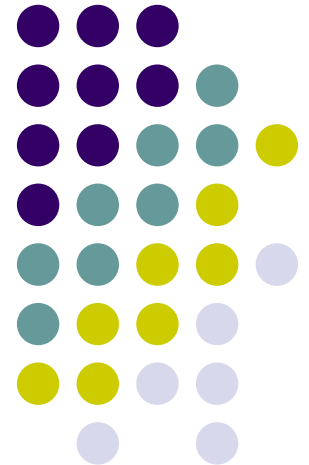
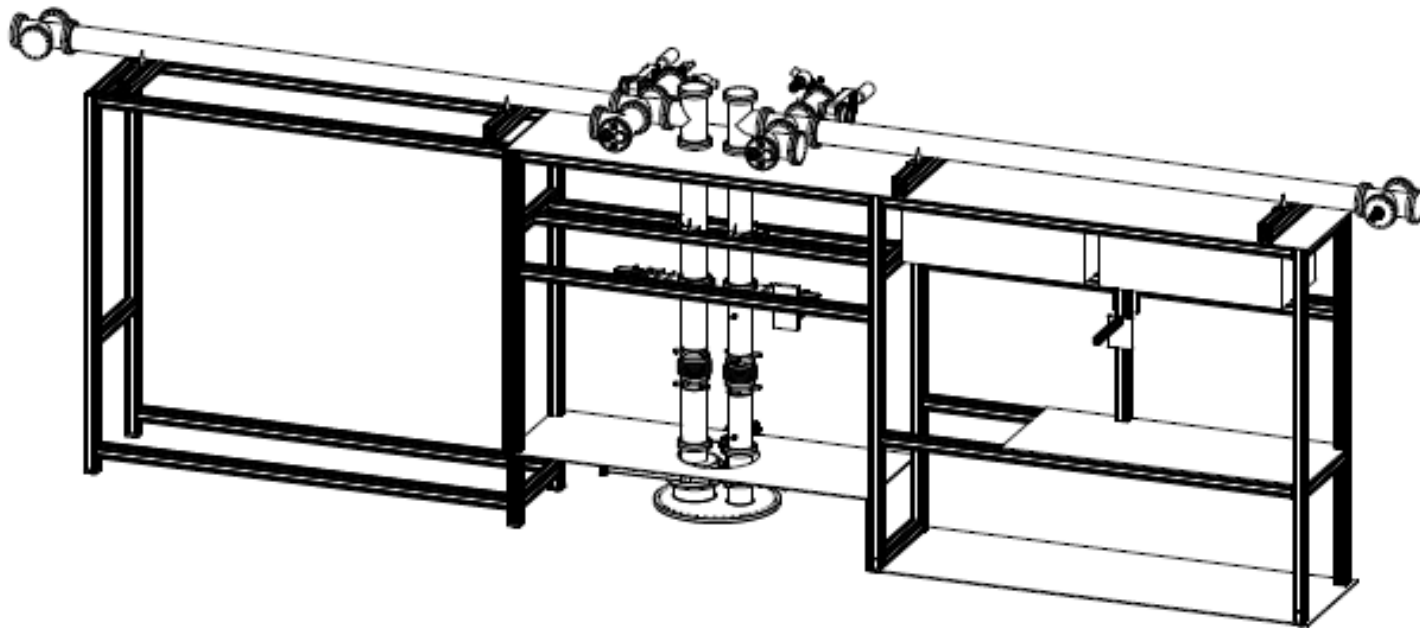
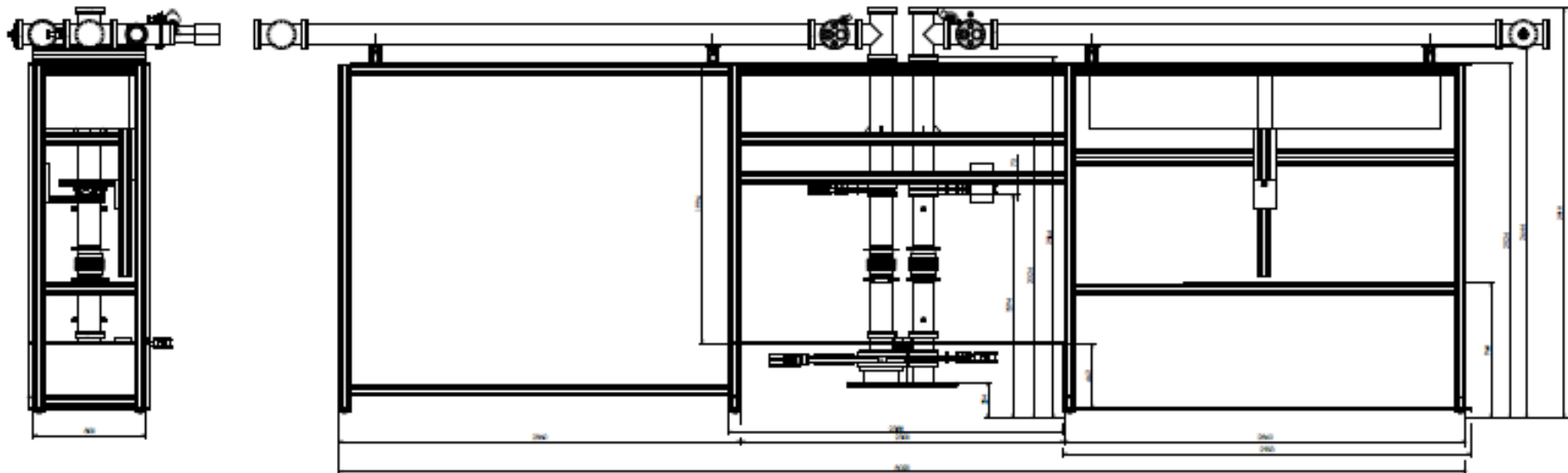


