Cavity Database Status and Plan at KEK

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Outline

1. Present Status at KEK
2. Contents for Comparison
3. Plan of Database at KEK
4. Summary

Present Status at KEK

14 vertical tests on four STF-Baseline cavities
for one year, Feb.06' ~ Feb.07'
(see, last TTC meeting at Fermilab)

30 vertical tests for S0 is scheduled in 2008 ;

. Two new STF-Baseline cavities, (MHI-5, MHI-6)
. Three DESY cavities, (AC71, AC74, AC80)
. One Fermilab cavity, (AES001)

Vertical tests [1 (HPR) + 3 (EP20μm) + α] on 6 cavities
Total 30 vertical tests for 8 months
~ 4 vertical tests / month = 1 vertical tests / week

New vertical test system in the STF hall at KEK
Under construction, now.

Present Status at KEK

String assembly of
four STF-Baseline cavities,
Jan. 2008.

Cryomodule test of 4 cavities,
May ~ July, 2008.

First cavity test in the new
vertical test area will be
started in March 2008.

Contents for Comparison of Cavity Performance in S0

Field Flatness ;
Adjust more than 97 %, before the final surface treatment.
Check more than 94 %, after the vertical test.
If less than 90 %, need some correction for comparison.

Experimental Condition ; variable input coupler, reliable Qext.

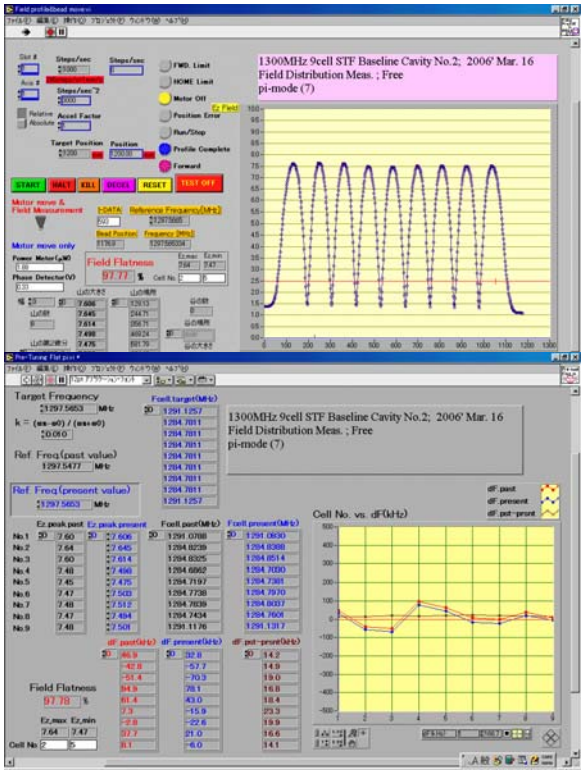
Fundamental Data ;
Qo – Eacc excitation curve, Rs (T) from 4.2 K to 2 K,
Eacc vs. x-rays radiation (mSv/hr, mRad/hr, mGy/min).

Passband Measurements & Thermometry ;
Eacc,max in each cell, Heating cell by quench,
Quench location, Inspection of inner surface.

Need to confirm no excitation of another passband mode.

