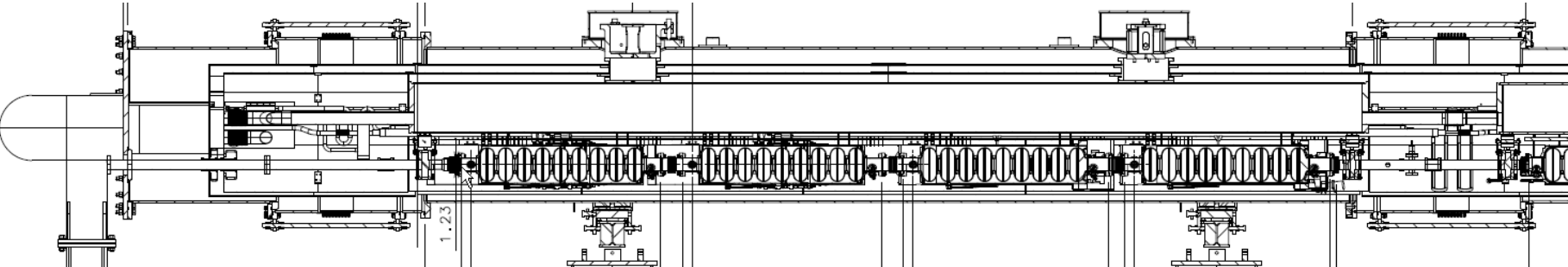
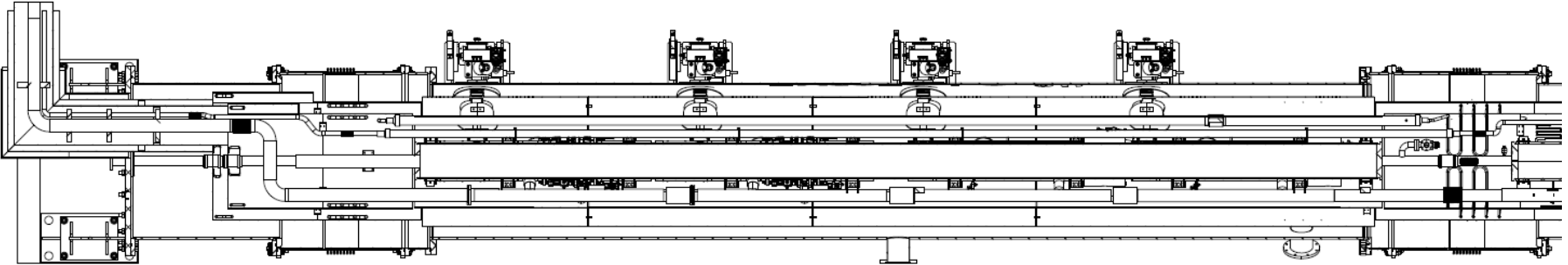
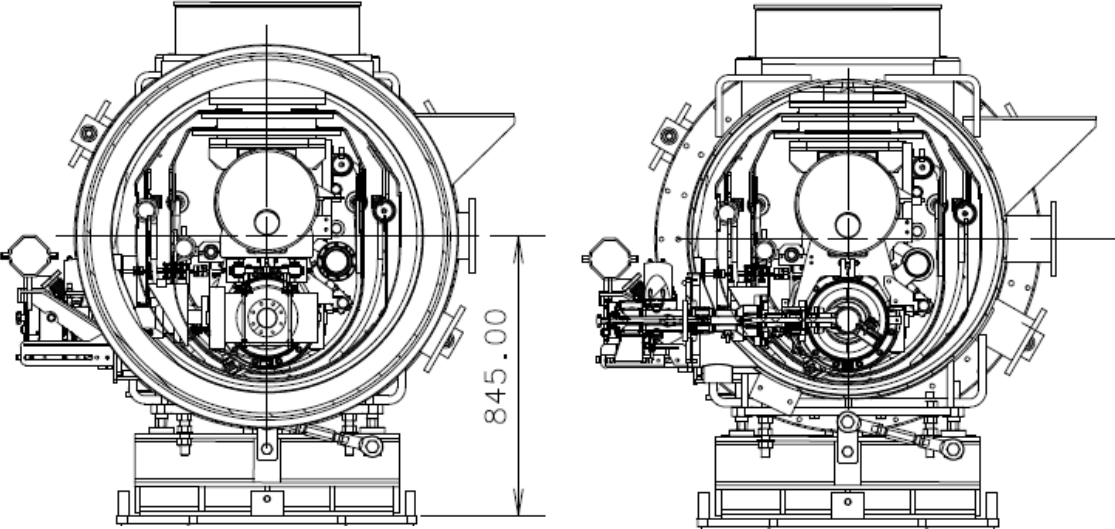


S1-G Cryomodule Component List

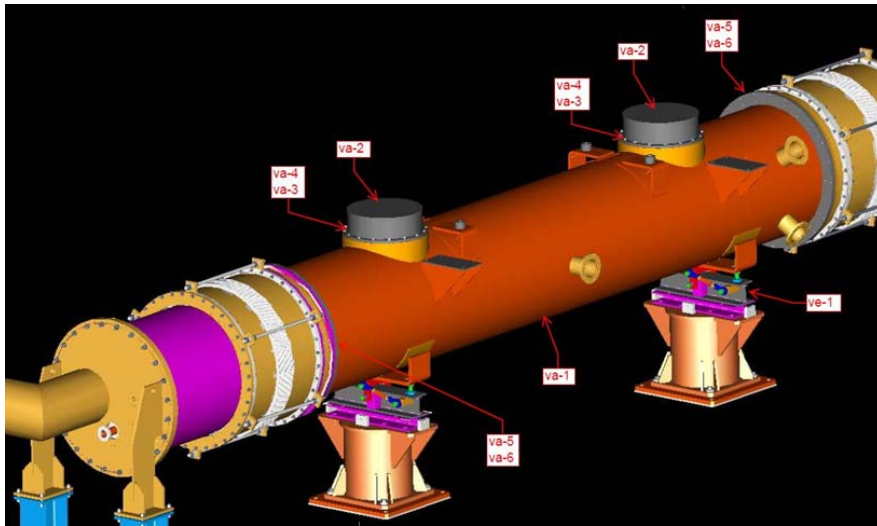
KEK, Norihito Ohuchi

Cryomodule Design for Module-C



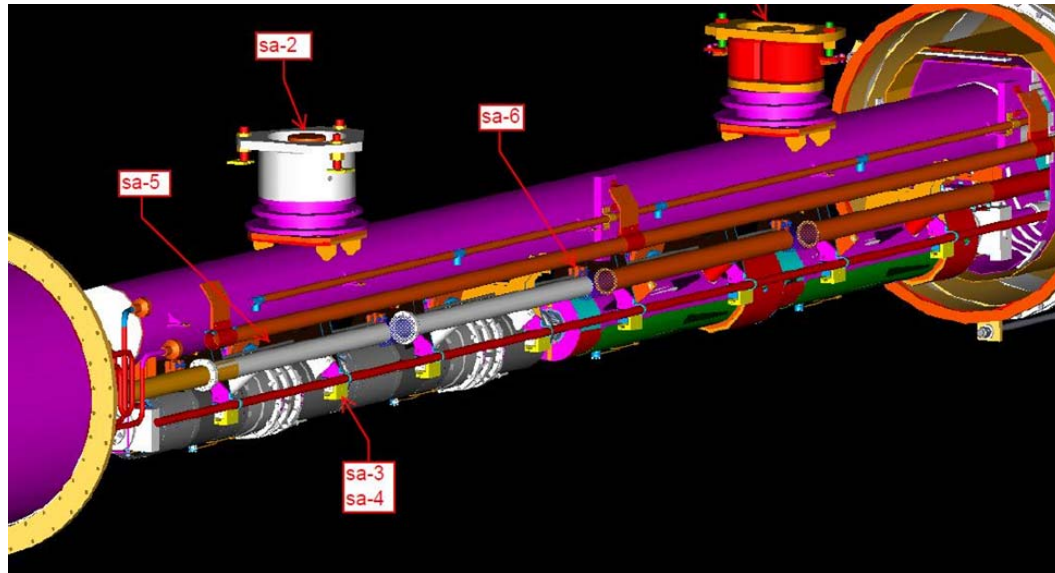
Module-C components (1)

