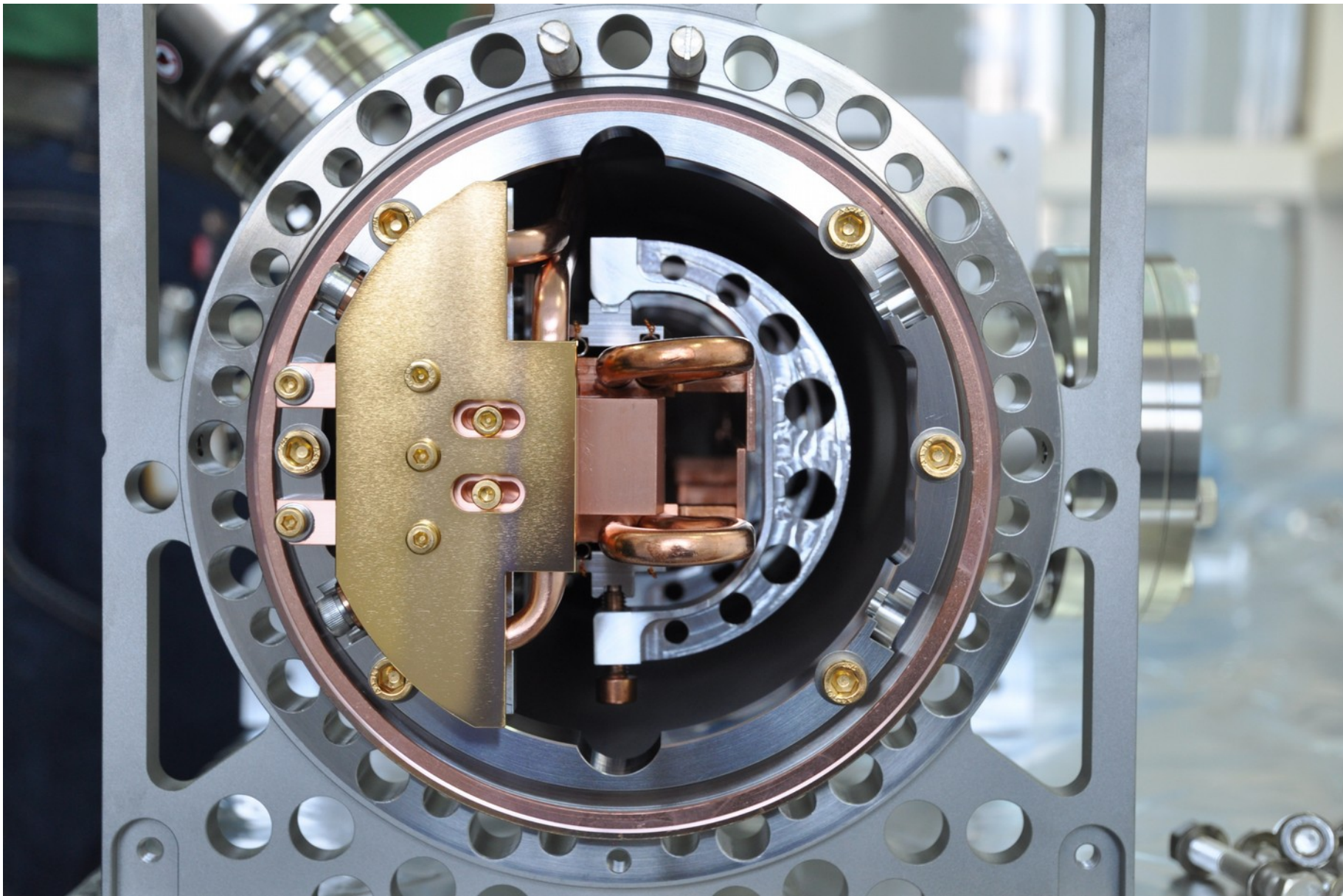


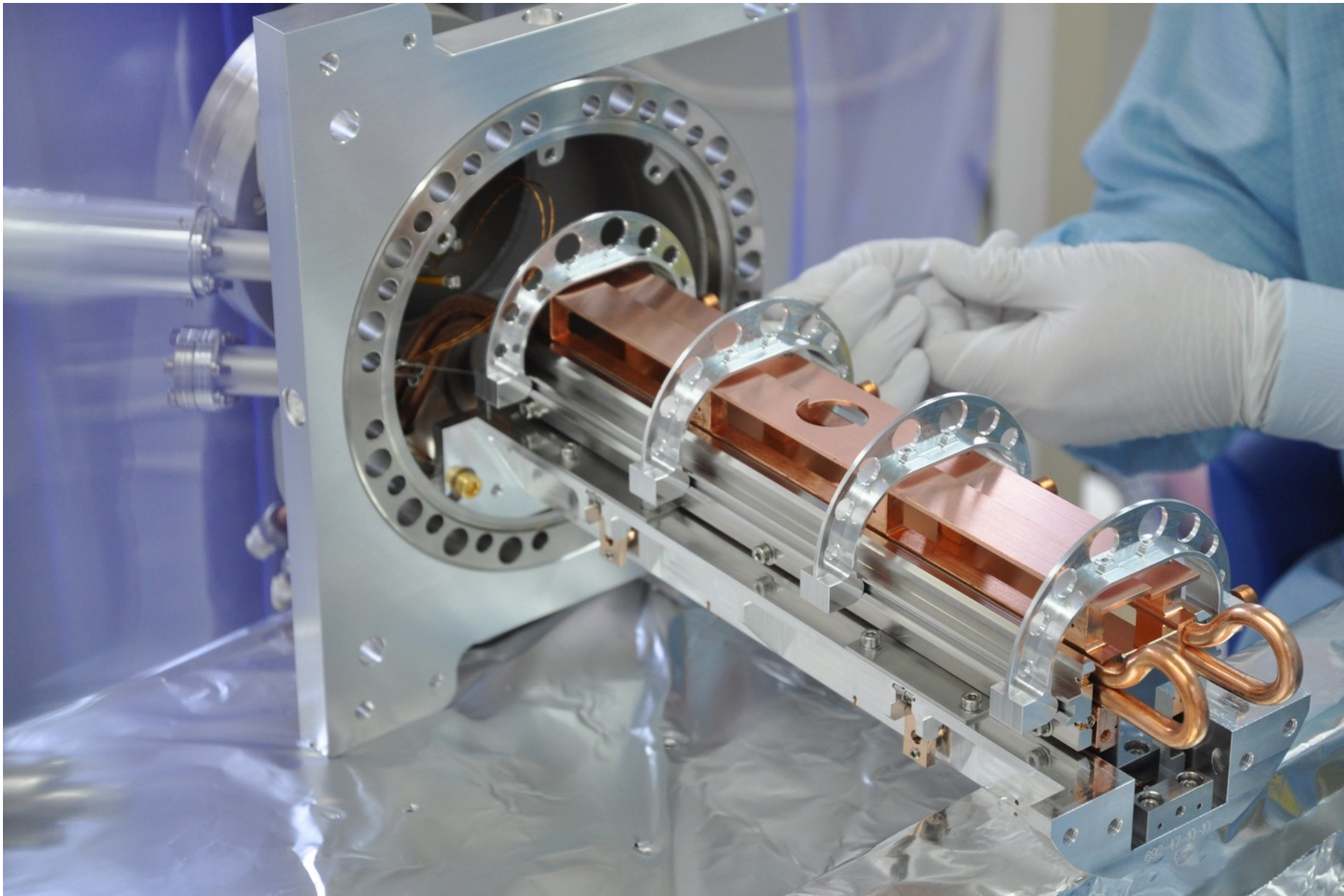
installation of moveable masks in the frontend



