

EU Regional Report

(to be presented in final version at the)
TTC Meeting @ LAL Orsay

16.6.2009

S. Aderhold, DESY

Electropolishing Facility @ Saclay

I r f u

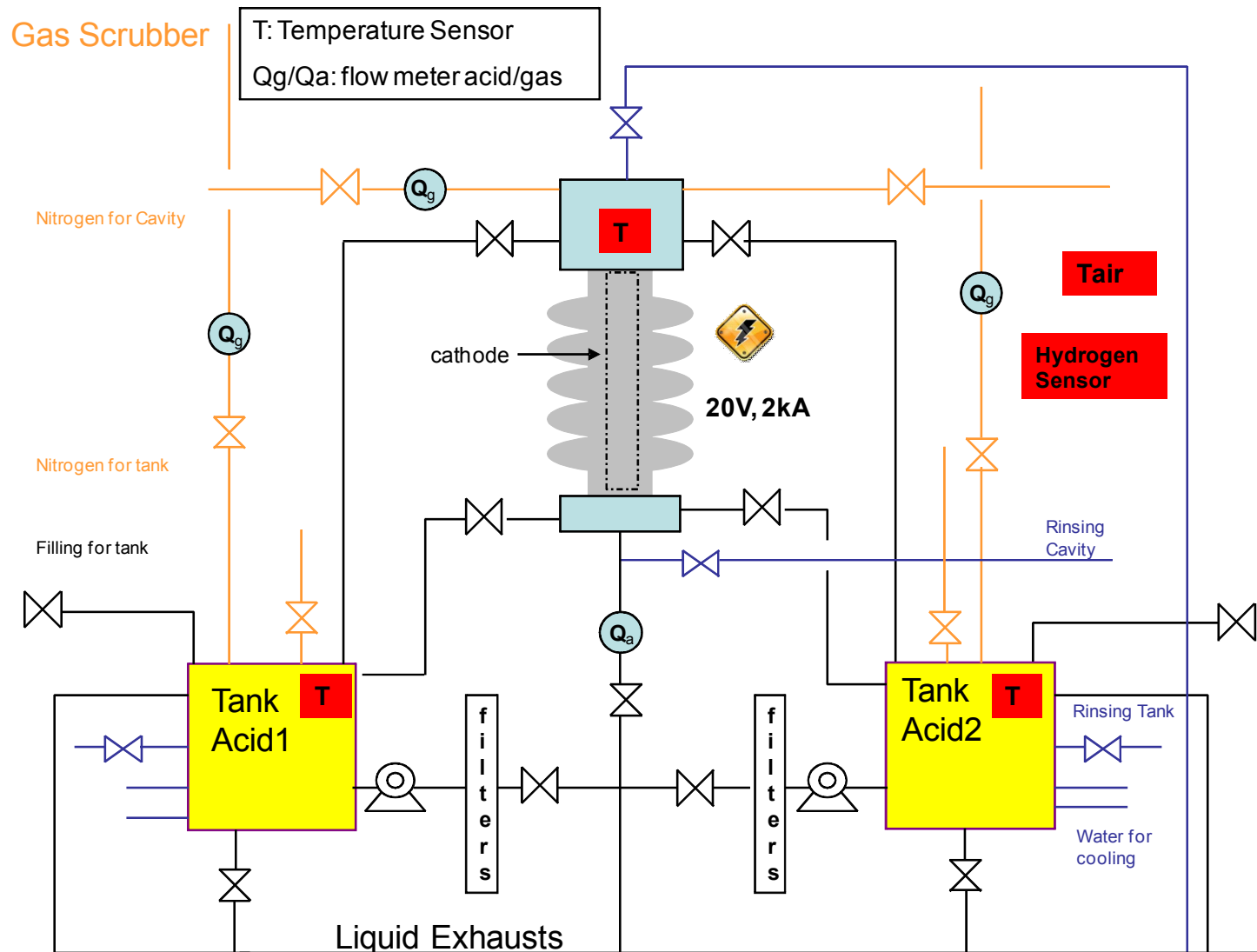
cea

saclay

B. Visentin



1-cell horizontal EP set-up
in operation



9-cell vertical EP set-up under study (FP7 : CNI PP)