Glovebox & Cryogenic system for the hdm integration tests

M. Barnabe-Heider, M. Reissfelder,
S. Schönert, H. Strecker, G. Zuzel

MPI-K Heidelberg





1. IDENTIFICAZIONE Nome: _____ Numero: _____ Data: _____		2. APPROVAZIONE Disegnato: _____ Verificato: _____ Data: _____	
3. DESCRIZIONE Descrizione: _____ Materiale: _____ Dimensione: _____		4. NOTE Note: _____ Note: _____	

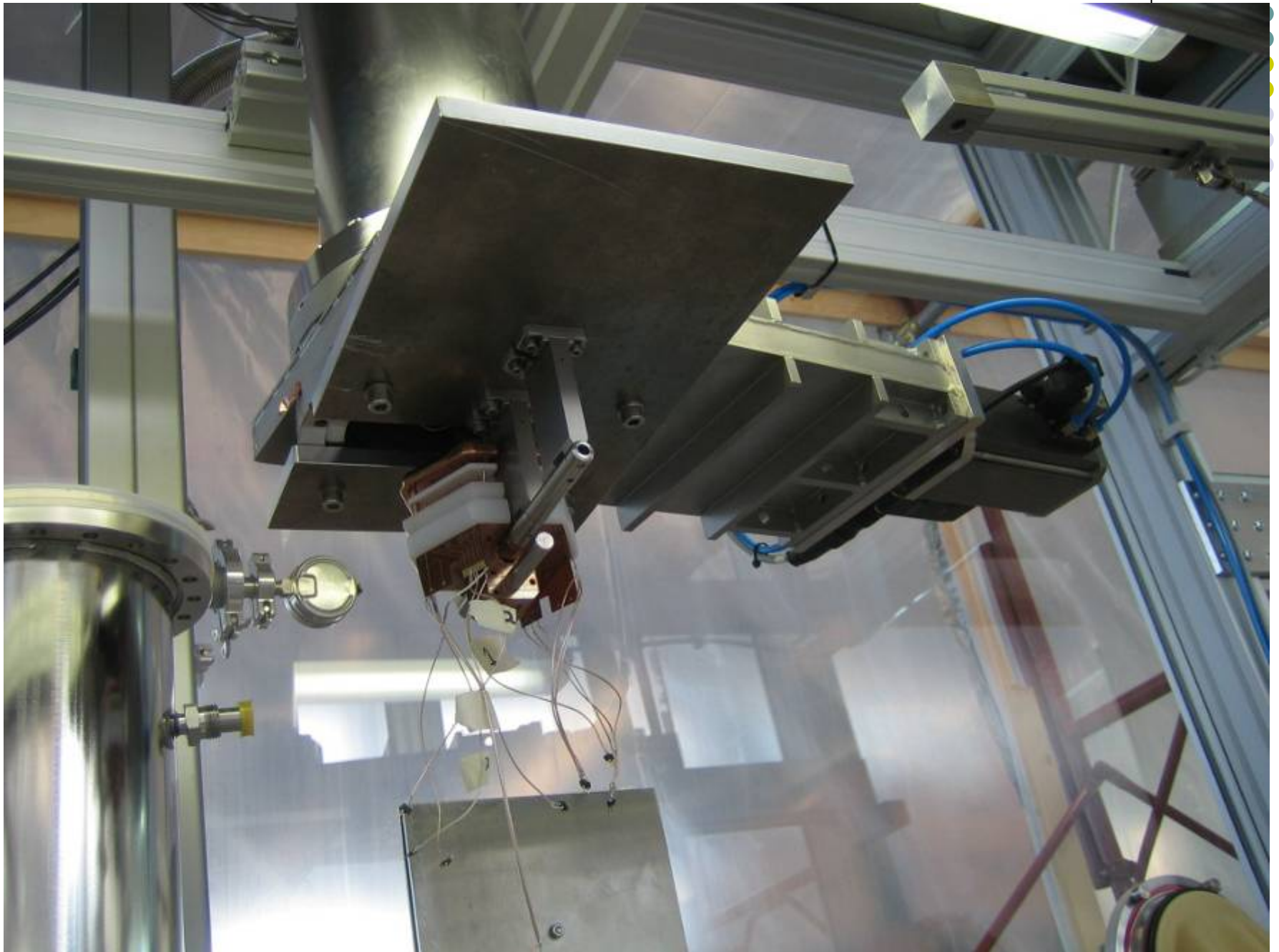


Gerda General Meeting, LNGS Italy, 15-16.06.2009

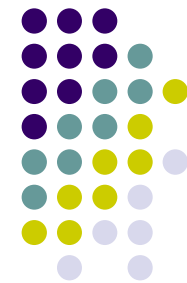


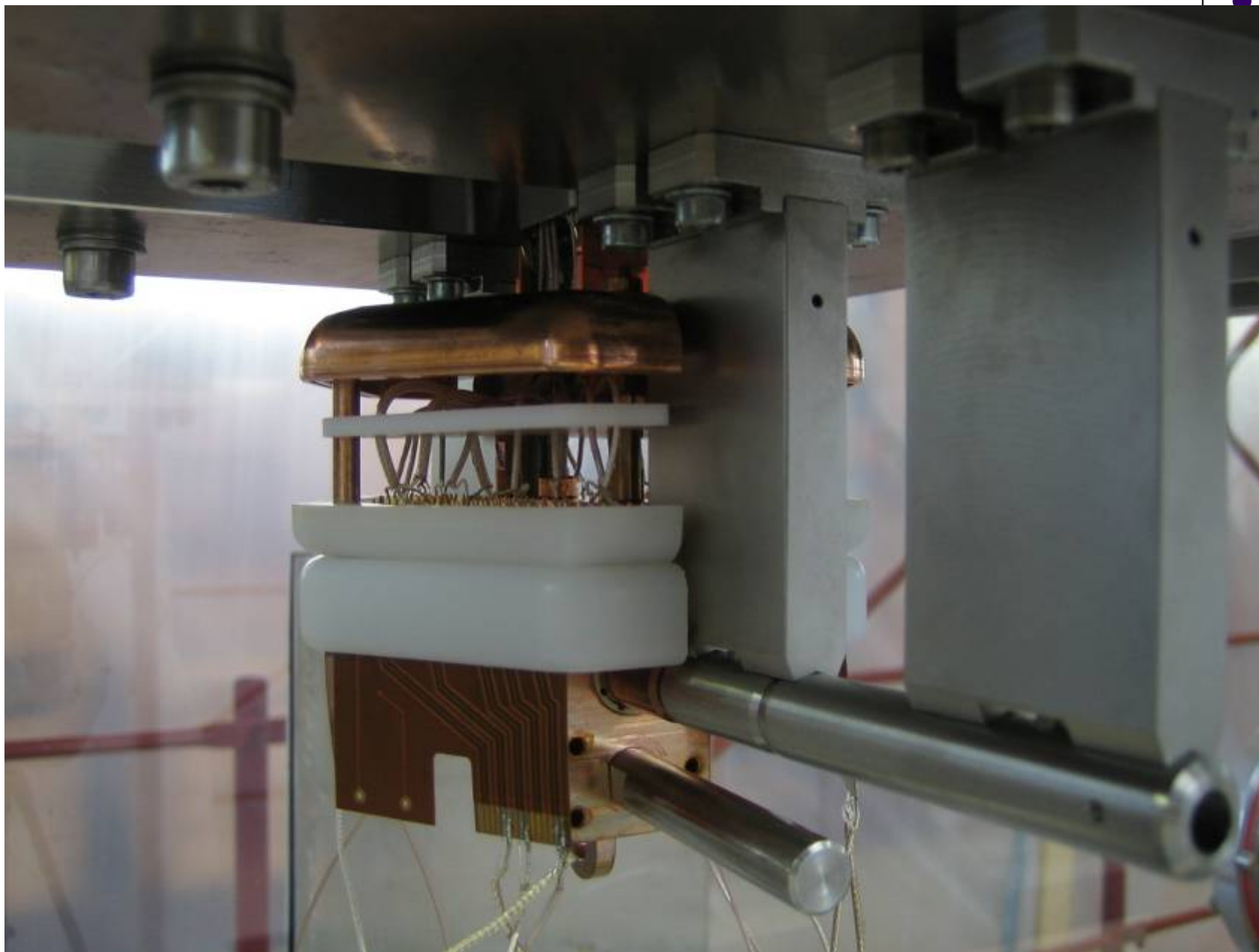
Gerda General Meeting, LNGS Italy, 15-16.06.2009



