

## MEETING MINUTES

**Location:** Vidyo  
**Date:** 15 Sep. 2020  
**Time:** 11am EDT  
**Indico event:** <https://indico.cern.ch/category/8972/>  
**Attendees:** Silvia, Eric, Zenghai, Jean, Naeem, Suba, Paolo, Leonardo.  
**Minute taker:** Silvia  
**Reviewed:** N/A

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### SCOPE OF THE MEETING

Weekly HL-LHC RFD HOM couplers follow-up meetings.

### NEXT MEETING

22 Sep. 2020

### DISCUSSION POINTS

OFS gasket is part of the issue. Replaced gasket with OFE copper 600C annealed gasket, carefully machined from inside to outside so no scratches appear on surface to guarantee vacuum tightness, assembled with 0.25 mm bite on each side and 0.6 mm gap between stainless steel flange and titanium flange. Led to no crack of ceramic; test repeated in two feedthroughs. For HL-LHC either Ti flange and/or chamfer in ceramic (which may cumulate metallization of filling material) will be modified to remove stress to ceramic.

Naeem will proceed with AUP's material choice for feedthroughs, using ceramic from INTA and all stainless steel flanges. (Currently CERN and AUP use different materials for feedthrough production.)

### ACTION ITEMS

	Action	Responsible	Status	Update
7	Provide sacrificial feedthroughs for transport evaluation.	Eric	Pending (Oct. 16, 2019)	Eric will provide 2-3 sacrificial feedthroughs by beginning of next year to FNAL. On-going. Currently qualifying thickness of inner tube (Feb. 18, 2020).
8	Check NA configuration to measure directly at 25 Ohm, incl. calibration requirements for 25 Ohm option.	Eric, Jamie	On-going (Oct. 16, 2019)	Email Nov. 12 2019. Jamie will send follow-up email with explanation.
10	Design of room-temperature test box with 2 HOM couplers	Eric	On-going (Oct. 16, 2019)	
11	Add accelerometer in the shock tests.	Eric	Pending (Oct. 16, 2019)	Eric inquired about accelerometer type/brand for shock test.

20	Which g force do the RF ancillaries need to survive in the shock test?	Kurt, Ofelia, Mikael	Pending (Oct. 22, 2019)	Parallel effort at FNAL (structural analysis – prelim shows 5g is ok -- and tests with feedthroughs from CERN)
30	Share tooling drawings with Naeem	Eric	Pending (Mar. 24, 2020)	
31	Send 3D mech design of RF ancillaries to Suba, Naeem, others and upload in EDMS	Eric	Pending (Mar. 24, 2020)	
37	Upload STP of 3D vacuum model in EDMS 2366191 v2. Ensure that parameterization for RFD RF ancillaries is in the same EDMS doc.	Jamie	Pending (Apr. 14, 2020)	Files in DocDB now also in EDMS 2366191 v2 Zenghai provided links to 3D vacuum model STP file, step-by-step procedure for building up vacuum model, and impedance table by email on April 21, 2020.
38	Share with Jean the brazing procedure for feedthroughs with titanium flange	Eric	Pending (Jun. 09, 2020)	
40	Calculate conversion of 10W power leakage from fundamental mode through HOM filters to the unit (dB) which is more useful in warm qualification of HOM filters.	Zenghai	Pending (Jul. 14, 2020)	
41	Confirm brazing materials to Naeem and verify materials list.	Eric	Pending (Sep. 1, 2020)	
42	Assembly procedures should include control step to verify 0.1 mm gap between port flange and feedthrough flange	Eric	Pending (Sep. 1, 2020)	See meeting Sep. 1, 2020.
	Add EDMS No. of HOM drawings to EDMS 2363558 (summary of	Silvia	Closed	Drawings listed in the ICD.

	models and studies reference)			
	Generate summary drawing with RF ancillaries dimensions	Erie	Pending (Apr. 07, 2020)	Not needed anymore.
	Provide markup with corrected numbers	Naeem	Closed	On June 2, 2020, Naeem showed different dimensions for HHOM wall thickness between CERN and AUP drawings.
	Confirm material used for flanges of each RFD RF ancillary	Eric	Closed	Now in the drawings. Check in the drawings.
	Review dimension difference for HHOM wall thickness between CERN and AUP drawings	Eric	Closed	
	Upload heat load breakdown for RF ancillaries and tolerance study to EDMS. Add reference to summary of engineering and multi-physics studies (EDMS 2363558)	Zenghai	Closed, see FDR	
	Upload materials to past meetings in the Indico website: <a href="https://indico.cern.ch/category/8972/">https://indico.cern.ch/category/8972/</a>	Zenghai	Closed (May 01, 2020)	
	Send LARP test box model to Eric	Suba	Closed (Apr. 21, 2020)	<a href="https://indico.cern.ch/event/891360/">https://indico.cern.ch/event/891360/</a>
	Send EDMS Doc. No. to Eric with summary of engineering studies for the RFD crab cavity	Silvia	Closed (Apr. 21, 2020)	<a href="https://edms.cern.ch/document/2363558/0.2">https://edms.cern.ch/document/2363558/0.2</a>
	Share link to trim tuning procedure for RFD.	Alex	Closed (Oct. 23, 2019)	Email Oct. 23, 2019
	Check RFD RF ancillaries drawings	Zenghai/Suba /Paolo/Naeem	Closed (Nov. 26, 2019)	Propagating new design modifications from Zenghai
	Provide thermal simulations for VHOM and temperature	Eric, Ofelia	Closed (Jan. 28, 2020)	Uploaded in Indico 7 Jan. 2020: <a href="https://indico.cern.ch/event/891345/">https://indico.cern.ch/event/891345/</a>

	distribution around the flange connection.			
	Ask accelerator model number	Leonardo	Closed (Oct. 22, 2019)	Email Oct. 22, 2019
	Check calculations for transport of HOM couplers.	Eric, Ofelia	Closed (Nov. 12, 2019)	Plastic deformation from transport of RFD HHOM coupler is negligible.
	Confirm that the HHOM helium jacket gets sufficient cooling through single inlet (in the past there was inlet and outlet for active cooling): LHCACFH0169	Eric, Ofelia	Closed (Nov. 26, 2019)	Discussion during meeting at CERN (week of Nov. 20).
	Add guiding pin to flange in LHCACFH0164	Eric	Closed (Nov. 12 2019)	No good for cleaning room
	Create Indico event for these meetings	Eric	Closed (18 Feb 2020)	<a href="https://indico.cern.ch/category/8972/">https://indico.cern.ch/category/8972/</a>
	Inform Suba about drawings that were corrected on Feb. 3, 2020.	Eric	Closed (email, Feb. 20, 2020)	<a href="https://edms.cern.ch/ui/#!/master/navigator/document?D:100502025:100502025:subDocs">https://edms.cern.ch/ui/#!/master/navigator/document?D:100502025:100502025:subDocs</a>
	Share FDR agenda with CERN	Leonardo	Closed (Mar. 31, 2020)	<a href="https://indico.fnal.gov/event/23353/">https://indico.fnal.gov/event/23353/</a> (link for the dry-run agenda, which mirrors the actual agenda for the FDR – note that the dates are for the dry-run)