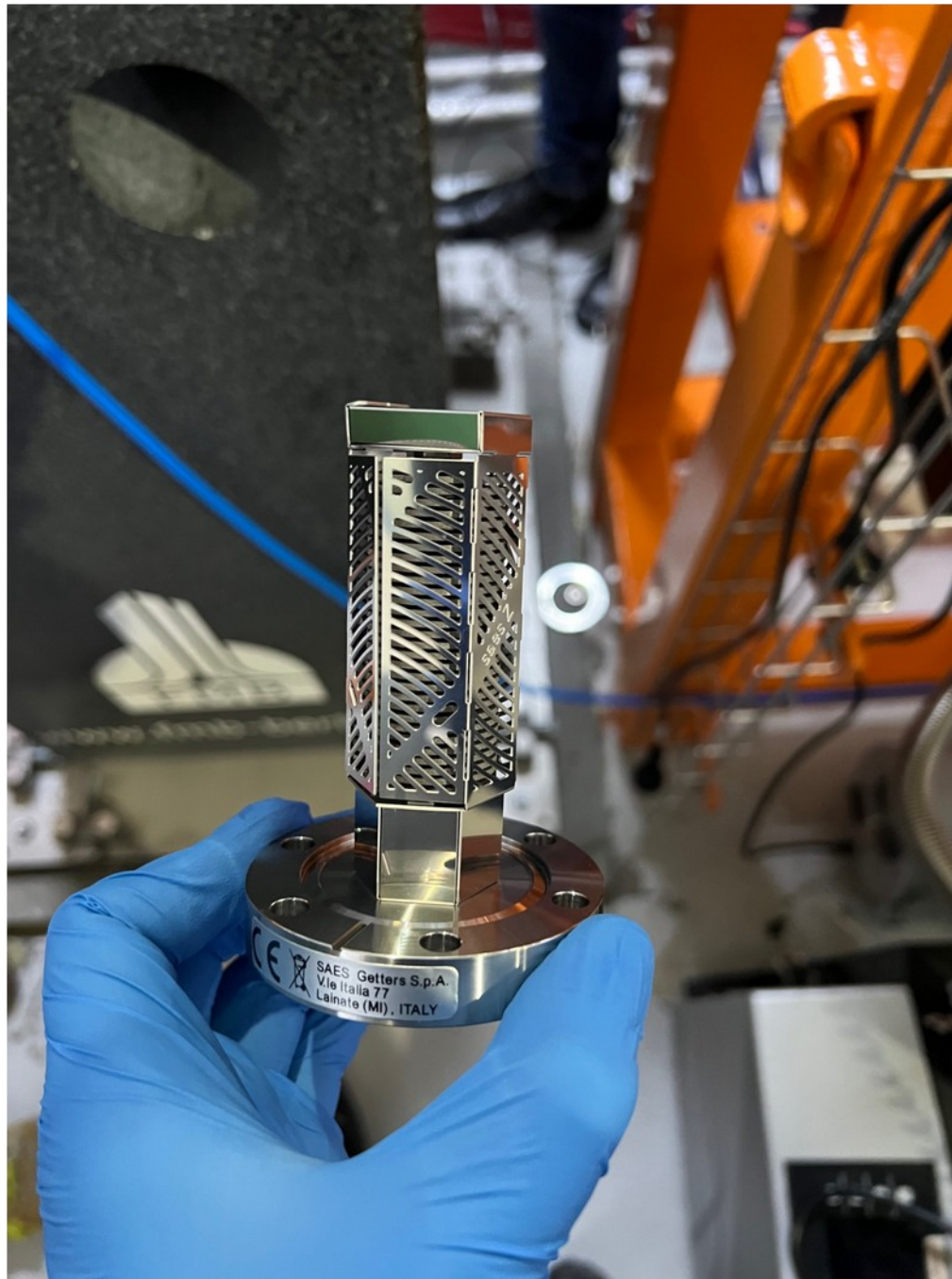


downstream view into M1





M1 mirror installed and covered by cooling shield



insertion of the  
M1 NEG-pump





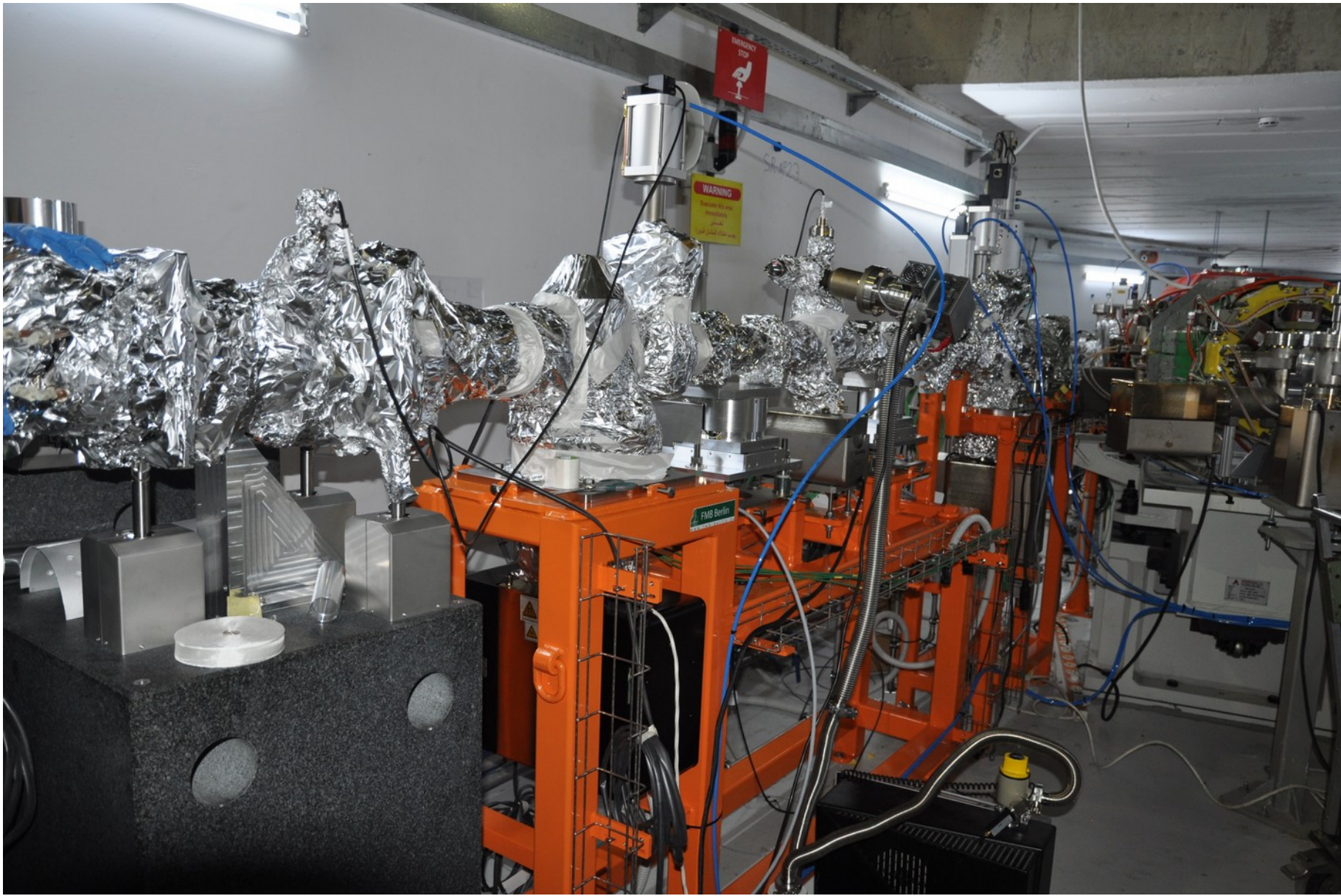
connection to the machine completed





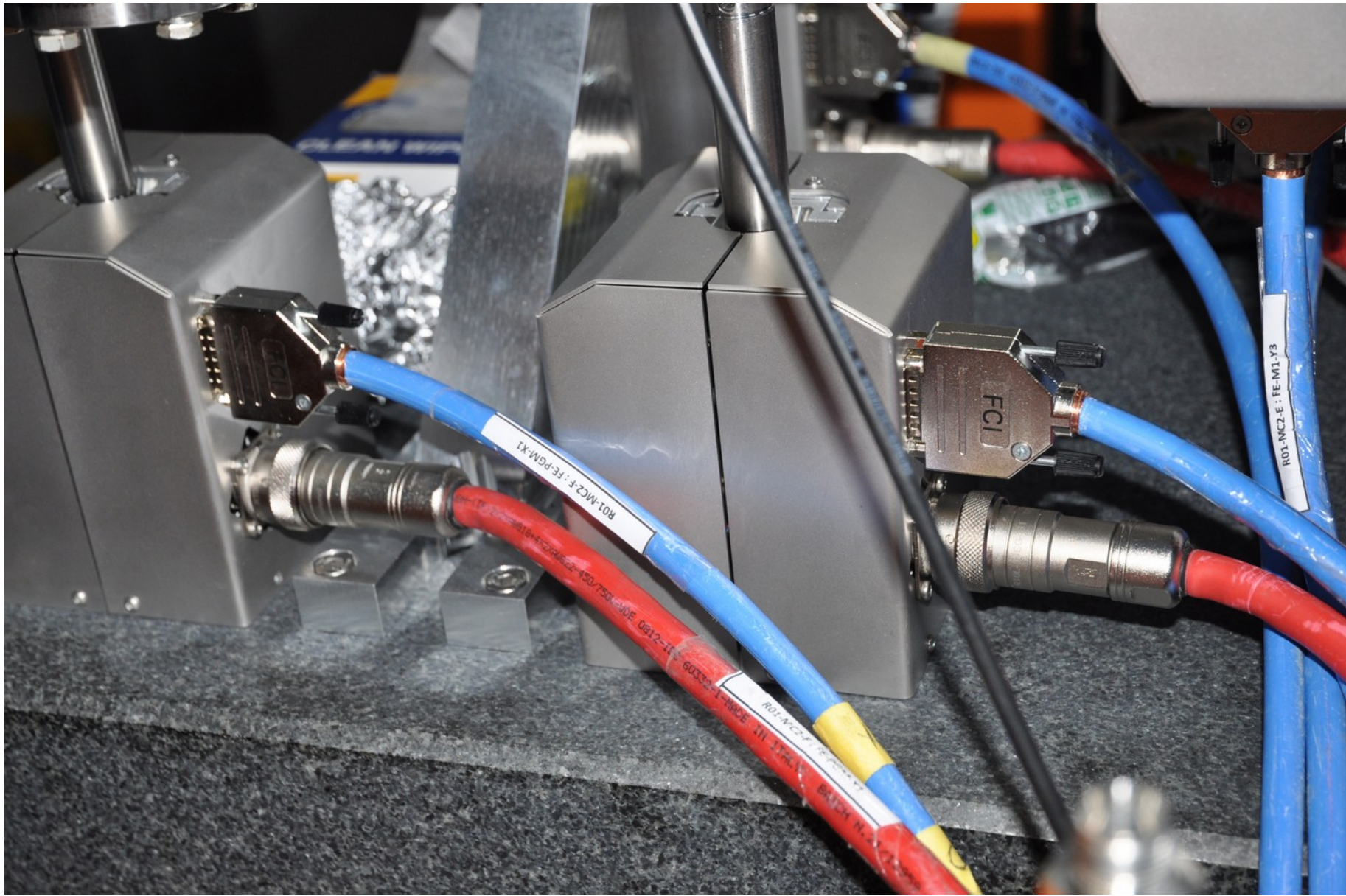
NW16 wall tube in place





frontend pumped down and prepared for bakeout





motor and encoder connections





controls racks in place and in operation



### HESEB Control System

Machine

Current	-0.147083 mA
Lifetime	0.000 H
Energy	0.00000 GeV
Mode	Shutdown

Undulator

#### Front-End

GV 1 → Fixed Mask → Photon Shutter → GV 2 → Fast Shutter → Movable Masks → GV 3

3.70e-06  
5.35e-13  