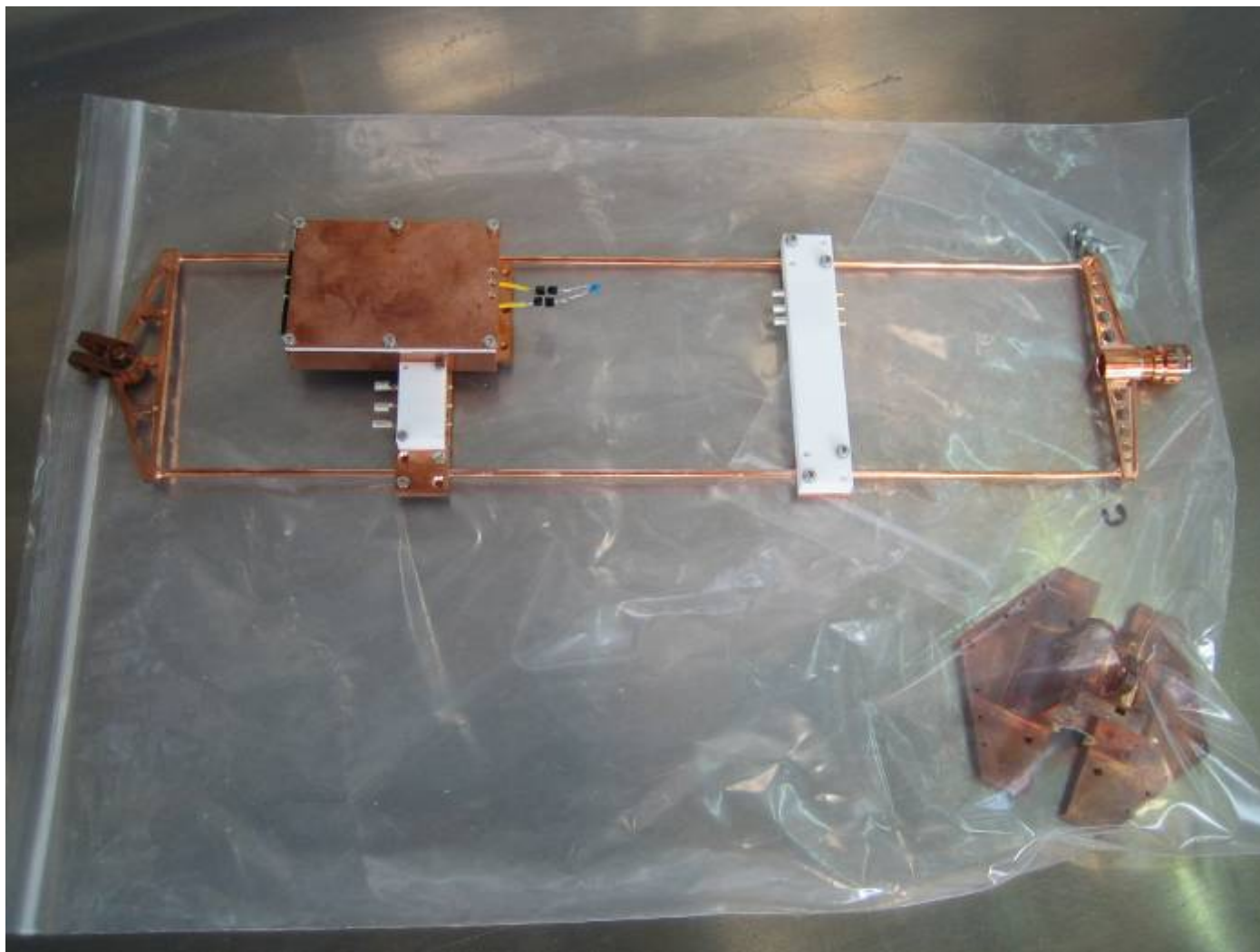


Gerda General Meeting, LNGS Italy, 15-16.06.2009

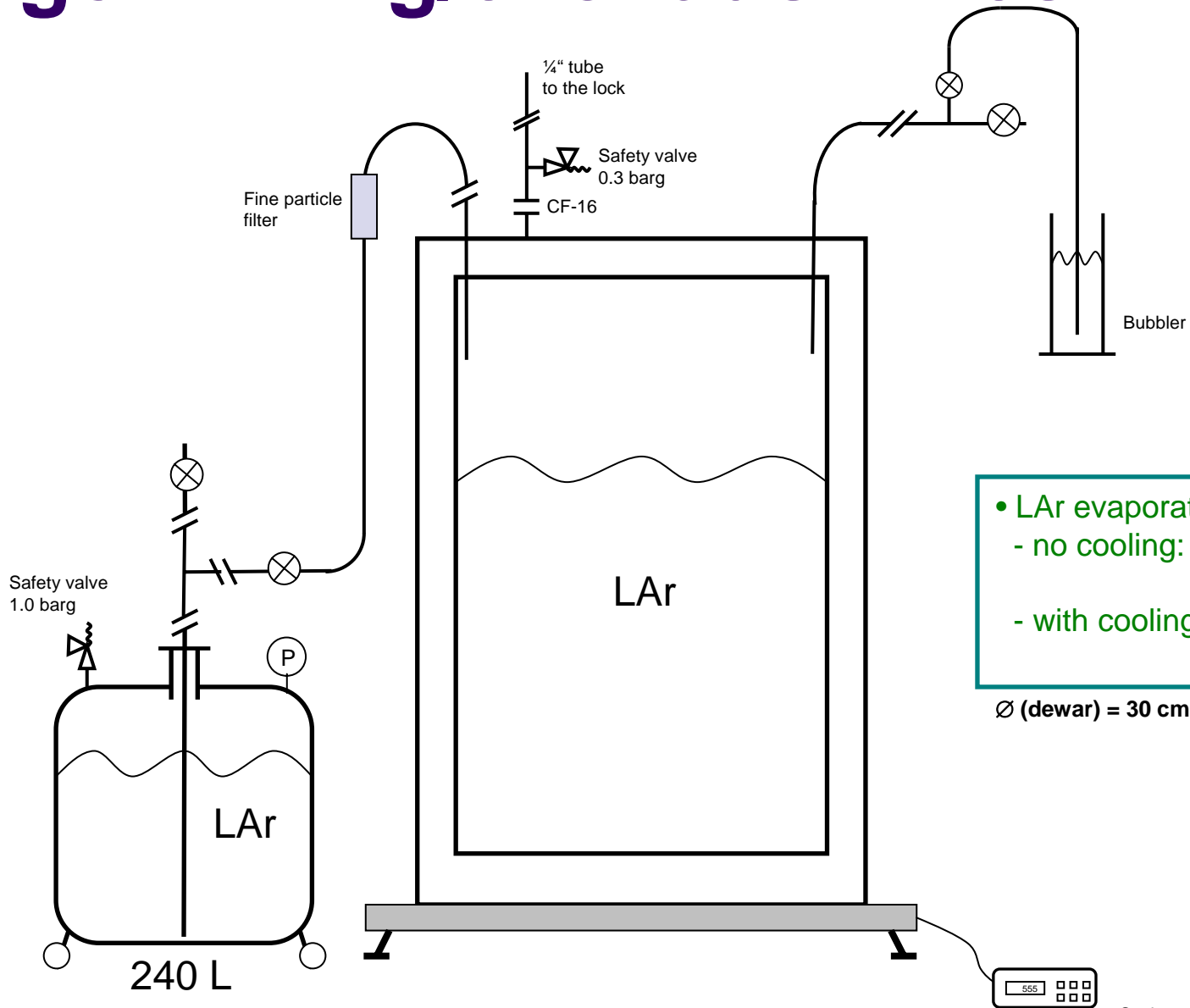




Gerda General Meeting, LNGS Italy, 15-16.06.2009



Argon filling/exhaust lines










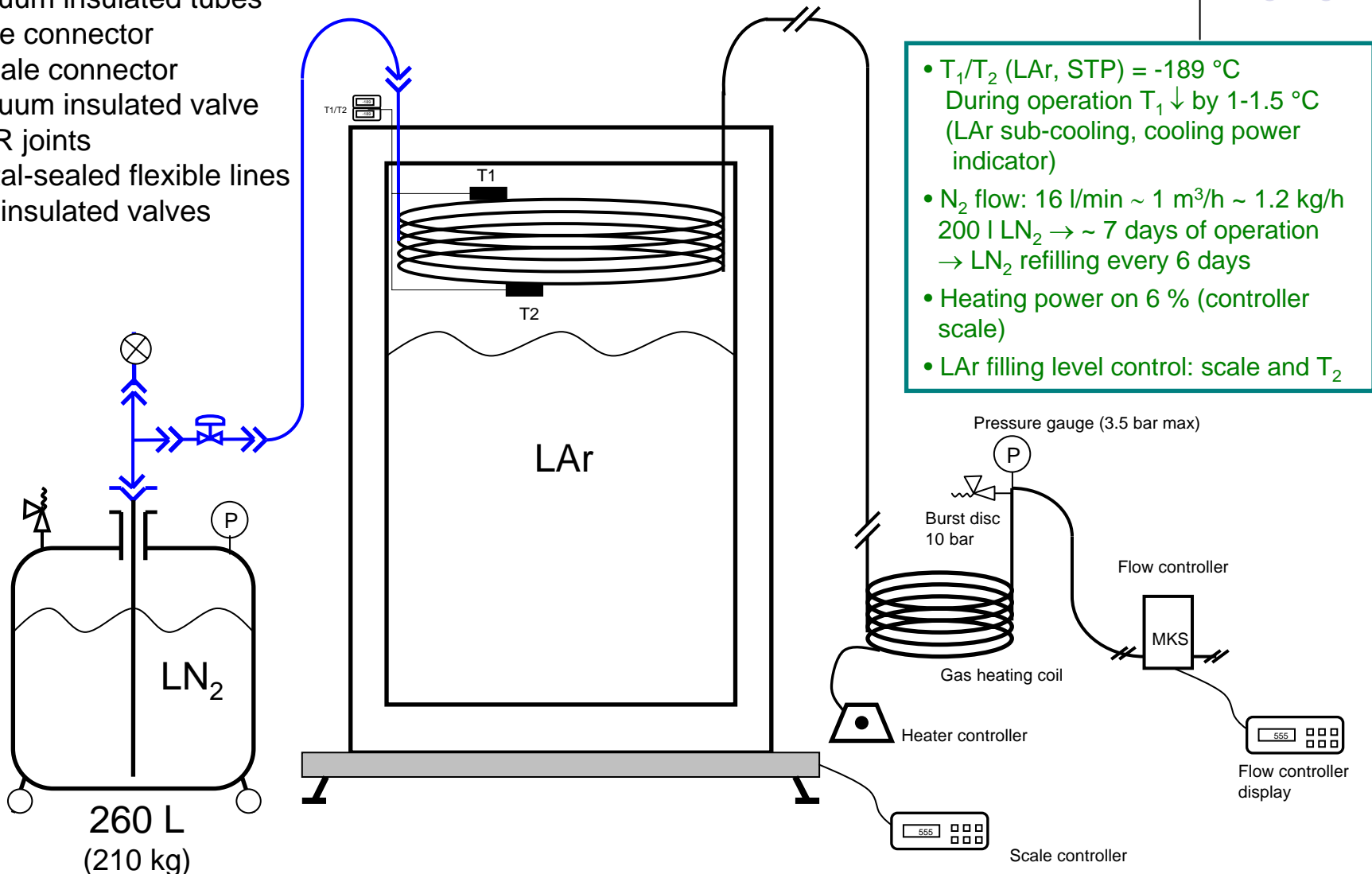
- LAr evaporation rates
 - no cooling: 5.8 kg/day
 - 5.8 cm/day
 - with cooling: 0.2 kg/day
 - 0.2 cm/day

Ø (dewar) = 30 cm → 1 cm LAr ≅ 1 kg

Nitrogen active cooling



-  vacuum insulated tubes
-  male connector
-  female connector
-  vacuum insulated valve
-  VCR joints
-  metal-sealed flexible lines
-  not insulated valves



- T_1/T_2 (LAr, STP) = -189 °C
During operation $T_1 \downarrow$ by 1-1.5 °C (LAr sub-cooling, cooling power indicator)
- N₂ flow: 16 l/min ~ 1 m³/h ~ 1.2 kg/h
200 l LN₂ → ~ 7 days of operation
→ LN₂ refilling every 6 days
- Heating power on 6 % (controller scale)
- LAr filling level control: scale and T₂

