

40th Meeting of SRF Group in IDT/WG2

- ✓ Recent progress of SRF 5-year plan at KEK and global collaboration for ITN (Kirk)
- ✓ Others (if any)

Attendees: A. Yamamoto, K. Umemori, D. Delikaris, S. Steiner, P. Burrows, Kirk

<https://agenda.linearcollider.org/category/256/>

Leaders for each sub-group at KEK (updated)

Sub-group	Leader
Drawing	Takeshi Dohmae
Cavity	T.B.D.
Frequency tuner	Mathieu Omet
Power coupler	Kirk
Magnetic shield	Ryuichi Ueki
SCQ magnet (+BPM)	Yasushi Arimoto (Hitoshi Hayano)
Clean work/Vacuum work	Hayato Ito
Cryomodule	Kirk
Infrastructure at COI	Shinichiro Michizono
RF	Toshihiro Matsumoto
Cryogenics	Hiroataka Nakai/Kota Nakanishi/Hiroataka Shimizu
Cavity fabrication/Material preparation	Takayuki Saeki/Takeshi Dohmae
High Pressure Gas Safety Act	Kensei Umemori/Takayuki Saeki/Takeshi Dohmae

Recent progress of SRF 5-year plan ①

- Japan (KEK)
 - Cavity
 - FG 9-cell cavity is under fabrication, negotiation with local government and KHK is under progress, may be approved in Feb
 - Six 1-cell cavities (FG/MG) will be produced by KEK in-house, and VT will start after delivery in Jan
 - KEK sent some MG disks to vendors in EU for press-testing
 - KEK is preparing necessary Nb material for Eddy Current Scanning (ECS) at DESY
 - KEK started the discussion with a domestic vendor to produce 9-cell cavities in next FY
 - Power coupler
 - Drawing work and specification document are under progress
 - Ceramic samples were ordered for quality check of brazing, thermal cycle test, TiN coating test, etc.
 - RF simulation is under progress between FNAL and KEK within the framework of the US-Japan Science and Technology Cooperation
 - Tuner
 - Drawing work is under progress
 - Discussion with FNAL is under progress for rental of a set of cavity/tuner/helium tank within the US-Japan
 - Mechanical simulation for LFD is under progress
 - Magnetic shielding/Demagnetization
 - Demagnetization test with a small cryo-vessel is under preparation
 - Drawing work of magnetic shielding is under progress
 - Discussion with a domestic vendor is under progress
 - SC-Q magnet
 - Discussion with a domestic vendor is under progress

Recent progress of SRF 5-year plan ②

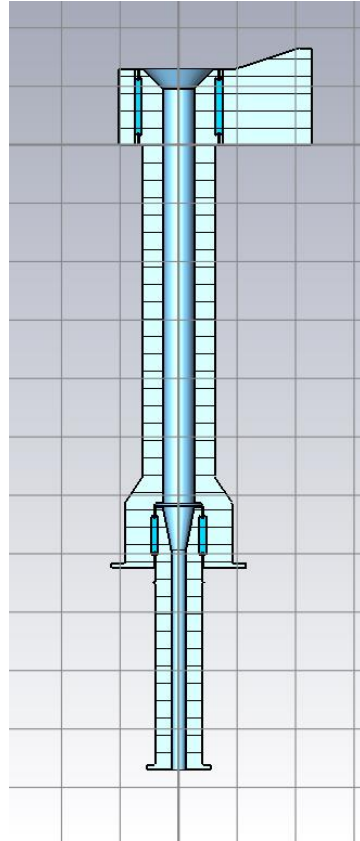
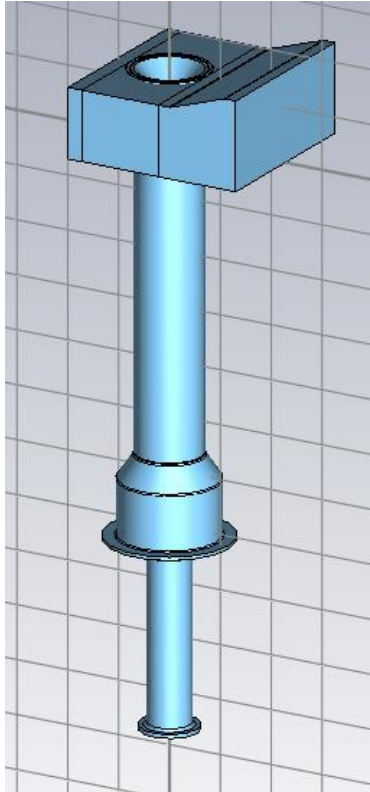
- Japan (KEK)
 - Clean work/Vacuum work
 - Design of mock-up cavities (will be used for training of cavity string assembly) was almost done, waiting for procurement
 - Remote control system for ionized gun and dust monitor will be completed soon, will be merged with robot arm system
 - Regular meeting on robotics with CEA and FNAL has been held
 - Cryomodule
 - Drawing work is under progress
 - Discussion with domestic vendors is starting
 - Infrastructures
 - Cavity Fabrication Facility
 - CFF group is preparing for new work area, install a new clean room and some devices
 - Cryogenics
 - They started the preparation for change request to discuss with local government
 - CM hanger
 - Currently under construction for improvement
 - CM test bunker
 - The design completed, the cost estimation done