3.49e-13

2.90e-05  
6.99e-07

Cooling M1 Movable Mask

#### Beamline

Tunnel Wall → 4-Blade Slit → M2 - PGM → GV 1 → M3a/b → Pumping Units → GV 2 → H-Exit Slit → V-Exit Slit → GV 3 → GV 4 → Ion

0.000e+00  
2.79e-13

0.000e+00  
3.49e-13

1.37e-12  
1.37e-12

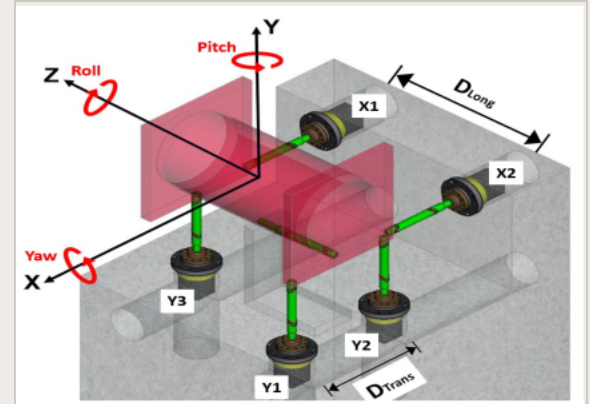
0.000e+00  
5.35e-13

Cooling M2 - PGM M3ab - M4a Vertical Slit Picoammeter 1 Picoammeter 2

Vacuum

### Front-End Mirror

#### M1



	Description	Position	Readback	Tweak	Limits		
					H	L	
Mirror 1							
Roll	Rotation around Z	0.000	223.586 mrad	< +001.00 mrad >	●	●	Expert
Pitch	Rotation around Y	0.000	-166.011 mrad	< +001.00 mrad >	●	●	SYNC
Yaw	Rotation around X	0.000	81.456 mrad	< +001.00 mrad >	●	●	STOP
H-Translation	Horizontal motion	0.000	-84.407 mm	< +001.00 mm >	●	●	
V-Translation	Vertical motion	0.000	-70.978 mm	< +001.00 mm >	●	●	

Close

### Form

#### Movable Mask

	Position	Readback	Tweak	Limits		
				H	L	
Horizontal Gap	0.000	44.338 mm	< +001.00 mm >	●	●	Expert
Vertical Gap	0.000	-37.420 mm	< +001.00 mm >	●	●	SYNC
Horizontal Center	0.000	-39.105 mm	< +001.00 mm >	●	●	STOP
Vertical Center	0.000	-33.926 mm	< +001.00 mm >	●	●	

Close

control system in operation:  
movement of M1 & masks  
implemented and working  
(cables removed for bakeout)





moving PGM chamber into place





PGM assembled  
at its final position