Electropolishing @ Low Voltage (5V)

Reduce Sulfur contamination

Two Nb samples electro-polished at 5V and 20V

similar heavy removal with 1-9-1 (HF-H₂SO₄-H₂O) Mixture

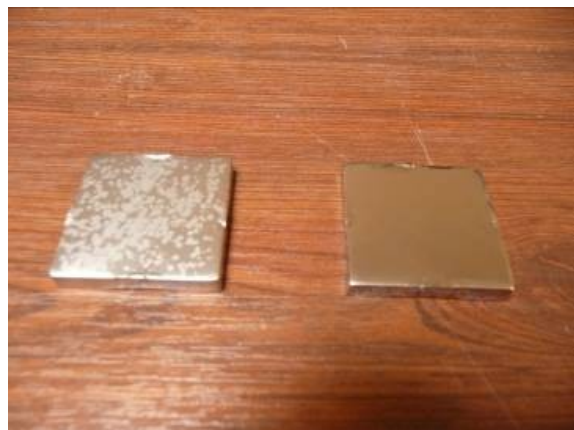
Successful RF test on single cell cavity (Tesla shape)

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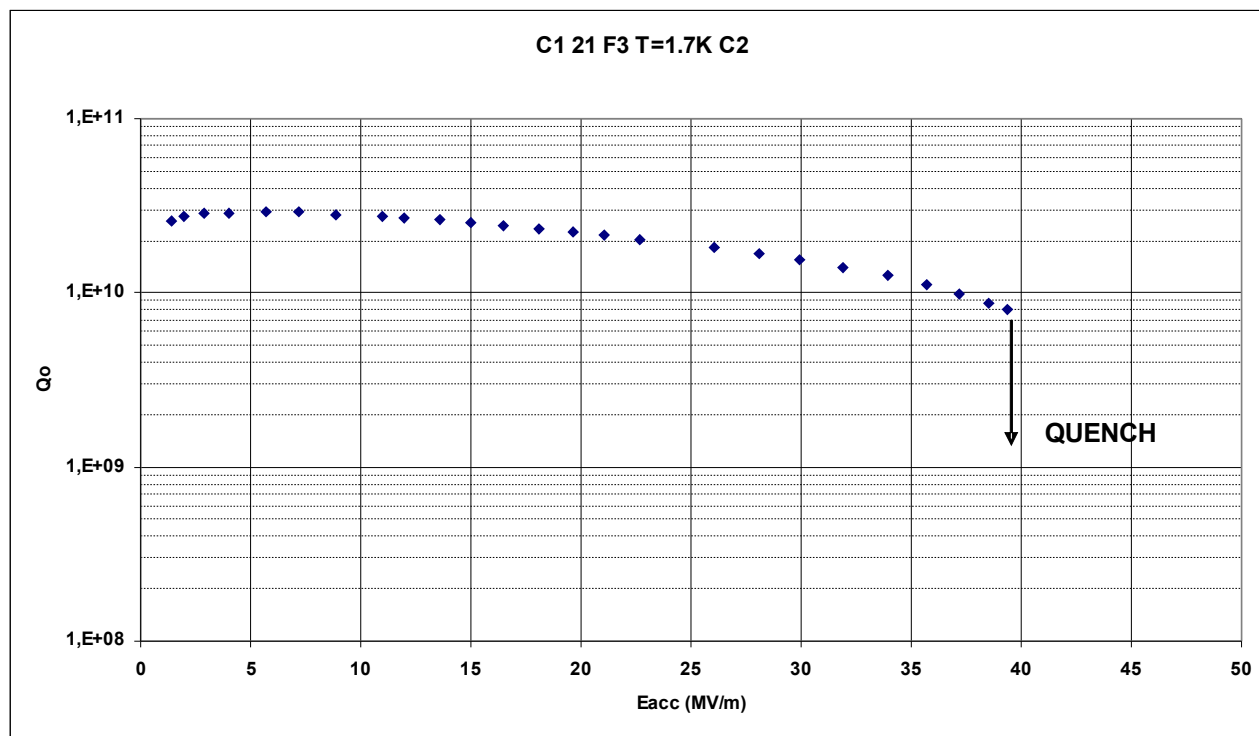
saclay