Items	Sub-components	Sub-sub-components	Sub-sub-sub-components	Responsible Institute	No. of pcs	Drw.No.	
Vacuum Vessel	Vacuum cap			INFN	1 set	va-1	
				INFN	2 sets	va-2	
			O-ring		INFN	2	va-3
			Bolt/washer		INFN	2X22set	va-4
				hexagon socket washer-plane	INFN	1	
					INFN	1	
	Craw clamp for vessel end flange			KEK	2X12 sets	va-5	
	O-ring for vessel end-flange			KEK	2	va-6	
Vessel movable support				INFN	2 sets	ve-1	
T-shape pipe and blind flange							
	T-shape pipe			INFN	4		
		O-ring		INFN	3		
	blind flange			INFN	8		
Additional vac. vessel stage				KEK	2		



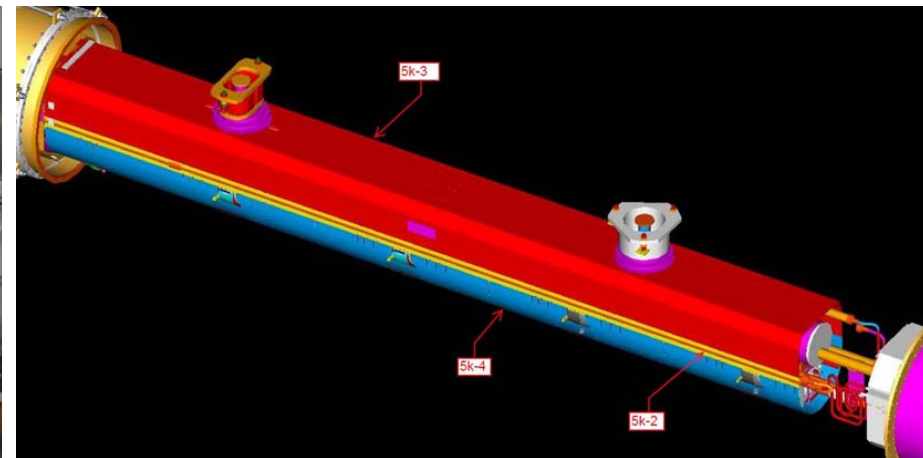
Module-C components (2)

Items	Sub-components	Sub-sub-components	responsible Institute	No. of pcs	Drw.No.
Support post (fixed type)			INFN	1 set	sa-1
Support post (movable type)			INFN	1 set	sa-2
Gas return pipe			INFN	1 set	
	C-cramp (right side)		INFN	8 sets	sa-3
	C-cramp (left side)		INFN	8 sets	sa-4
	Invar rod		INFN	1	sa-5
		mounting fixture	INFN	10 sets	sa-6
	Copper braids (between shields and posts)		INFN	8	sa-7
	MLI for GRP		INFN		



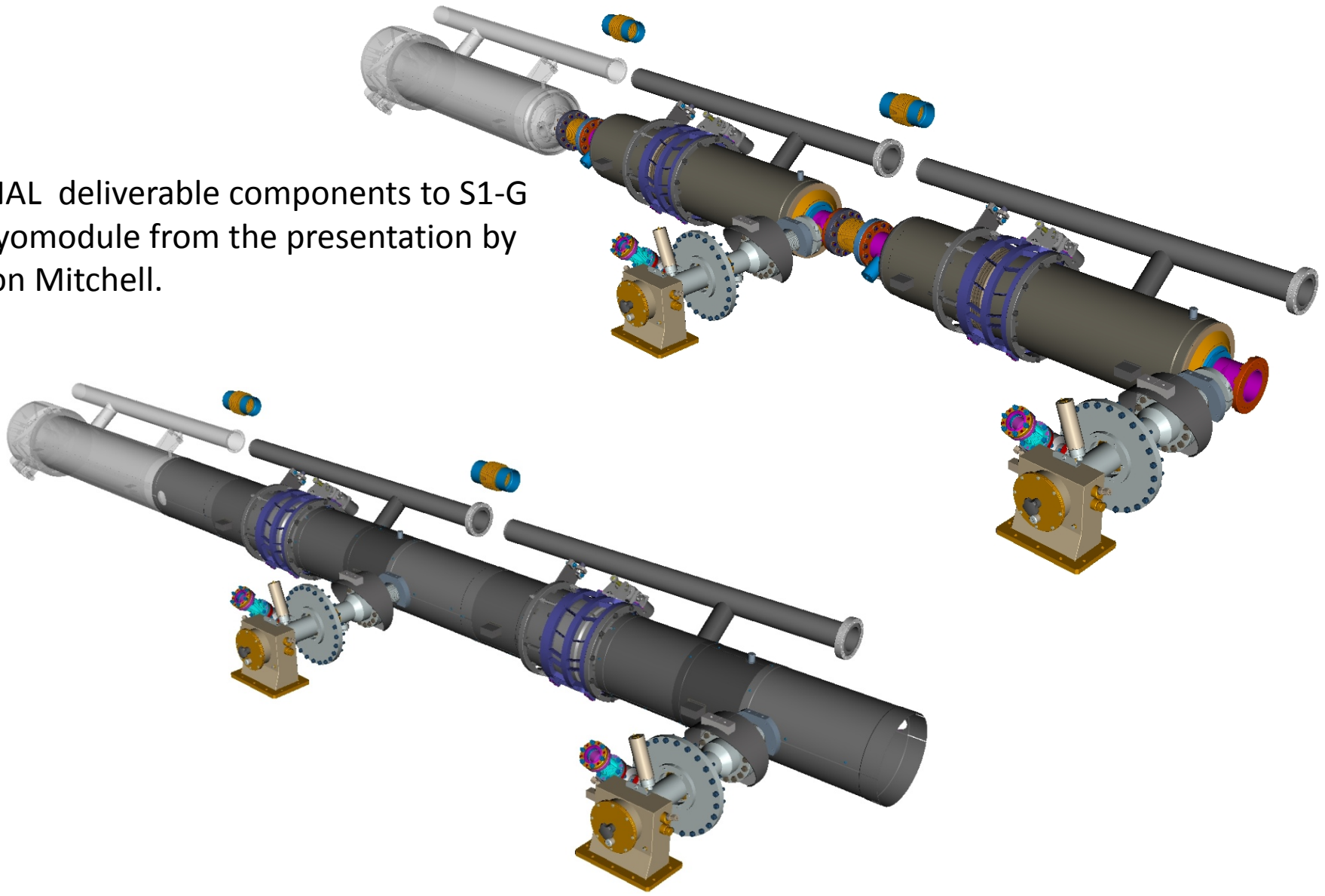
Module-C components (3)

