## TTC 2020 WG2 Summary

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#### WG2 Couplers and auxiliaries

Charge: Superconducting accelerator modules require more than just cavities. The goal of this working group is to exchange knowledge and ideas related to recent developments in the field of fundamental power and HOM couplers, including feedthroughs. Frequency tuners, usually operated at cold, are required also. What are the most recent designs? High Q cavities, discussed in WG-1, require sufficient magnetic hygiene; this holds not only for testing condition but also in the real accelerator environment. Recent developments should be reported.

#### WG2 speakers from worldwide



**CETD** Masao Irikura KEK Yasuchika Yamamoto **⋘** KEK RIKEN Kazutaka Ozeki RIKEN Kenji Suda Sangbeen Lee **IBS IHEP** Tongming Huang (remote) **THALES** Stephane Bethuys **Daniel Trompetter** HZB<sub>H</sub> HZB **Emmy Sharples Denis Kostin** DESY **CERN** James Mitchell CEA **Christian Arcambal CEA Guillaume Devanz Steve Einarson** CPI **BNL Doug Holmes** Wencan Xu BNL **JLAB** Mircea Stirbet Jefferson Lab

Fermilab

**FNAL** 

**FRIB** 

Yuriy Pischalnikov

Sang-hoon Kim

#### WG2 talks cover a wide range of applications

We have been impressed by the large spectrum of items and devices presented

CW and Pulsed

Low, medium, high power levels

Frequency range from MHz to GHz

All kinds of accelerators

Electron storage rings

Electron linac light source

Hadron colliders

Heavy-ion linacs



#### Highlights



HIGH POWER TEST OF ESS MEDIUM 矣 🥫

4P/P pulse is possible with the current seture Fundamental Power Couplers (FPC) are conditionned at room temperature first, then at 2K up to 1.2 MW peak power. **Observations** 

Cr2O3 (chrome-oxide) coating

Company A provided two samples (Sample A and B) with Cr<sub>2</sub>O<sub>3</sub> coating done by a (Four conditions: High/Low temperature, Thick/Thin coating)

Comparison of TiN coating and Cr<sub>2</sub>O<sub>3</sub> coating

#### Provocative topics

Is coupler conditioning really necessary for medium power CW applications?

Should a FPC design last for decades?

Do we condition couplers long enough?

One window vs two windows

Some very interesting provocative topics, Not solid answers as of today. We will continue to debate on them (for years...)

Lamic windows

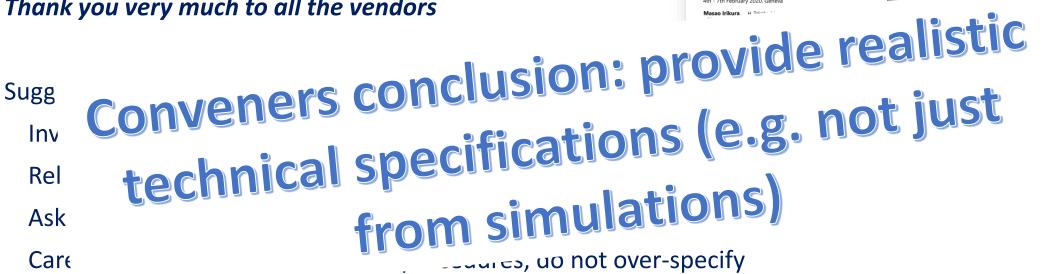
### Coupler Vendor Experience

Appreciate their presentations as providing usually 'private' information

Even though the competitors are in the same room

Thank you very much to all the vendors





TTC 2020, 04-07 February 2020, Geneva, Switzerland

#### To be continued...

Very interesting topics, four sessions of 90 minutes were not enough to deal with all aspects of FPCs, HOM couplers, Tuners...

We would like to invite you to these workshops for designated topics Worldwide FPC meeting

Microphonics and resonance control workshop

ICFA mini-workshop on HOM damping in superconducting cavities 2<sup>nd</sup> Workshop on Operating SRF Systems Reliably in a "Dirty" Machine

# Thanks to you All!