B. Visentin



+ 30' Chloroform Rinsing

-> Talk by F. Eozenou



3.9 GHz @ INFN

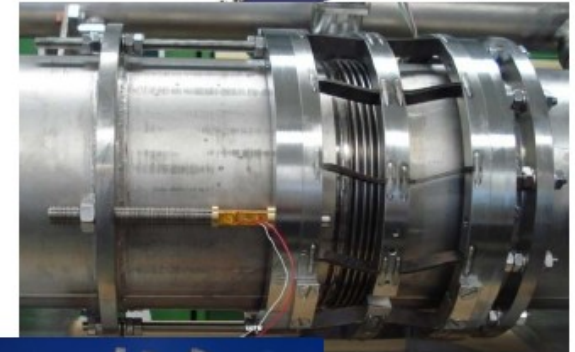
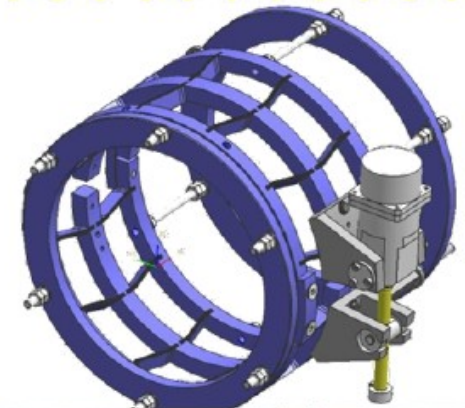
- Mechanical fabrication of three cavities completed by Zanon
- Field flatness tuning done
- Optical inspection in as manufactured state done

ILC-HiGrade Cavities

- ~30 add. cavities in XFEL order covered by HiGrade program
- QC sample out of production stream
 - undergo all regular steps (except He-tank-welding)
 - Appendix to XFEL specification
- Will be separated from other cavities in Saclay
- Add. Tests (e.g. T-map, optical inspection) and preparations, → details to be defined
-

Status of the Blade Tuner development:

- "Slim" design prototype with piezo realized from the original *SuperStructures* tuner. Manufactured and intensively cold tested at CHECHIA (DESY) and HoBiCaT (BESSY) searching for limits and performances
- From the experience gained, a "revised" Blade Tuner was designed. Guidelines: titanium, stiffness, strength, piezo action and further simplification.
- New design tuners manufactured in a small series of 8 units, 2 more are under production.

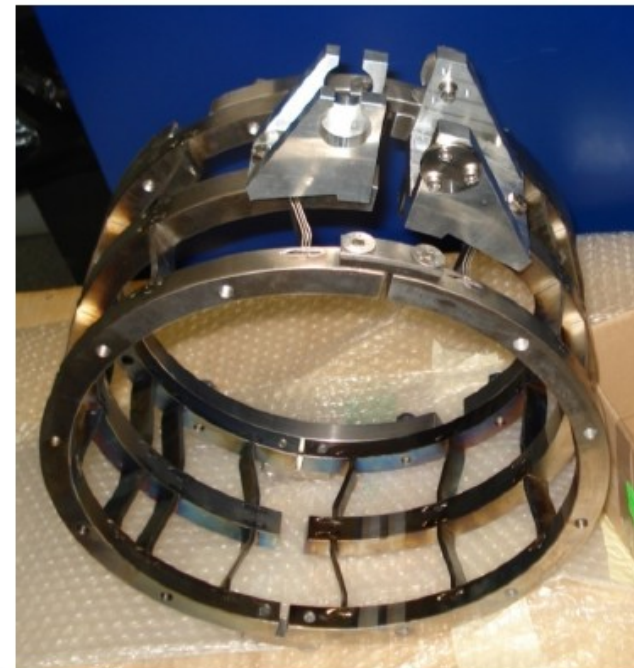
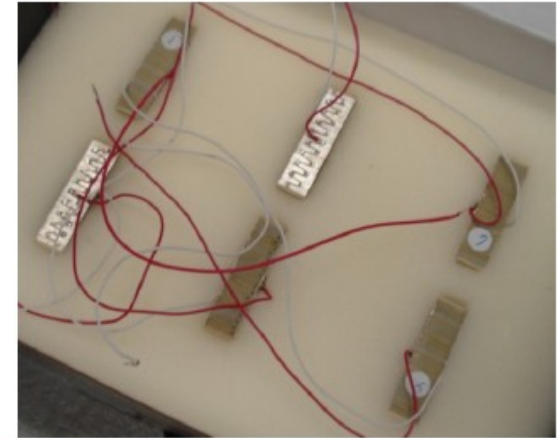