Items	Sub-components	Sub-sub-components	responsible Institu	No. of pcs	Drw.No.
Cool-down and warm-up pipe			INFN	1	co-1
	Metal seal for flange		INFN	4	co-2
		Bolt	INFN	4x6set	co-3
	Mounting fixture		INFN	4 sets	co-4
5K forward pipe			INFN	1	5k-1
5K return pipe with fin			INFN	1	5k-2
5K shield Al plates			INFN	1 set	
	Upper Al plate		INFN	1 set	5k-3
	Lower Al plate		INFN	1 set	5k-4
		Bolt and nut	INFN		5k-5
	MLI for 5K shield		INFN	1 set	5k-6
80K forward pipe			INFN	1	80k-1
80K return pipe with fin			INFN	1	80k-2
80K shield Al plates			INFN	1 set	
	Upper Al plate		INFN	1 set	80k-3
	Lower Al plate		INFN	1 set	80k-4
		Bolt and nut	INFN		80k-5
	MLI for 80K shield		INFN	1 set	80k-6
Pipe for cables of tuner components			INFN	1 set	pi-1



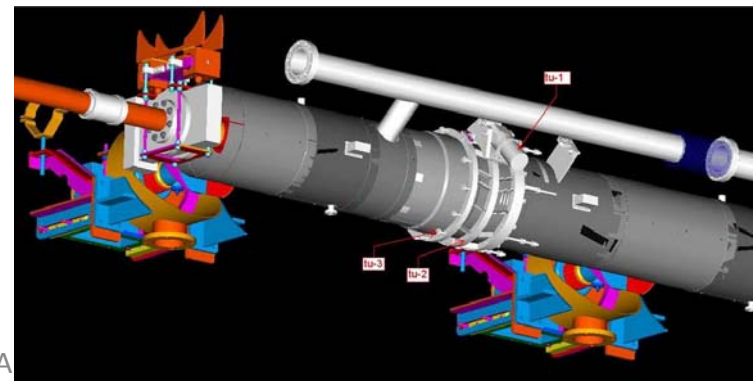
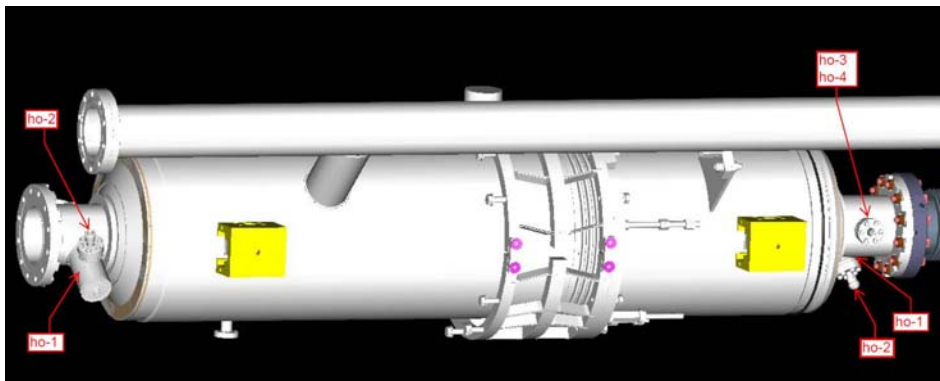
FNAL cavity components (1)

FNAL deliverable components to S1-G cryomodule from the presentation by Don Mitchell.



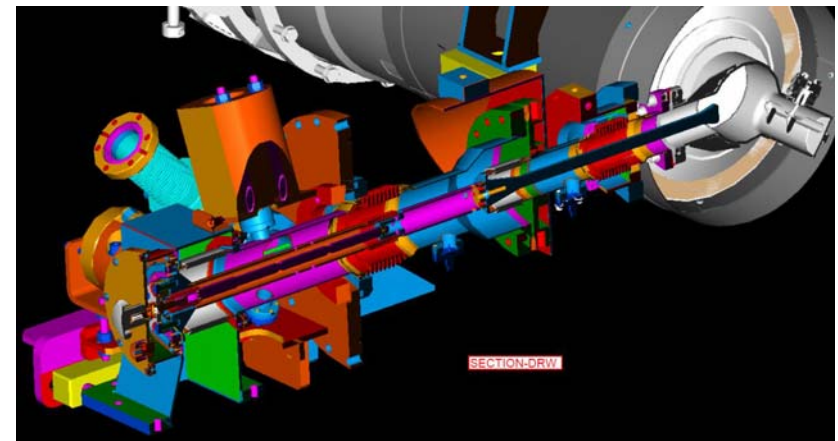
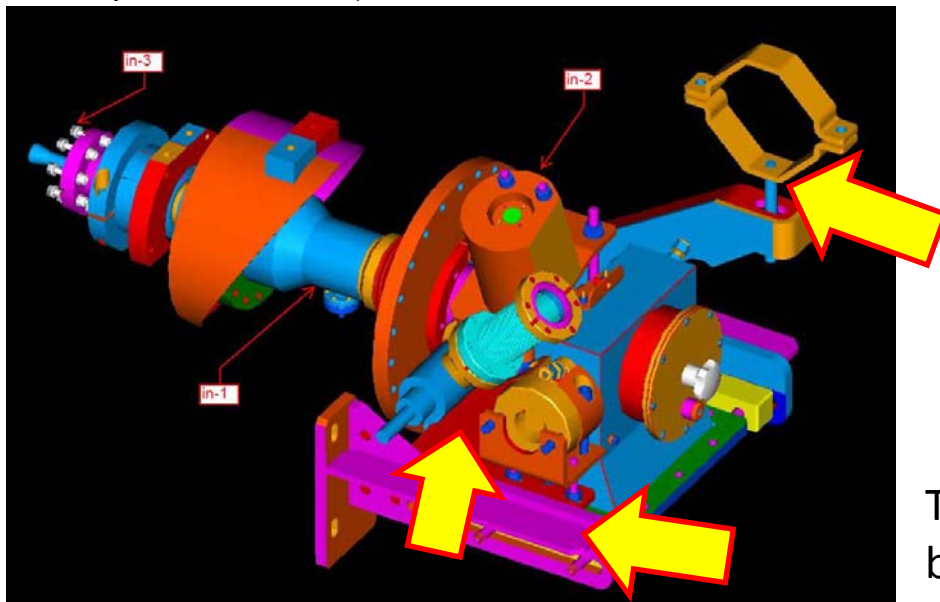
FNAL cavity components (2)

Items	Sub-components	Sub-sub-comp.	Responsible Institute	No. of pcs	Drw.No
Cavity-jacket	Main body		FNAL	2 sets	ca-1
	2K Lhe supply pipe and bellow		FNAL	2 sets	ca-2
	SI		FNAL	2 sets	ca-3
Tuner (Blade-slim)	Main components		FNAL/INFN	2 sets	
		Motor-ASSY	FNAL/INFN	1 set	tu-1
		Blade-ASSY	FNAL/INFN	1 set	tu-2
		Bolt and nut	FNAL/INFN	10 set	tu-3
	Cable (motor, piezo)		FNAL/INFN	1	
HOM coupler	Main component		FNAL	2 sets	tu-4
		antenna-ASSY	FNAL	2	ho-1
	Monitor coupler		FNAL	2	ho-3
	Thermal intercept		FNAL	2 sets	ho-5
Feedthrough flange, RF cables, monitor cables			FNAL/KEK	2 sets	
	RF cables with connector and feedthrough inside vacuum vessel		FNAL	4 sets	
	monitor cables with connector and feedthrough inside vacuum vessel		FNAL	2 sets	
	RF cables with connector outside vacuum vessel		KEK	4 sets	
	monitor cables with connector outside vacuum vessel		KEK	2 sets	



FNAL cavity components (3)