Global collaboration and recent progress for ITN

- Overseas
 - Americas
 - US released the P5 report
 - Asia
 - Korea University and PAL newly joined the ITN, and KEK will explain for them in 19/Dec
 - Europe
 - CERN, CEA and INFN are considering production of two 1-cell cavities, will start from 2024
 - This depends on when the budget and the Nb material will be transferred from KEK to EU
 - CEA and INFN are discussing with DESY how to contribute to ITN
 - DESY is preparing for ECS
 - Free of charge for EU
 - Americas and Asia are under discussion
 - CIEMAT and IFIC are discussing with KEK to produce SC-Q magnet and BPM system
 - IFIC and IJCLAB newly joined the ITN, they will discuss internally in EU

Recent progress of power coupler

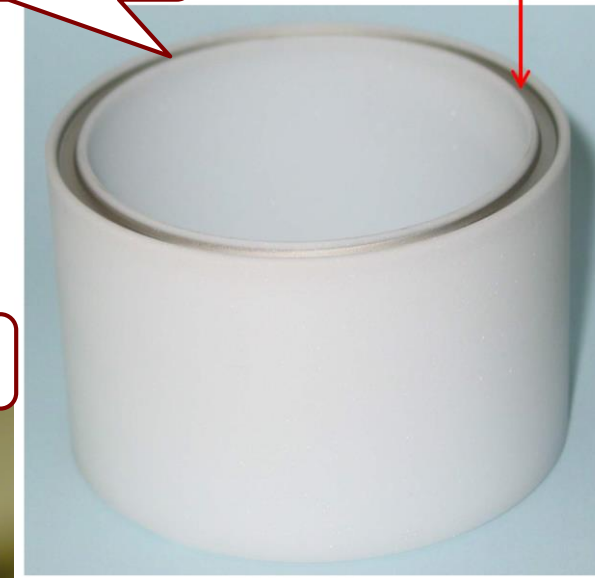
RF simulation is under progress



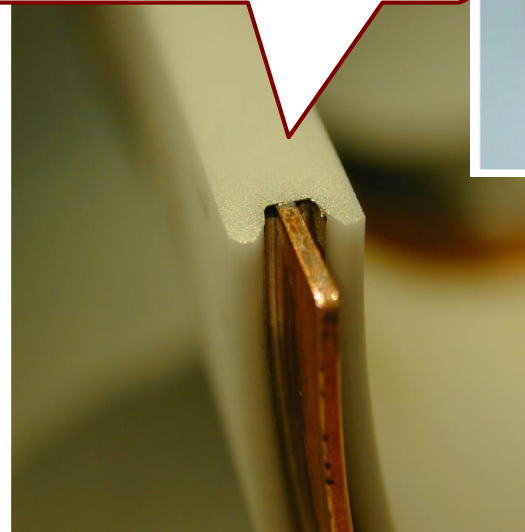
Courtesy of R. Katayama

Metalized ceramics

ceramic with metallization



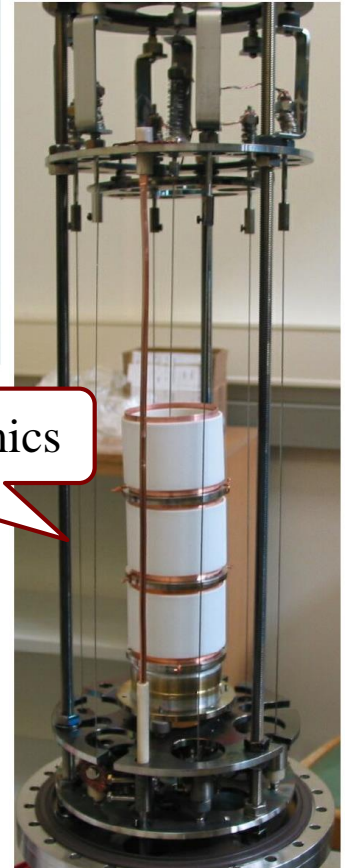
Quality check of brazing



cut-view of the ceramics to copper collar brazing: braze is very regular.

TiN coating on ceramics

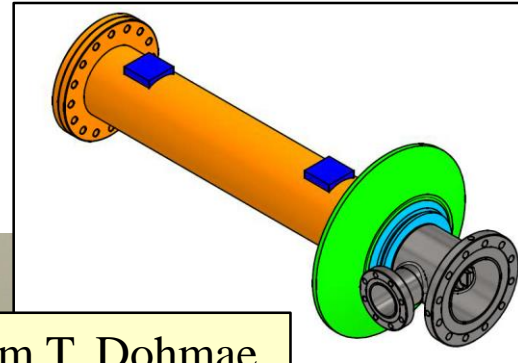
Courtesy of D. Kostin



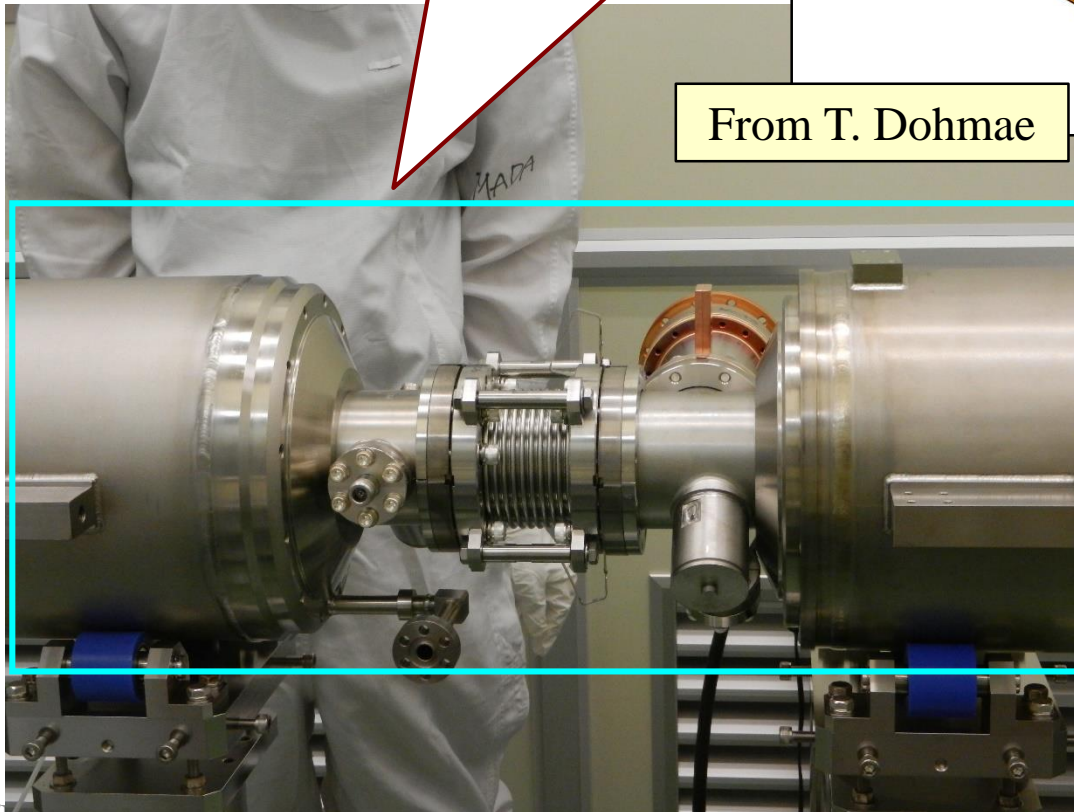
Design/Production of mock-up cavities

KEK will introduce mock-up cavities for training of cavity string assembly.