C.Pagani @ TILC09

Important installations to come in short times:

- Cryomodule 2 (CM2) of **ILCTA** facility at New Muon Lab, FNAL, US: 8 units
- **S1-Global** facility at KEK, Japan: 2 units

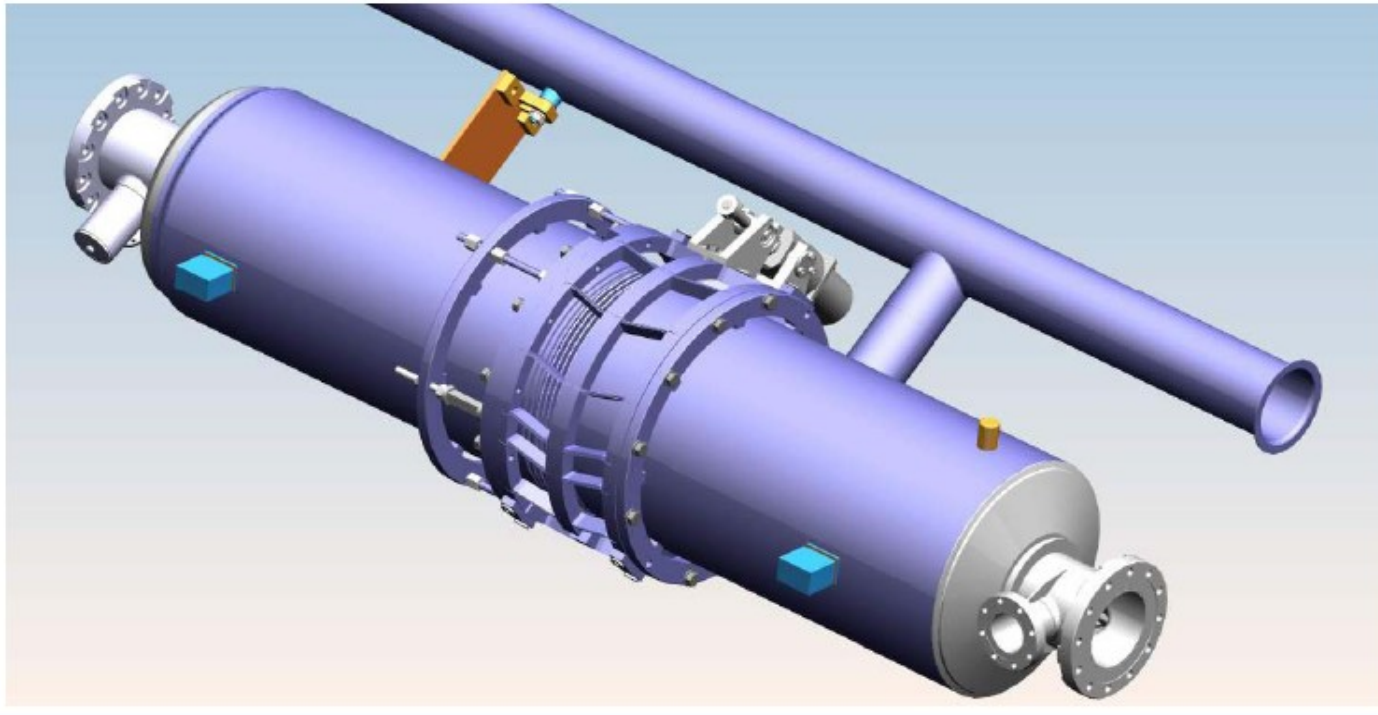
ILC-HiGrade of EU FP7 is also on the way: 24 units



C.Pagani @ TILC09

ILC-XFEL Plug Compatible Cavity

- Cavity with Helium Tank, Tuner and pipe connections
 - Plug Compatible with the 3 Regional Infrastructures
 - Plug Compatible with the FLASH and XFEL Cryomodules