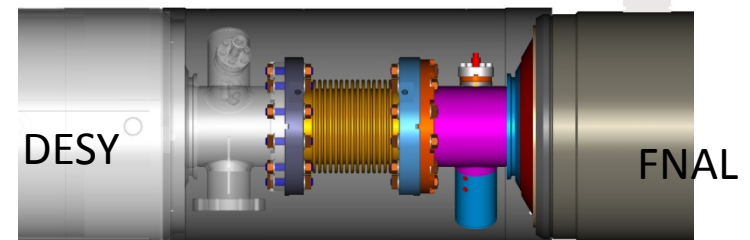
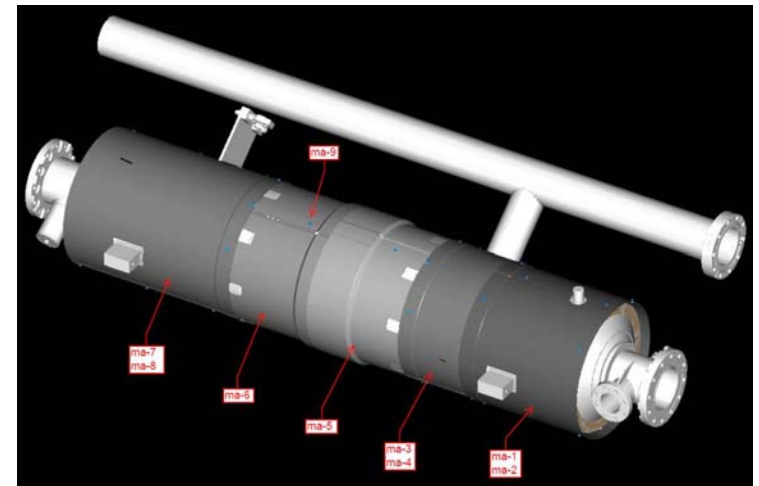
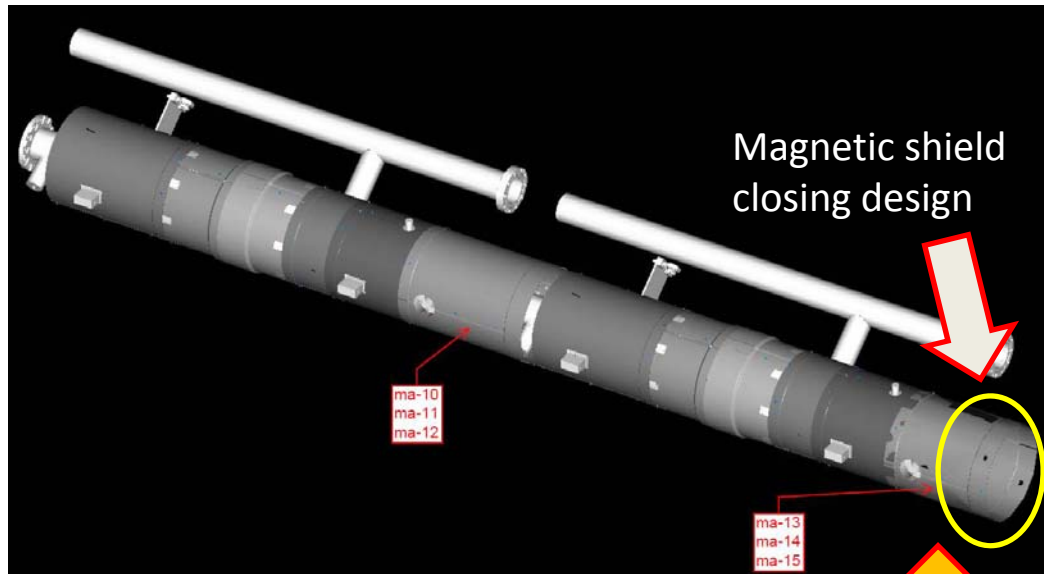
Items	Sub-components	Sub-sub-comp.	Responsible Institute	No. of pcs	Drw.No	
Input coupler	Main components		FNAL	2		
			Coupler-ASSY	FNAL	1set	in-1
			Shield-ASSY	FANL	1set	in-2
			Bolt and nut	FNAL	8set	in-3
				FNAL	1	
				FNAL	1	
			Seals	FNAL	1	
			Coupler shield (5K and 80K)	FNAL		
			Diagnostic cable	FNAL	2	
			Thermal intercept	FNAL	2 sets	
			Vacuum flange to vessel	FNAL	2 sets	
				Bolt and nut	FNAL	
				O-ring	FNAL	1
	Supports for input coupler and vacuum pipe out of vacuum vessel		SLAC	2		



The support structure will be supplied by SLAC.

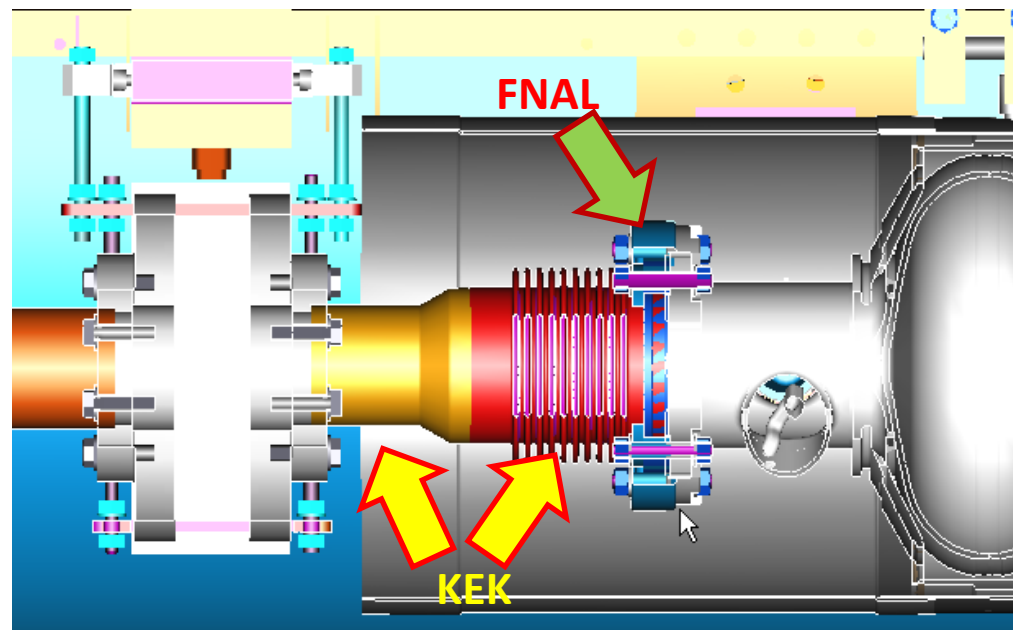
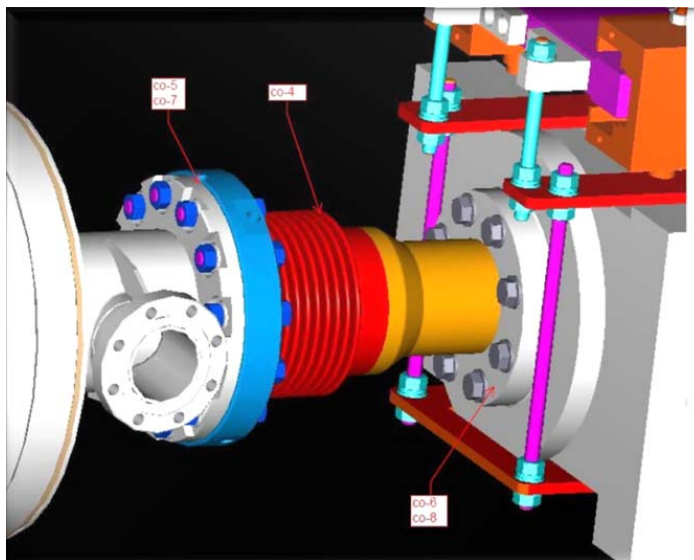
FNAL cavity components (4)