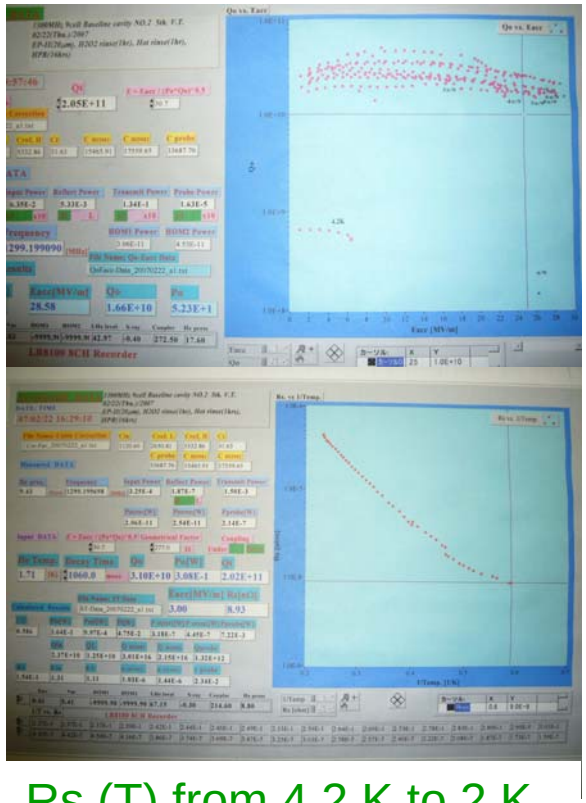
Example of Test Results at KEK

Field Flatness

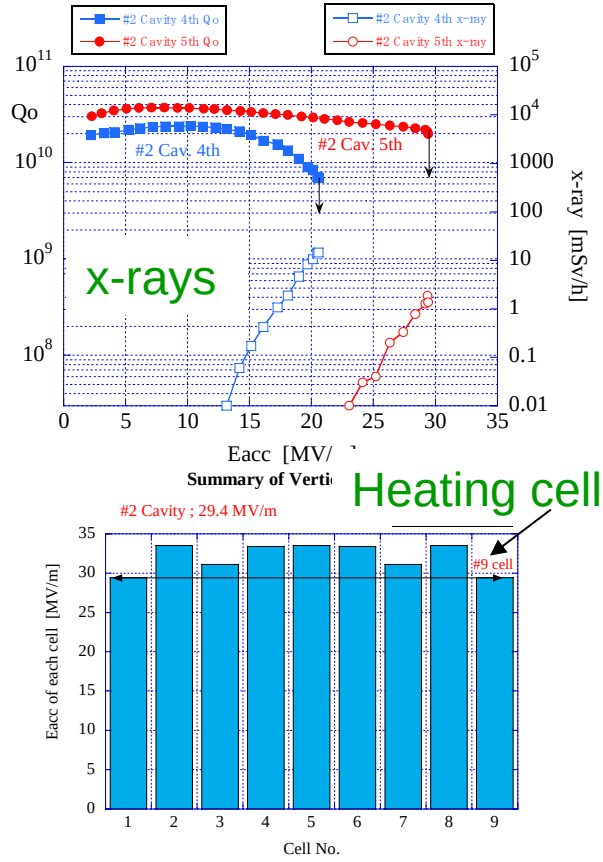


fo in each cell

Qo-Eacc / Passband meas.



Rs (T) from 4.2 K to 2 K



Eacc,max in each cell

All electric files of these test data have been stored in PC.

Plan of Cavity Database at KEK

Present Data Bank at KEK

Logbooks and Electronic files in PC is enough to storage and analyze the data for 4 cavities.

But, ...for the next step.

KEK needs database system ?

Perhaps, Yes.
for more than 10 cavities.

. Develop own database system
or
. Join to DESY database system
or
. Others .....(EDMS)

Under Consideration, now.

SUMMARY

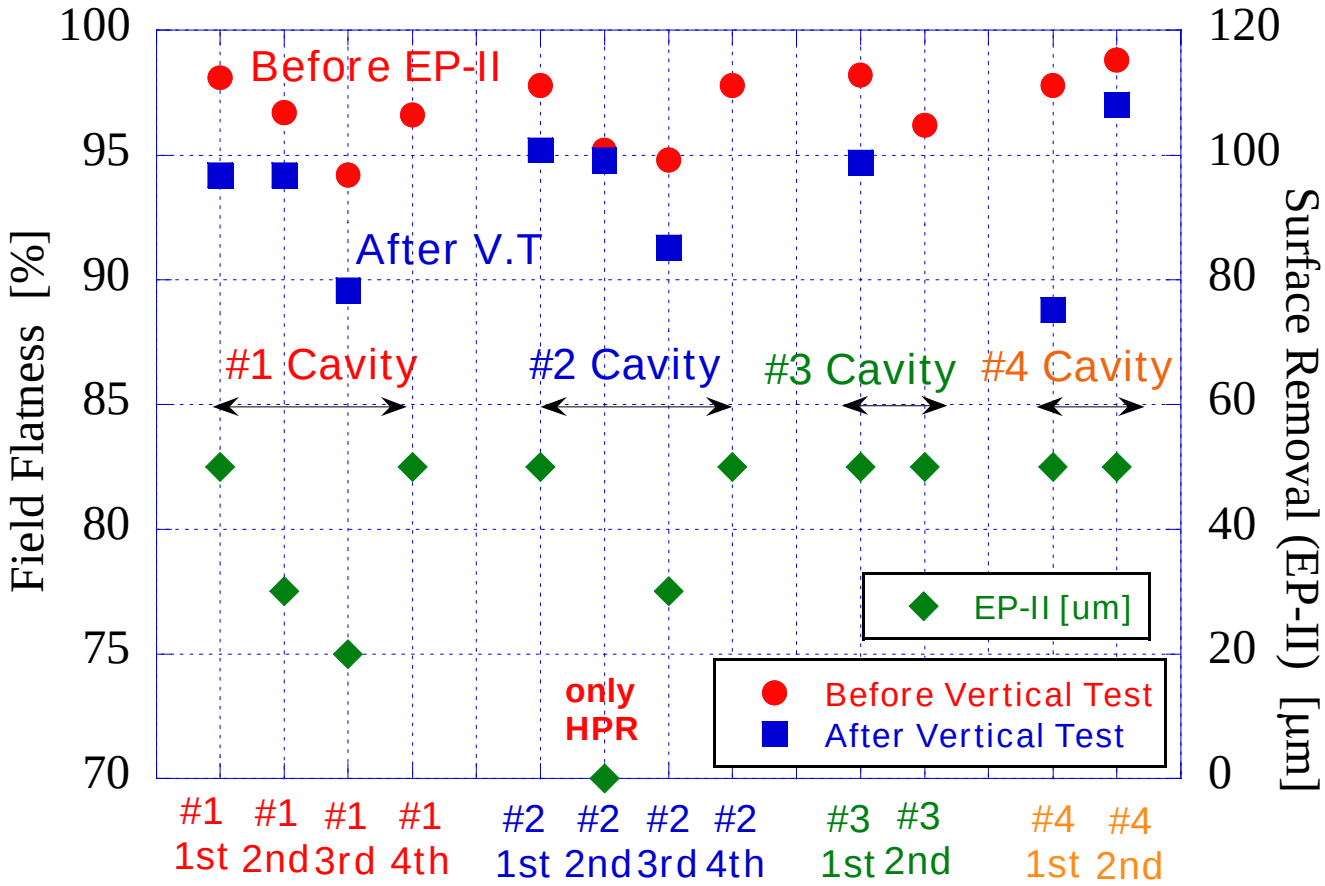
KEK should start to consider the cavity database system, before the cavity tests for S0.