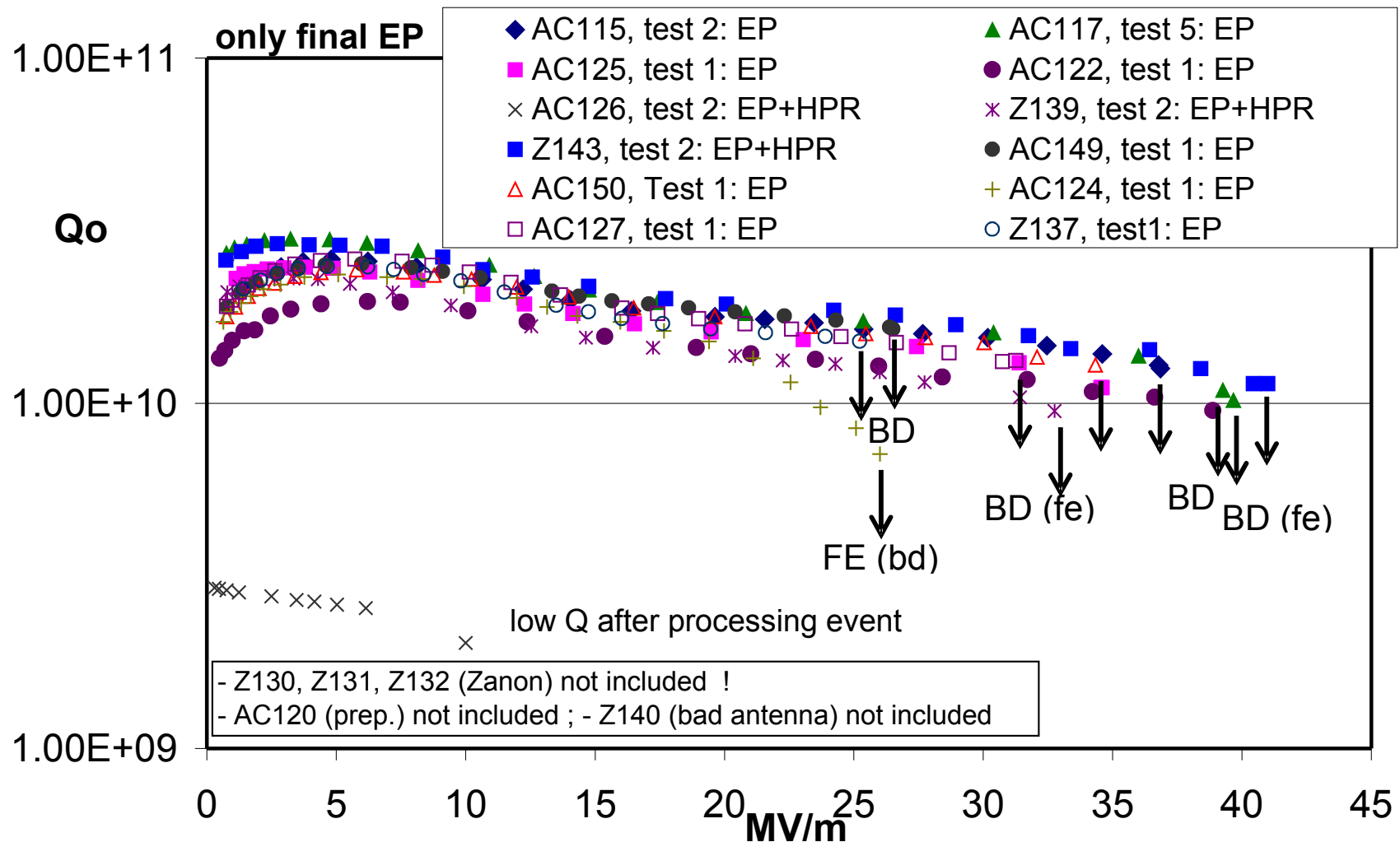
INFN Milan strongly promotes and supports the plug compatibility concept to make the best use of XFEL expected synergies for the ILC