Magnetic shield	For cavity-jacket		FNAL	2 sets	
		shield-plate	FNAL	1 set	
		Bolt and nut	FNAL	34 set	ma-9
	For beam pipe between FNAL cavities		FNAL	1 set	
		Bolt and nut	FNAL	10 set	ma-12
	For beam pipe between FNAL cavity and gate		FNAL	1 set	
		Bolt and nut	FNAL	8 set	ma-15
	For beam pipe between FNAL and DESY		FNAL	1 set	
		Bolt and nut	FNAL		



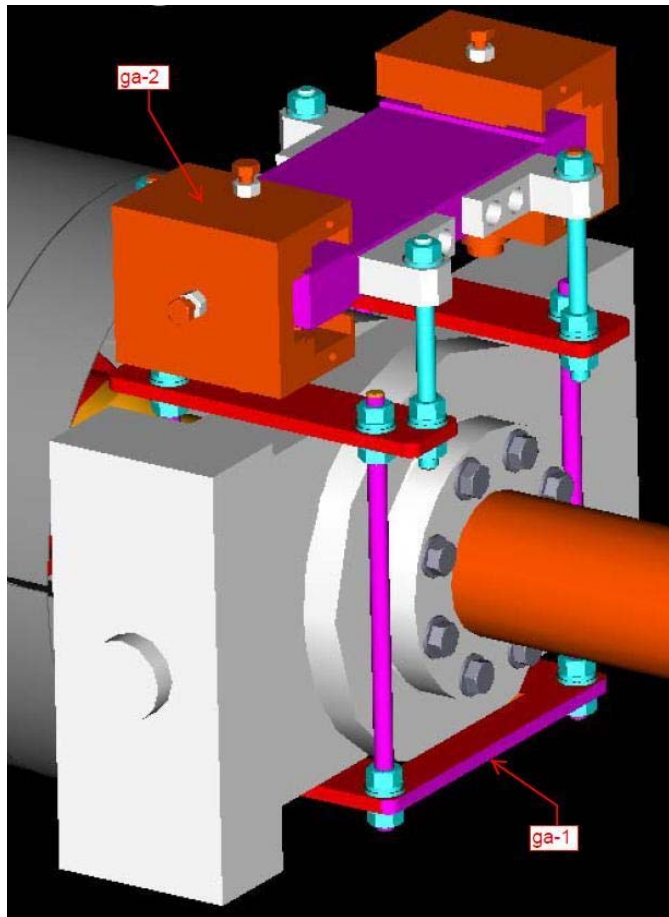
FNAL cavity components (5)

Connection beam pipe and bellow	Between FNAL cavities		FNAL	1 set	
		bellow	FNAL	1	∞-1
		Metal seal	FNAL	2	∞-2
		Bolt and nut	FNAL	2X12set	∞-3
	Between FNAL cavity and gate valve		FNAL/KEK	1 set	
		Bellow	KEK	1	∞-4
		Metal seal	FNAL/KEK	1set	
		Bolt and nut	FNAL	12set	∞-7
		Bolt	KEK	8set	∞-8
	Between FNAL and DESY cavities		FNAL	1 set	
		bellow	FNAL	1	∞-9
		Metal seal	FNAL	2	∞-10
		Bolt and nut	FNAL	2X12set	∞-11



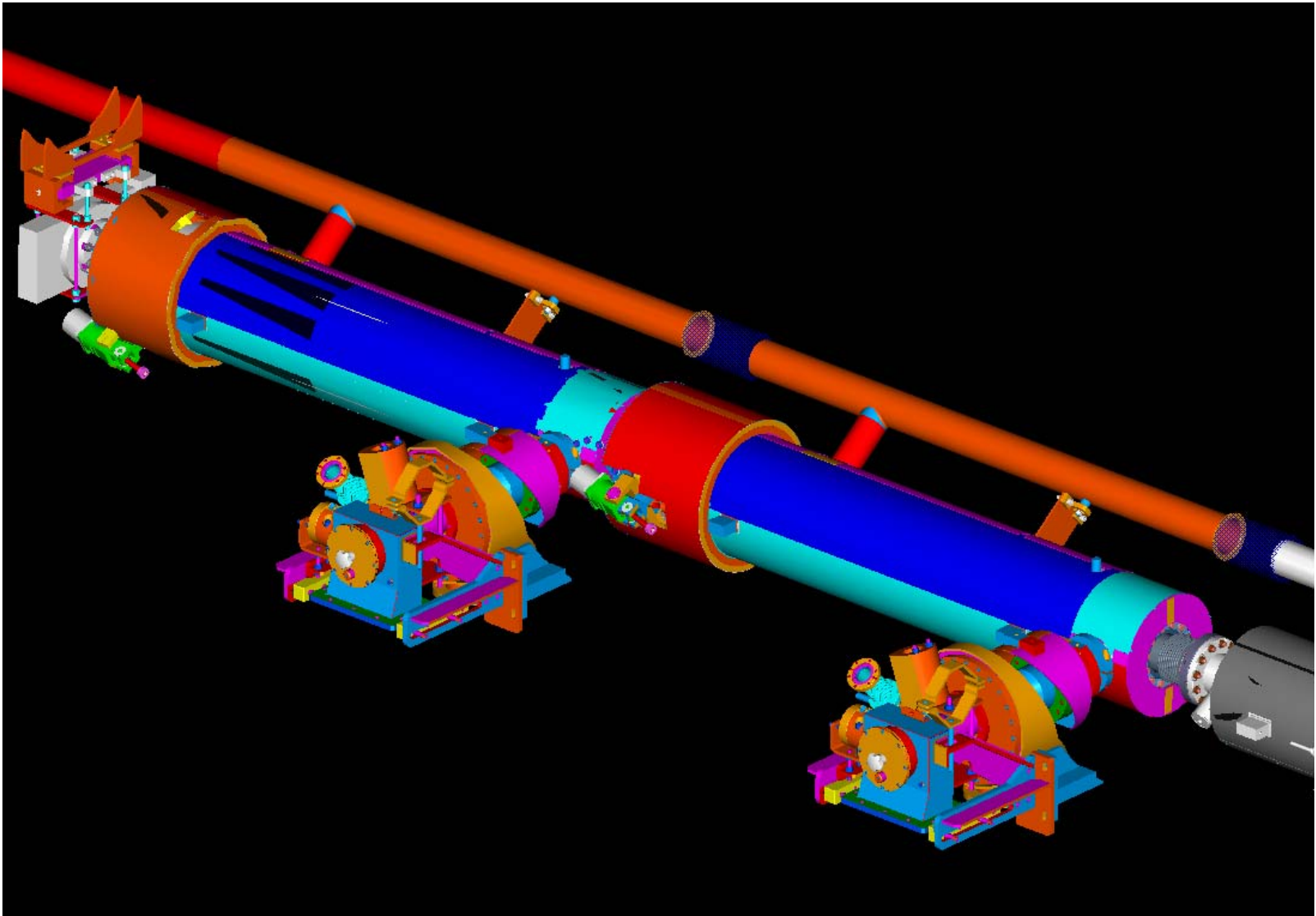
FNAL cavity components (6)

Gate valve			KEK	1 set	
	Valve support-ASSY		KEK	1 set	
		support-ASSY	KEK	1 set	ga-1
		C-cramp	KEK	2 set	ga-2



