SM-Int

	Step	Risks	Manpower/Duration	Tooling
SHELL PREPARATION	Mounting of cooling bars for layer 0 to 4	Sensible outlets	3 / few hours	Torque key
	Mounting of LV bus bars	Flexible copper, bus bar damage, r	4 / few hours	Clamps, torque key
PER LAYER (1 WEEK)	Gas leakage measurement			Gas supplies and monitoring
	Chamber HV current trends		2 / 3 days	Gas flushing, MPOD and software
	Disconnection from test stand	Heat on HV cables	1 / 15 Min	Soldering-iron
	Screw preparation		1 / 30 Min	Containments, Counting, Bookkeeping
	Chamber placement in SM	Mechanical damage	2 / 60 Min	Metal plates to cover LV plugs, ropes/be
	Gas connection	Tilting, vacuum grease dosis	1 / 10 Min	Vacuum grease, gloves
	Module alignment and screwing	Screw loss	2 / 10 Min	Torque key
	Stair frame mounting	Mechanics, screw loss	2 / 15 Min	Torque key
	HV cable insertation, connection to patchpanel	Cables not heat-resistant	2 / 30 Min	Soldering-iron
	JTAG cables		2 / 60 Min	Hot glue
	DCS power cables		2 / 60 Min	Hot glue
	Ethernet cables		2 / 60 Min	Hot glue
	Sensing wires / temperature sensors	Polarity reversal	2 / 30 Min	Hot glue
	Low voltage connection	Polarity reversal, Copper ductility,	2 / 90 Min + 2 / 30 Min	Torque key
	Trigger fibres	Mechanical damage	1 / 90 Min	Cable ties
	Ethernet test		1 / 30 Min	LV infrastructure, IT
	CE test		1 / 30 Min	LV infrastructure, IT
	JTAG test		1 / 30 Min	LV infrastructure, IT
	Fastnoise		1 / 30 Min	LV infrastructure
	Gas connection and flushing		1 / 60 Min	Gas system (CO2)
	Gas overpressure / underpressure test		1 / 2 days	Gas system
	ORI fibre connection	Mechanical damage	1 / 120 Min	
	ORI fibre checks and fixation		1 / 90 Min	Optical power-metre
	Cooling connection		2 / 60 Min	Hose clamps
	Cooling underpressure / overpressure checks		1 / 1 day	Pumps, connectors, manometres
	Noise test / Stress test / temperature test		1 / 90 Min	Cooling system, DAQ
	Layer finalisation		2 / 60 Min	Tape, cables ties, hot glue, camera

LEGEND:
Chamber test
Mechanical integration, cooling and gas
LAN/JTAG
LV
HV
Trigger and ORI fibres
Testing

Full Diss	Milling	Spares	Tests	Infrastruct.
	Corner Ledge:	New green hoses for cooling		Evacuation of cooling pipes (not for Layer 5?)
		LV Connectior	Test for LV shorts	

Test stand → NA
Test stand → NA

		Chamber screws replace competely
lts for lowering		
		Conncetors, metal pipe stack 1 → 3 interconnection to bridge 2
		Screws
		Screws
Replace cable	Rework Solde	Patch box
Full/50% renewal		Cable crimping
Full/50% renewal		Cable crimping
Full/50% renewal		Cable crimping
uncritical		Some spares
		Schüttenboxes (expensive, available at all?), MUST not destroy
+	-	
+	-	
+	-	
+	-	
O2 content on	-	
		Mechanical connectors, Esel, optical cleaing fluid
+	-	
		Connectors
+	-	Vacuum Pump/Underpressure test
+	-	

HV test, short term without LV etc, but CO2 flushing, take carte of humidtiy when HV tests
LV Rework: Wiener PS for tests, rough check for shorts, (Jorge), Mixed water
Maybe Delta PS sufficient, but plan for Wiener in case of one SM diss