R.Paparella@HiGrade-meeting
6.3.2009

DESY

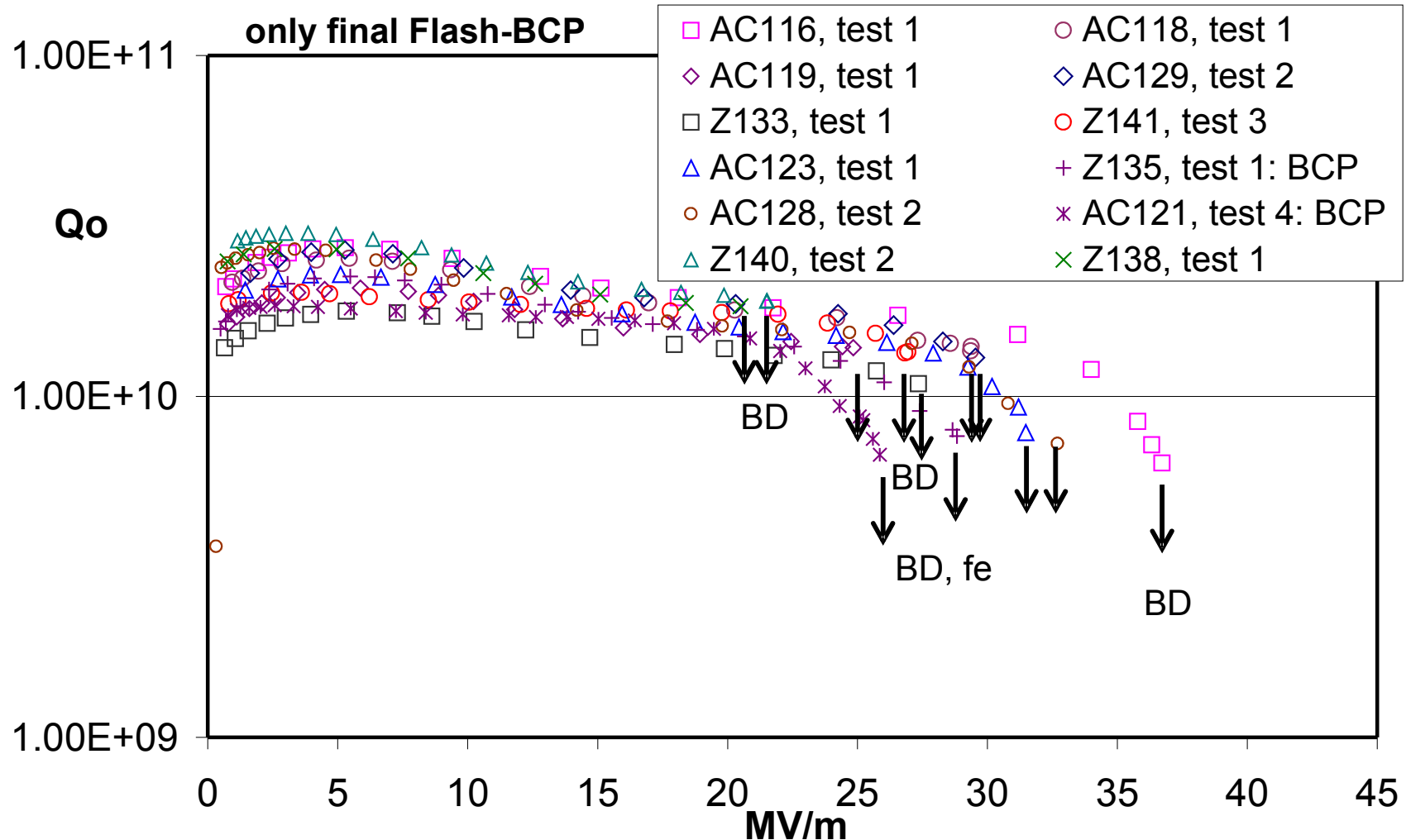
- Call for tender of XFEL cavities under preparation
- 3.9 Ghz-module for FLASH arrived from FNAL
 - Test on CMTB under preparation
- Optical inspection (Kyoto/KEK-Camera) in good use
- Cavity RF test result analysis (details in talk by D. Reschke)

6th production: Q(E) of final EP-cavities



**=> high gradients at high Q; low gradient Z-cavities after EP;
 sometimes field emission (with and w/o He-tank)**

6th production: Q(E) of final Flash-BCP cavities



=> Q-slope present though 120C baked; less field emission ??
 (- with and without He-tank)