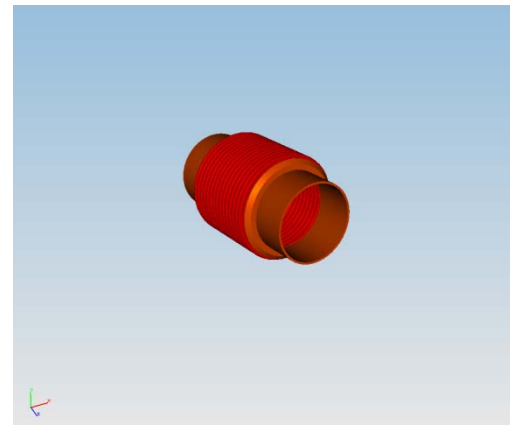
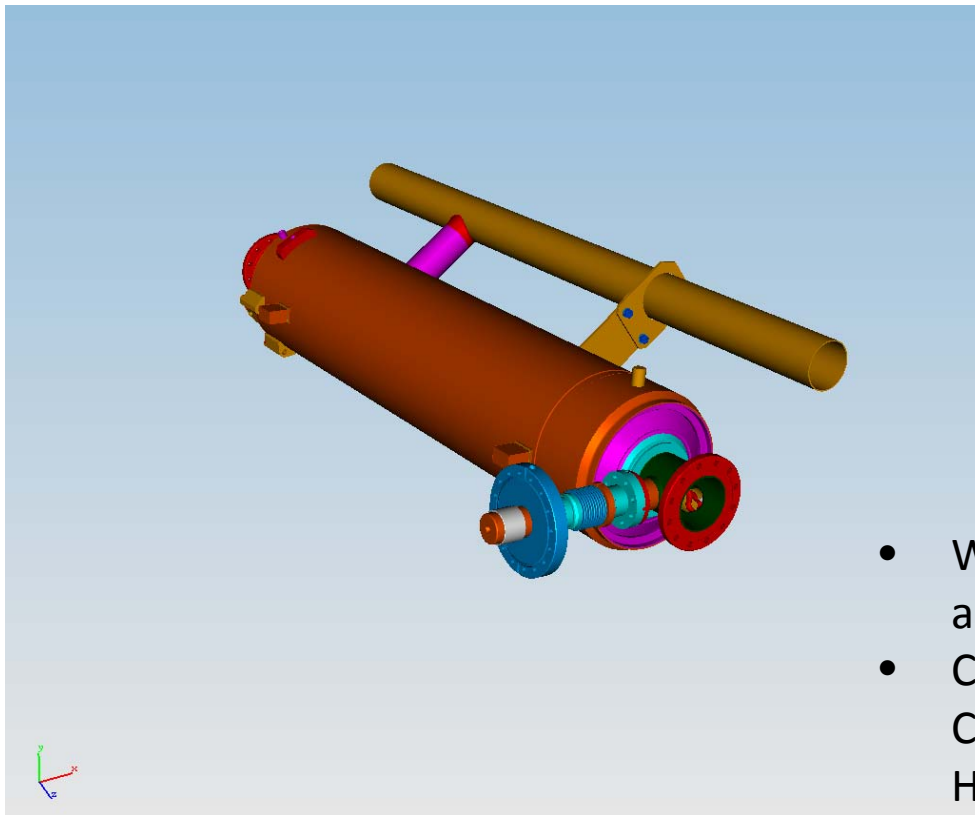
DESY cavity components (1)

DESY cavity components were discussed with Kay Jensch.



DESY cavity components (2)

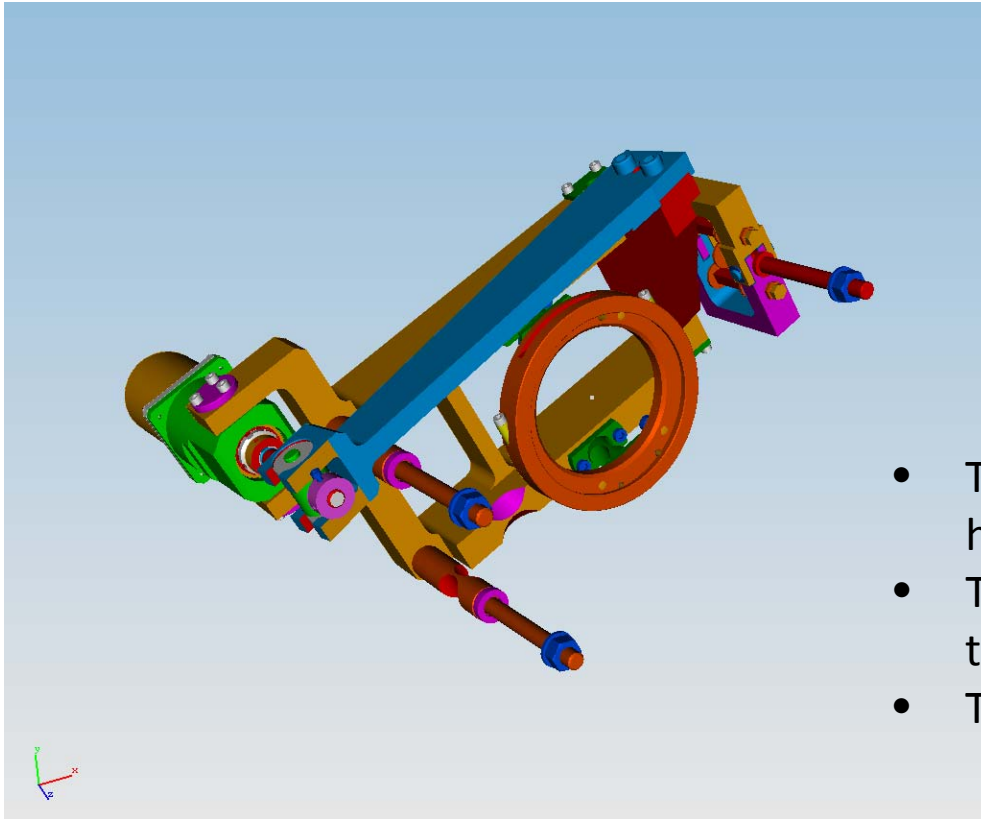
Items	Sub-components	Sub-sub-comp.	Responsible Institute	No. of pcs	Drw.No.
Cavity-jacket	Main body		DESY	2 sets	ca-1
	2K LHe supply pipe and bellow		DESY	2 sets	ca-2
	SI		DESY	2 sets	ca-3



- Welding Ti-bellow at KEK-STF during the assembly.
- Cavity tested in CHECHIA and dressed with Cold Main Coupler, Pick-up Antenna and HOM-Feedthrough

DESY cavity components (3)