This meeting is a good chance for KEK.

Thank you for your attention.

END

Change of Field Flatness (1)

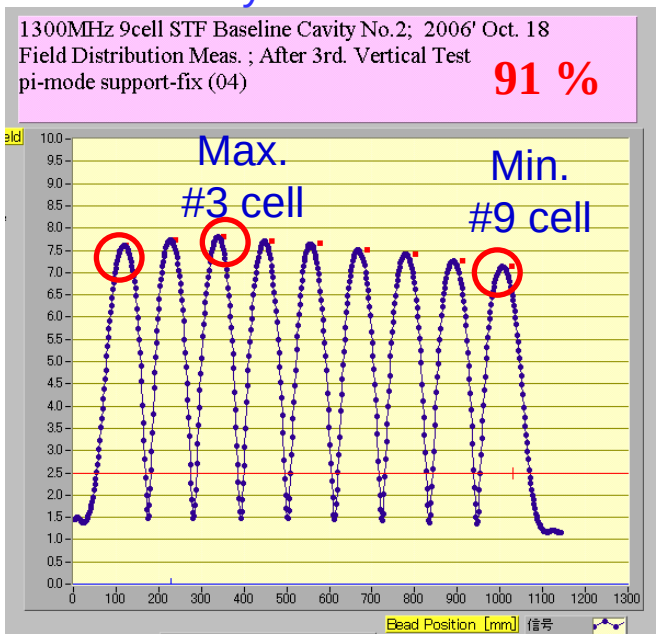


Change of Field Flatness less than ~ 4 % (excpt. 1 case)

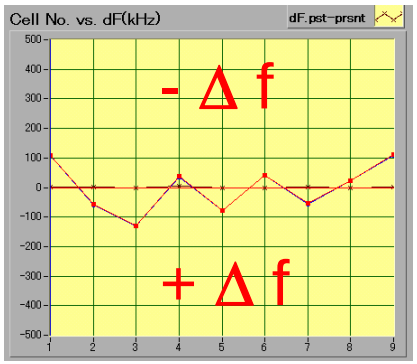
Potential cause; transportation, handing, not uniform EP, …

Change of Field Flatness (2)

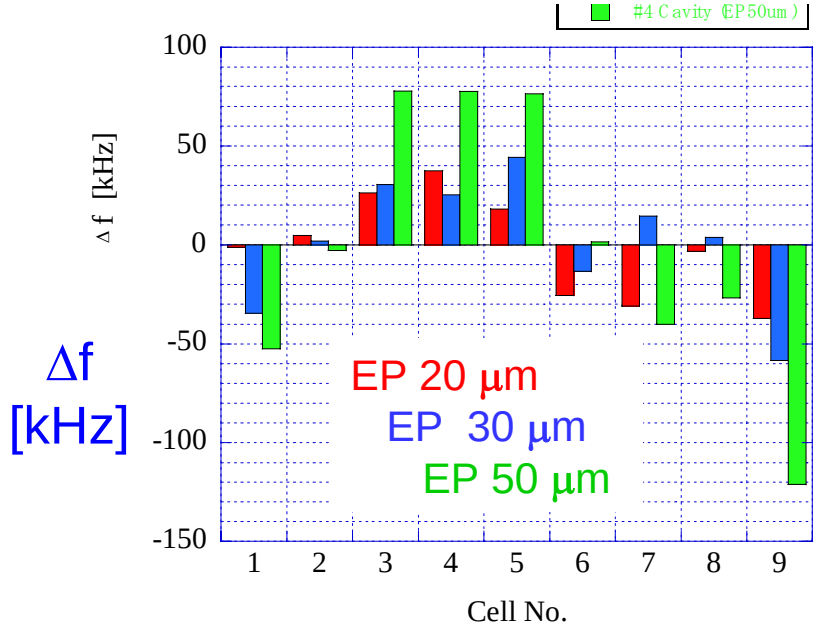
#2 Cavity after 3rd V.T



Deviation from ideal fo in each cell



Frequency Change in each cell by EP



Amount of surface removal by EP seems to be not uniform in each cell.

Temperature outside of cells and acid flow rate inside cells during EP have a verv similar distribution.

Improvement of flow rate in each cell

→ Change of field flatness < ~2%