6th production: cavity reprocessing

■ Additional HPR:

Cavity	Treatment	Gain in E_{onset} (10^{-2} mGy/min)
AC117, test 3	HPR + ethanol after FE	+ 9 MV/m
AC121, test 3	HPR after FE	+ 4 MV/m
AC126, test 2	HPR after FE	massive degradation
Z139, test 2	HPR after FE	+ 8 MV/m
Z141, test 2	HPR + ethanol after FE	+ 1 MV/m
Z143, test 2	HPR after FE	+ 8 MV/m

■ New chemical treatment:

Cavity	Treatment	Gain in E_{onset} (10^{-2} mGy/min)
AC115, test 2	EP + HPR (no ethanol)	- 2 MV/m
AC117, test 5	EP + HPR + ethanol after FE	+ 13 MV/m
AC121, test 4	BCP + HPR after FE	+ 6 MV/m
Z141, test 3	BCP + HPR after FE	> 12 MV/m

Optical inspection @ DESY

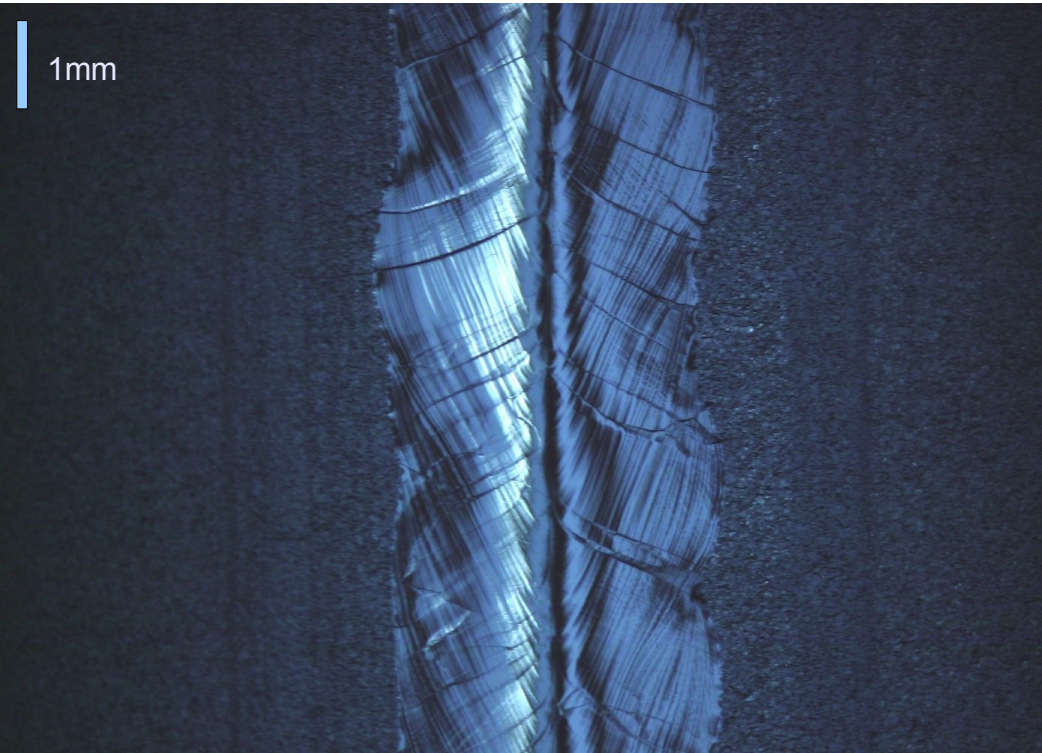
- Inspected >20 9-cell-cavities
 - Several in different stages of preparation
- Tracking of defects from „as manufactured“ state to vertical test with T-map
- Improvement towards automation for „industrial“ application is ongoing

Optical inspection @ DESY

Equator #1 at 23 deg.

Z137

Equator #1 at 20 deg.



Before treatment



After 108 μm main EP

- Equator #1 shows large steps and rough grains after main EP
- All other equators look normal

Many thanks to all colleagues
who provided slides or data
for this talk!