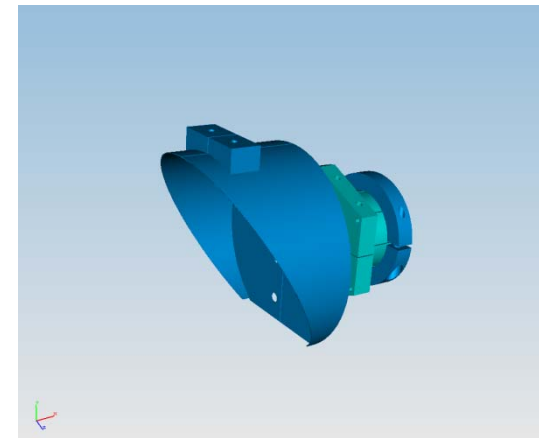
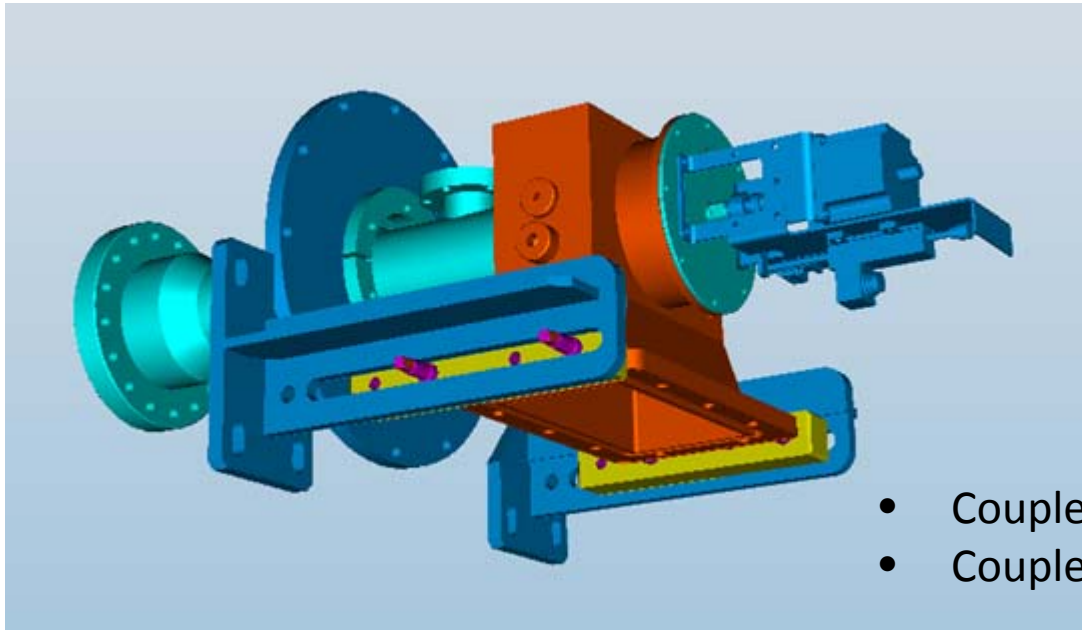
Items	Sub-components	Sub-sub-comp.	Responsible Institute	No. of pcs	Drw.No.
Tuner (Saclay)	Main components		DESY	2 sets	
		Mortor-ASSY	DESY	1set	tu-1
		support-ASSY	DESY	1set	tu-2
	Cable (motor, piezo)		DESY	2 sets	tu-3



- Tuner system is delivered with the cable harness for the motor and piezo.
- To specified: cable length - feedthrough type and feedthrough flange position
- Thermal intercepts

DESY cavity components (4)

Items	Sub-components	Sub-sub-comp.	Responsible Institute	No. of pcs	Drw.No.
Input coupler	Main components		DESY	2set	
		Coupler-ASSY	DESY	1set	in-1
		Shield-ASSY	DESY	1set	in-2
	Coupler shield (5K and 70K)		DESY	2set	
	Diagnostic cable		DESY	2	in-3
	Thermal intercept		DESY	2 sets	in-4
		Bolt and nut	DESY	8 set	in-5
		Seals	DESY	1	in-6
	Vacuum flange to vessel		DESY	2 sets	
		Bolt and nut	DESY		
		O-ring	DESY	1	
Supports for input coupler and vacuum pipe out of vacuum vessel			DESY	2	

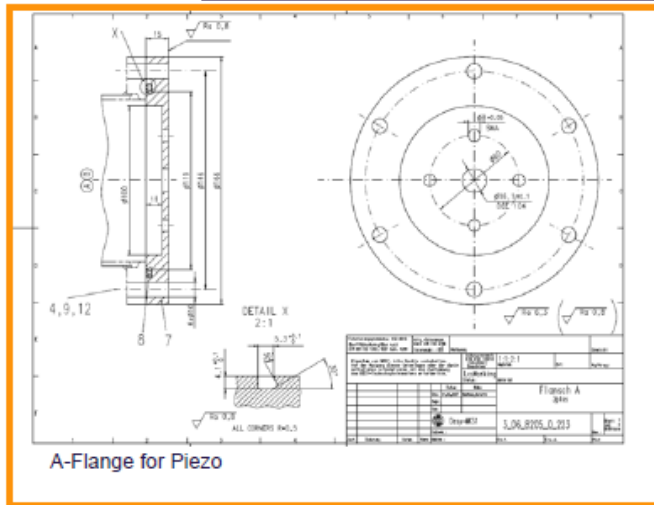
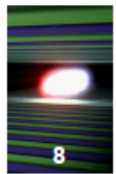


- Coupler cold part - mounted on the cavity
- Coupler pumping line ?

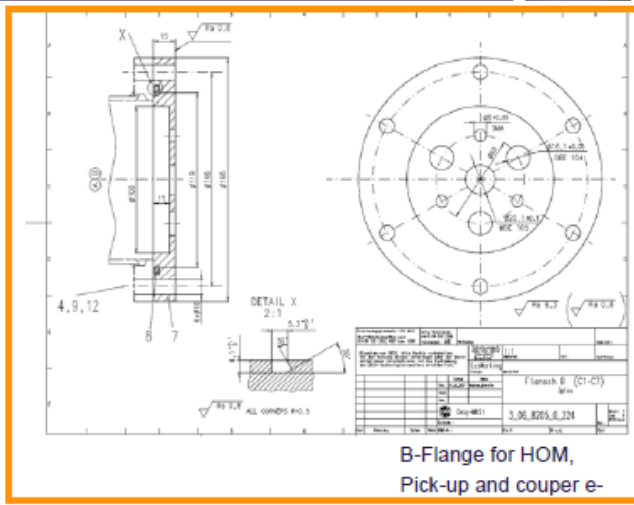
DESY cavity components (5)

Items	Sub-components	Sub-sub-comp.	Responsible Institute	No. of pcs	Drw.No.
HOM coupler	Main component		DESY	2set	
		Antenna-ASSY	DESY	2	ho-1
	Monitor coupler		DESY	2	ho-3
	Thermal intercept		DESY	2 sets	ho-5
Feedthrough flange, RF cables, monitor cables			DESY/KEK	2 sets	
	RF cables with connector and feedthrough inside vacuum vessel		DESY	4	
	monitor cables with connector and feedthrough inside vacuum vessel		DESY	2	
	RF cables with connector outside vacuum vessel		KEK	4	
	monitor cables with connector outside vacuum vessel		KEK	2	

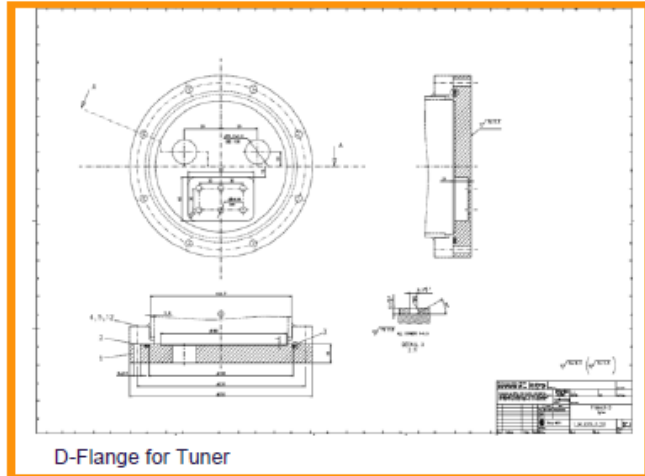
Needed: Cable plan-feedthrough type and feedthrough flange position