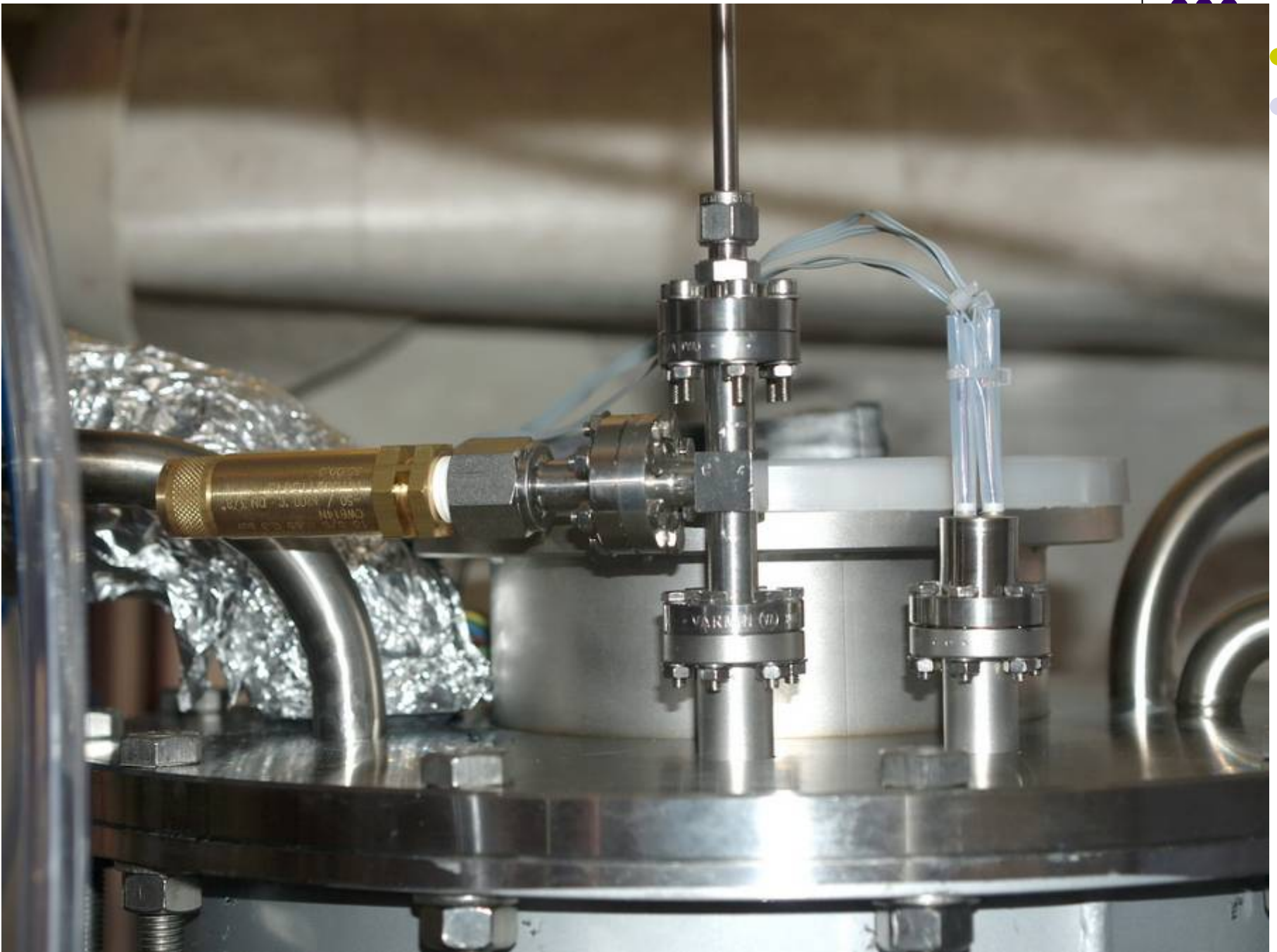
Summary cryogenics



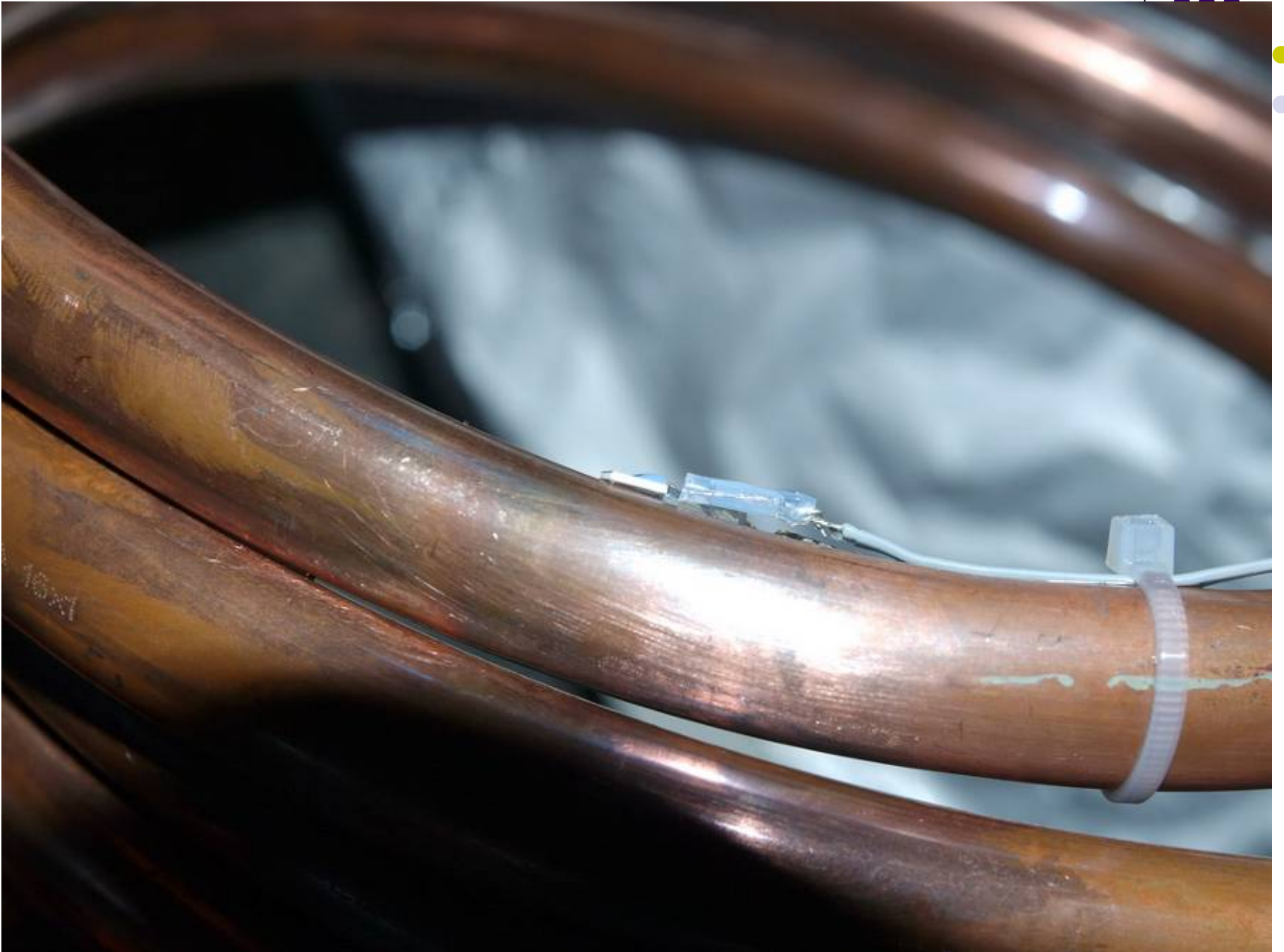
- Still to be done:
 - positioning/vertical alignment of the dewar
 - installing a tube between the dewar and the shutter
- LN₂/LAr system ready for operation