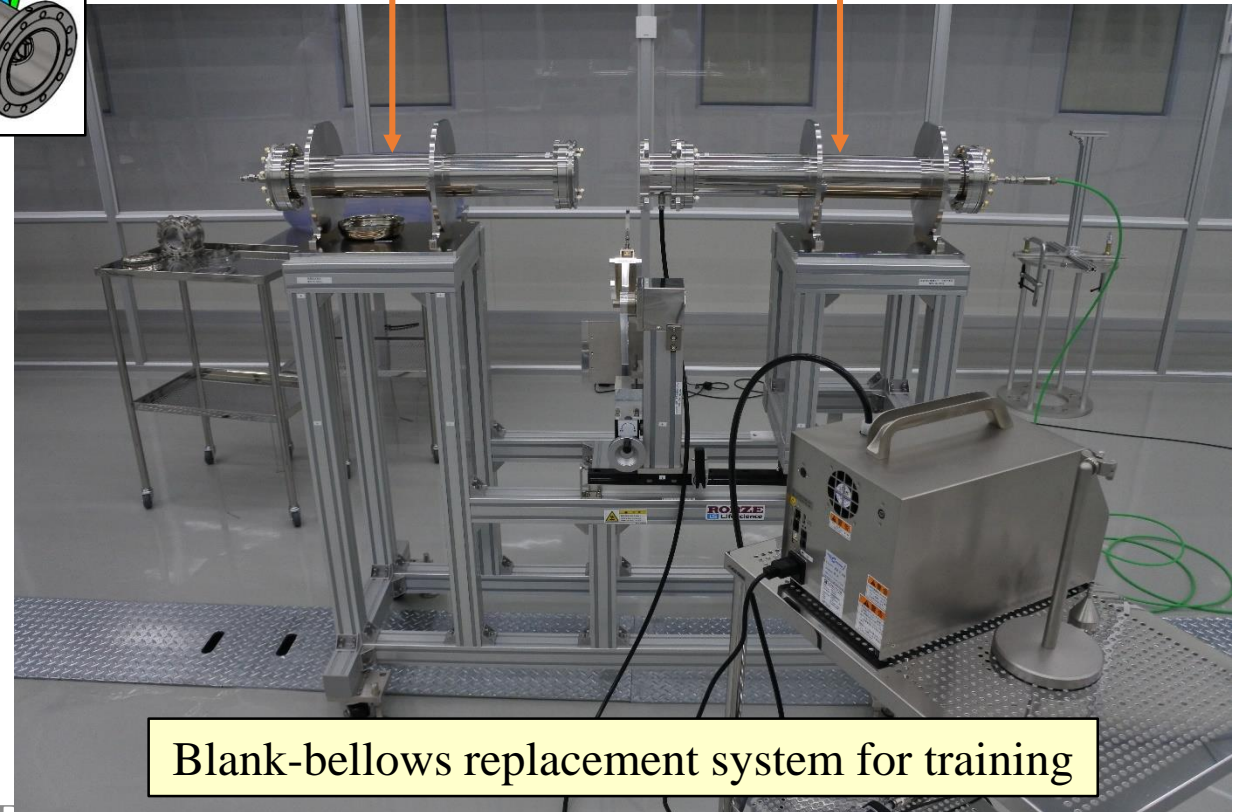
We designed mock-up cavities for training of cavity string assembly