A-Flange for Piezo



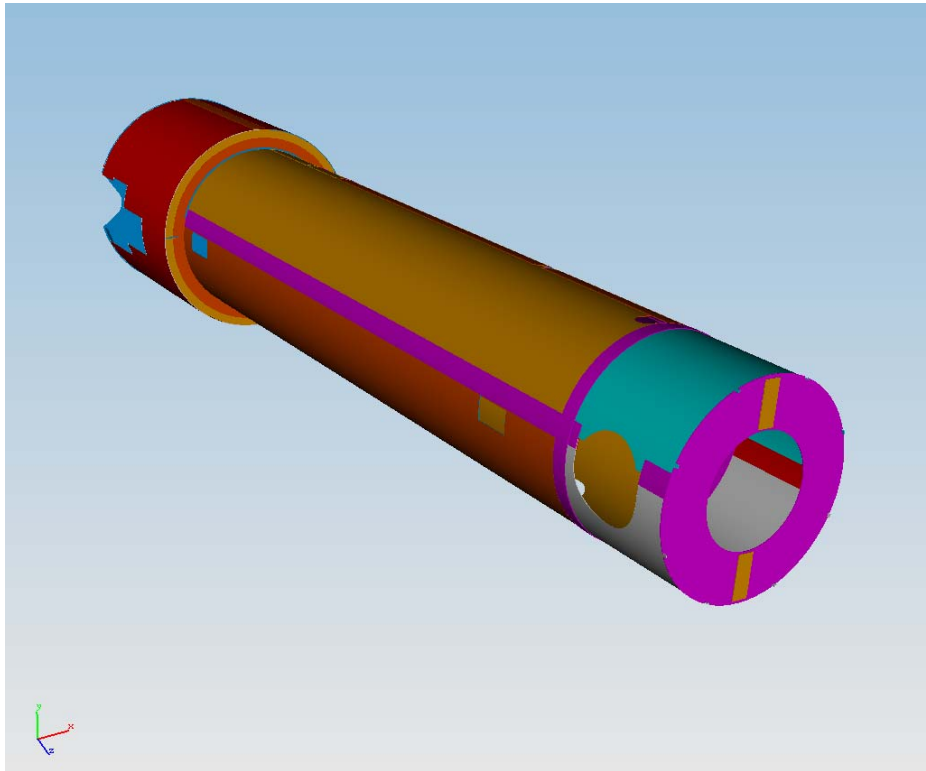
B-Flange for HOM,
Pick-up and couper e-



D-Flange for Tuner

DESY cavity components (6)

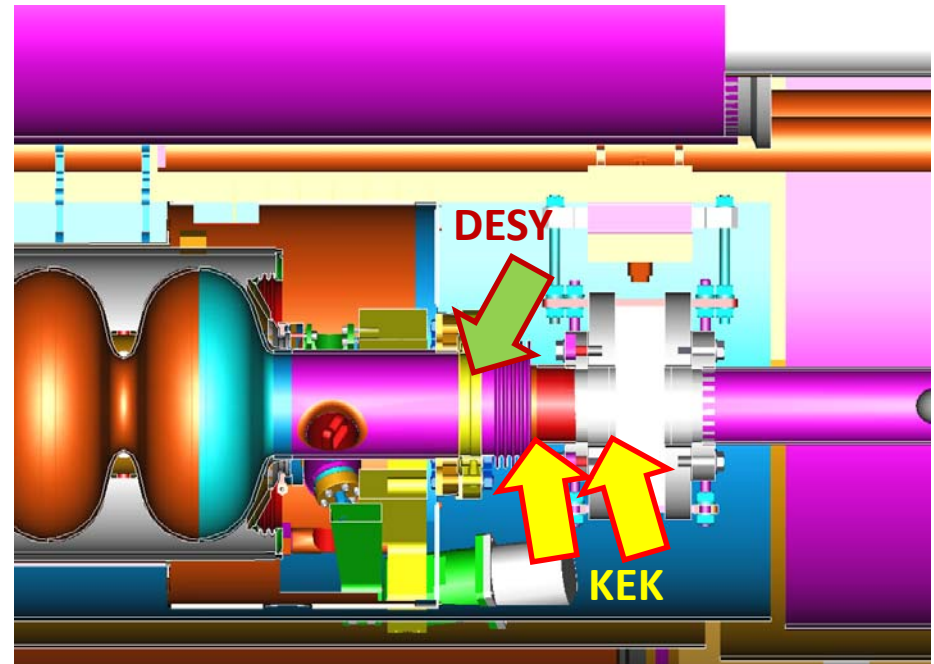
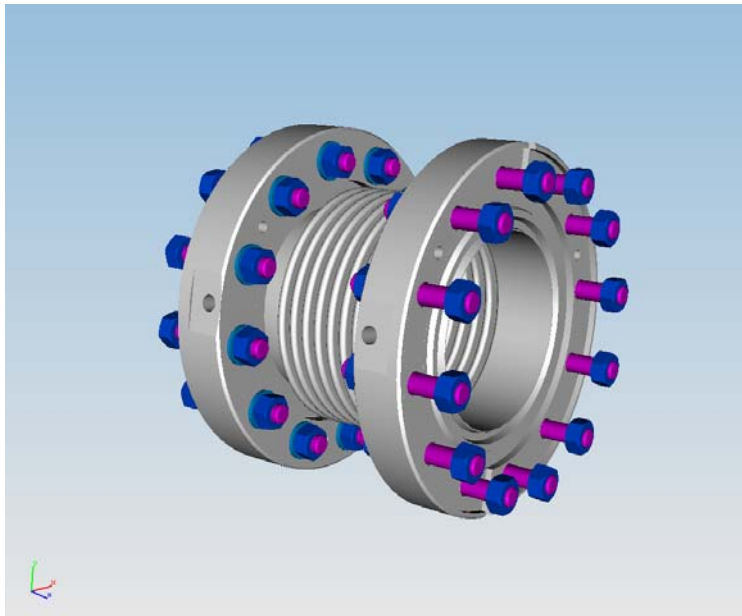
Items	Sub-components	Sub-sub-comp.	Responsible Institute	No. of pcs	Drw.No.
Magnetic shield	For cavity-jacket		DESY	2 sets	
		shield-plate	DESY	1 set	ma-1
	For beam pipe between DESY cavities		DESY	1 set	
		shield-plate	DESY	1 set	ma-2
	For beam pipe between DESY cavity and gate valve		DESY	1 set	
		shield-plate	DESY	1 set	ma-3



Standard magnetic shield - No special shields for the beam pipes

DESY cavity components (7)

Items	Sub-components	Sub-sub-comp.	Responsible Institute	No. of pcs	Drw.No.
Connection beam pipe and bellow	Between DESY cavities		DESY	1 set	
		bellow	DESY	1	oo-1
		Metal seal	DESY	2	oo-2
		Bolt and nut	DESY	2X12set	oo-3
	Between DESY cavity and gate valve		DESY/KEK	1 set	
		bellow	KEK	1	oo-4
		Metal seal	DESY/KEK	1set	
		Bolt and nut	DESY	12set	oo-7
		Bolt	KEK	8set	oo-8



Vacuum pipe for input couplers



Proposal

Vacuum pipe for input couplers: KEK

Connection bellows and flanges: DESY and FNAL

Proposal

1. Defining the cable plan (cavity group)
 - Piezo, HOM, pick-up, coupler e-, tuner
 - Flange design
2. Connection bellow flanges between the cavity and the gate valve
 - Gate valve flange and bellows : KEK
 - Cavity flange : DESY and FNAL
3. Vacuum pipe for input couplers
 - Vacuum pipe : KEK
 - Connection bellows and flanges: DESY and FNAL