- LN₂ to be transported from underground using additional 240-l dewars, LAr refilling in HdM
- Exact cooling parameters (N₂ flow, heating power) have to be adjusted compromising LAr evaporation and LN₂ consumption



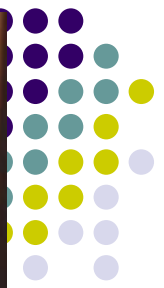
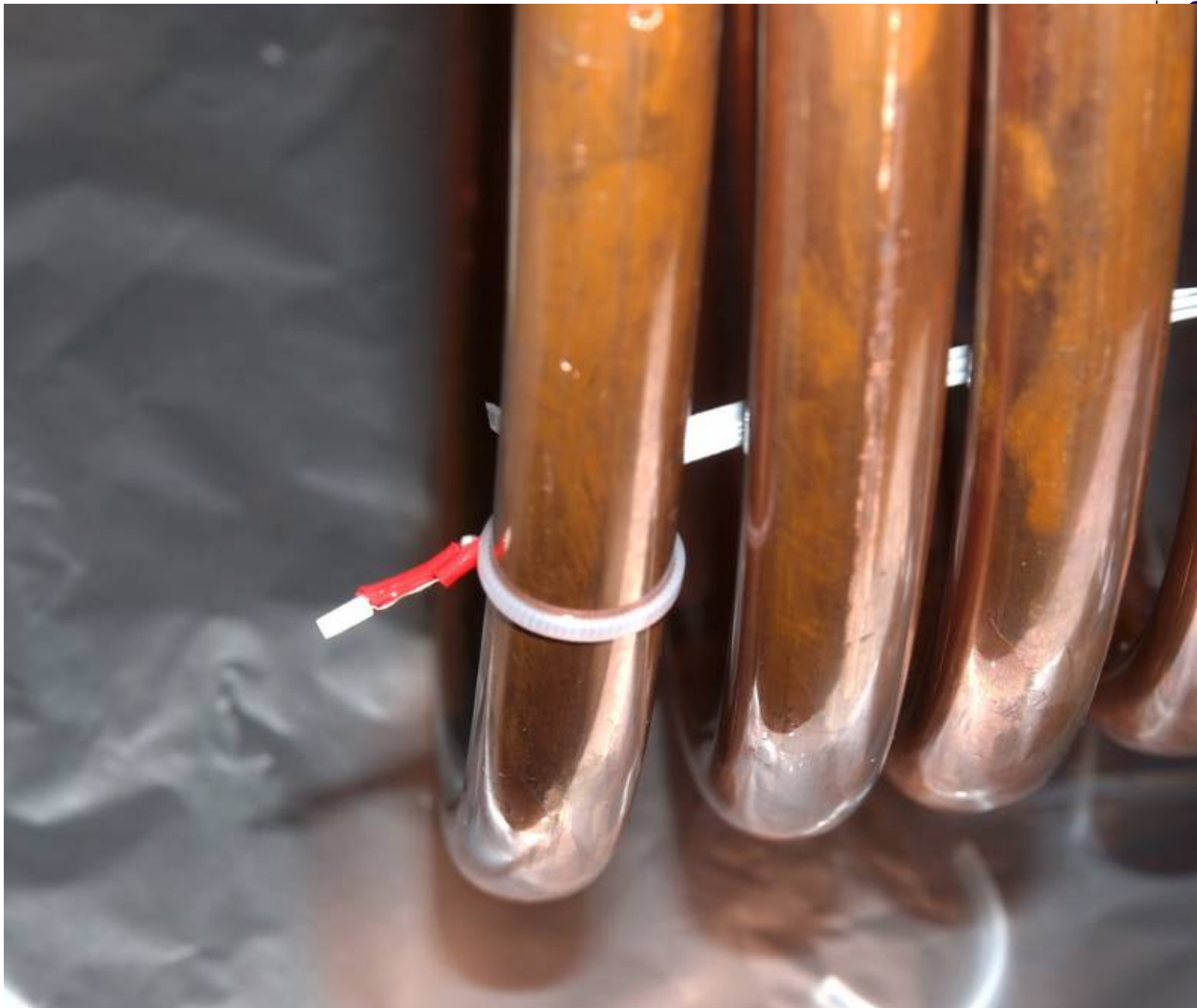
Gerda General Meeting, LNGS Italy, 15-16.06.2009