From T. Dohmae



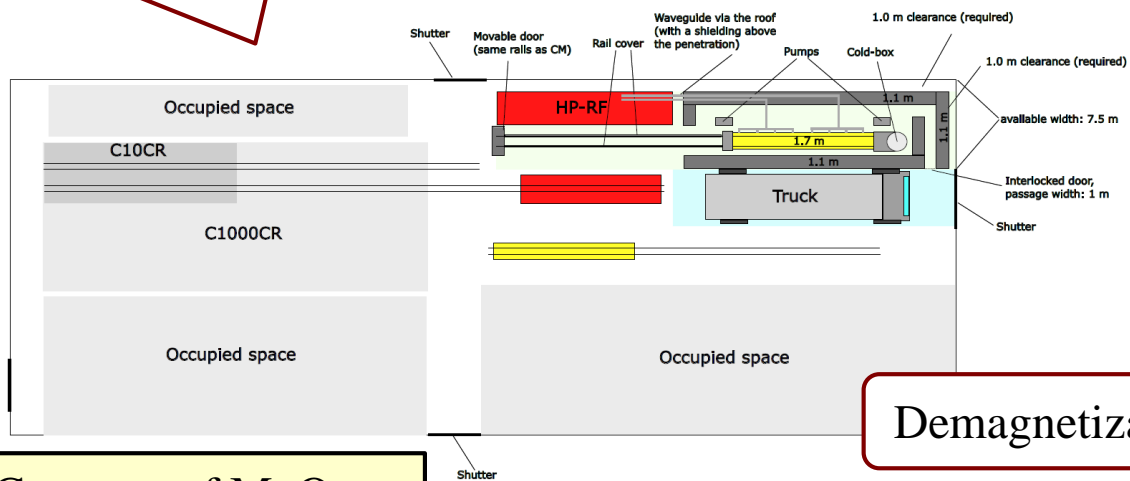
We will replace dummy cavities with mock-up ones



Blank-bellows replacement system for training

Recent progress of infrastructure at COI

Layout of CM test bunker at COI



Courtesy of M. Omet

Tuner work area



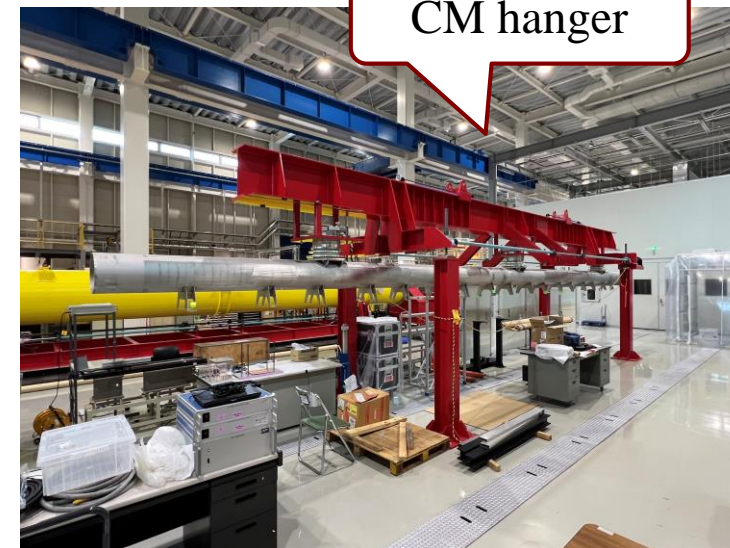
Courtesy of M. Omet

Demagnetization study using mock-up CM

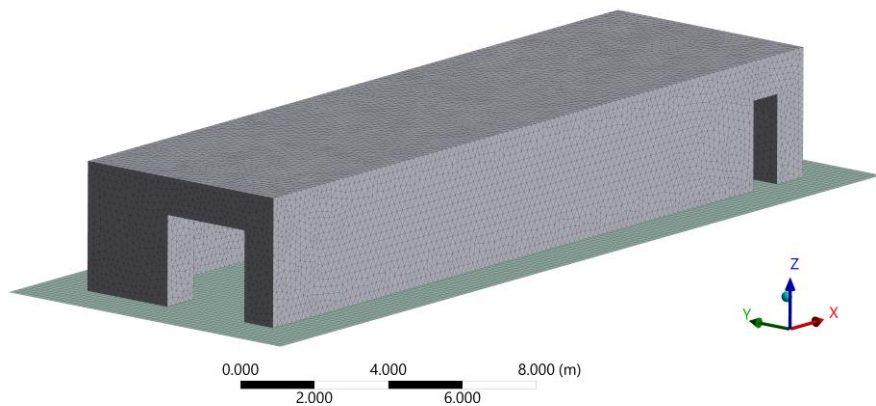


Courtesy of R. Ueki

CM hanger



Courtesy of H. Hayano



Courtesy of H. Araki

Meeting/Conference schedule

Meeting #	Date	Contents
40	5/Dec	Recent progress of SRF 5-year plan and global collaboration for ITN
	5~8/Dec	TTC Meeting 2023 @FNAL, US
	8~11/Jul/2024	LCWS2024 @Tokyo, Japan



<https://agenda.linearcollider.org/event/10134/>