Gerda General Meeting, LNGS Italy, 15-16.06.2009

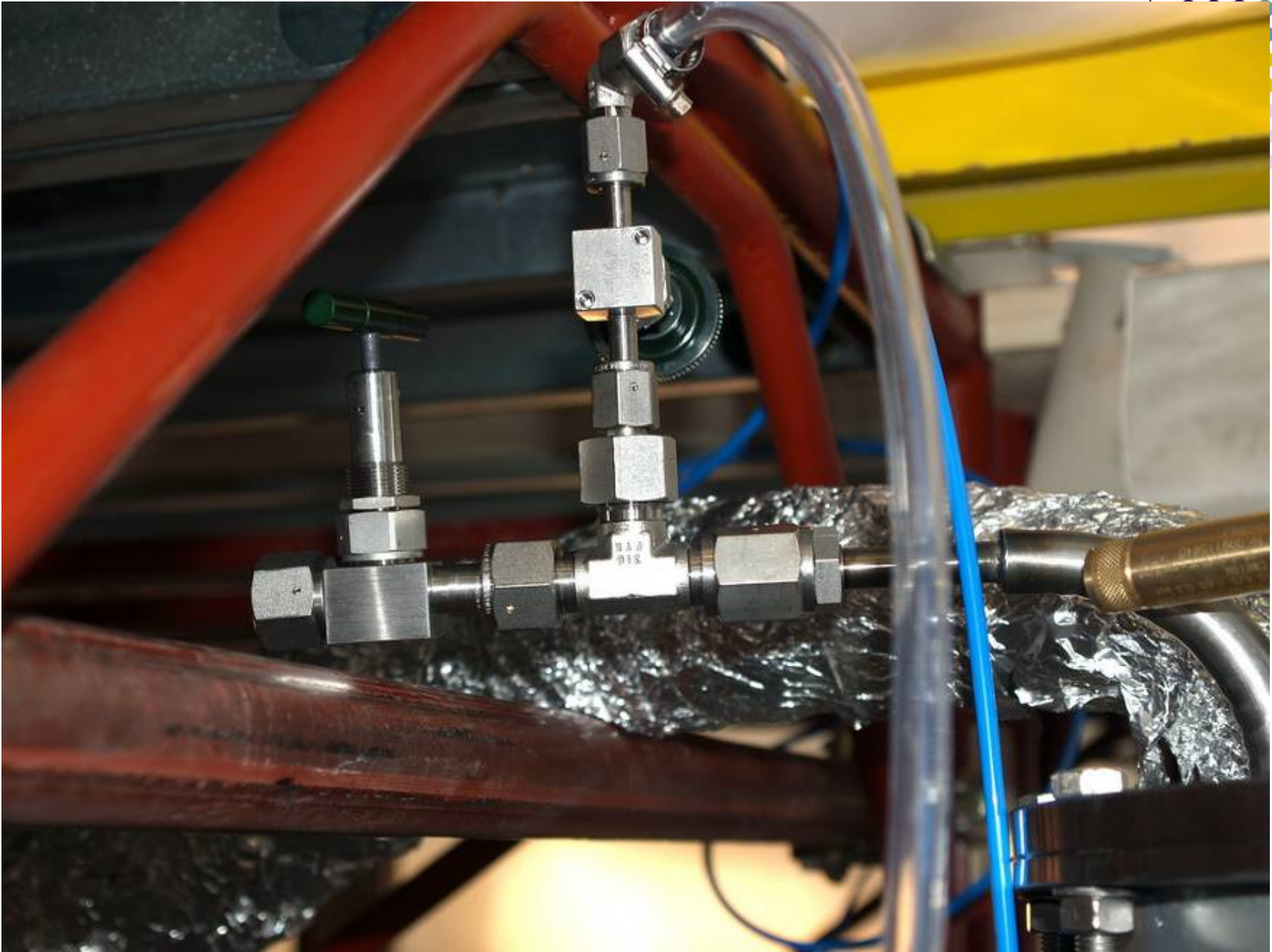


Gerda General Meeting, LNGS Italy, 15-16.06.2009





Gerda General Meeting, LNGS Italy, 15-16.06.2009



Gerda General Meeting, LNGS Italy, 15-16.06.2009



Gerda General Meeting, LNGS Italy, 15-16.06.2009





Gerda General Meeting, LNGS Italy, 15-16.06.2009

