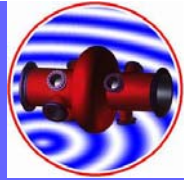# Remarks on RF Tests of Individual SC Cavities in SM18 Vertical Test Stands

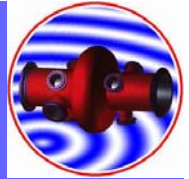## P. Maesen

SPL Collaboration meeting, 11-12 Dec '08

Content

- SM18 Presentation

- Vertical Cryostat

- Vacuum connection & leak detection

- Cool down & Warm-up

- Q(Eacc) measurement
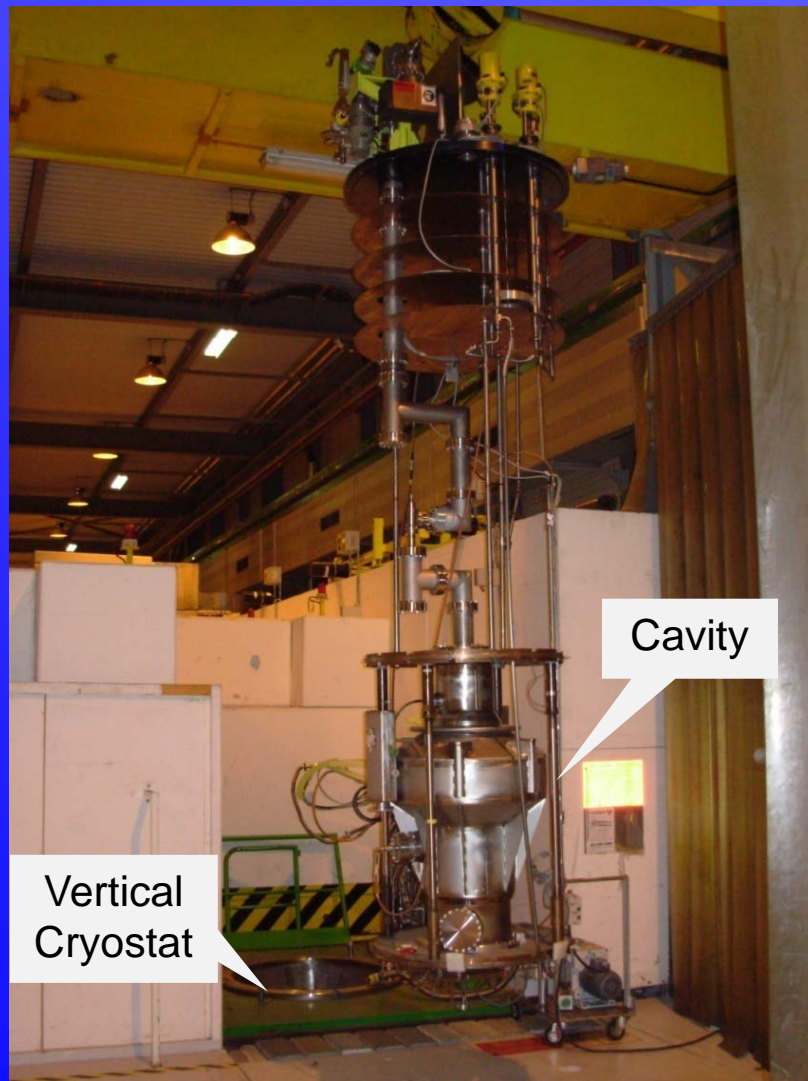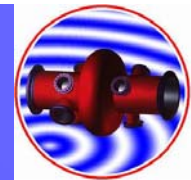
- Discussion…

SM18 Presentation

- Test Stand for SC cavities for LEP, LHC, SOLEIL and R&D
  - Consists of :
    - 4 vertical cryostats 4.5 Kelvin
    - 2 cryostats (depth 4 m), 2 cryostats (depth 2.5 m)
    - Fed by 200 W RF amplifiers 352 or 400MHz
      - One amplifier 700-800MHz just ordered
    - He connections : lHe inlet, gas outlet and warm recovery line
    - Aging temperature probes

Vertical Cryostat

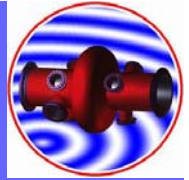

Cavity

Vertical Cryostat

The picture shows a SOLEIL cavity in its He tank for revalidation:

- Mobile concrete bunker

- Area under RP control

- Cavity validation in vertical cryostat by measurement of Q(Eacc).

- E- emission monitoring

- Possible He processing

- Magnet shielding to be done
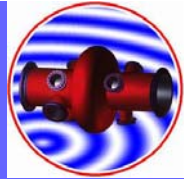
Vacuum connection & leak detection

Dedicated state-of-the-art processing and assembly techniques & procedures for sc cavities:

- Connections under laminar flux

- Low speed oil free vacuum pumping system

- He leak detectors

- Personnel: 2 CERN staff + 1 FSU in charge of SC cavity test infrastructure

Cool down & Warm up

- Cryo operation becomes difficult with aging ABB control interface and aging instrumentation…

- And

  – We share the He distribution with the LHC magnet test stand (2000 elements in machine) !

  – Since spring 2007 the SM18 cryo-plant capacity went down to 22 g/sec

  – Old RF transfer line consumes already 8 g/sec…

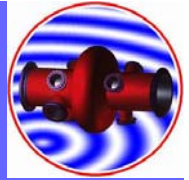 – Very limited cryogens availability these last 2 years for SC tests

Q(Eacc) measurement

Cavity H6.8C
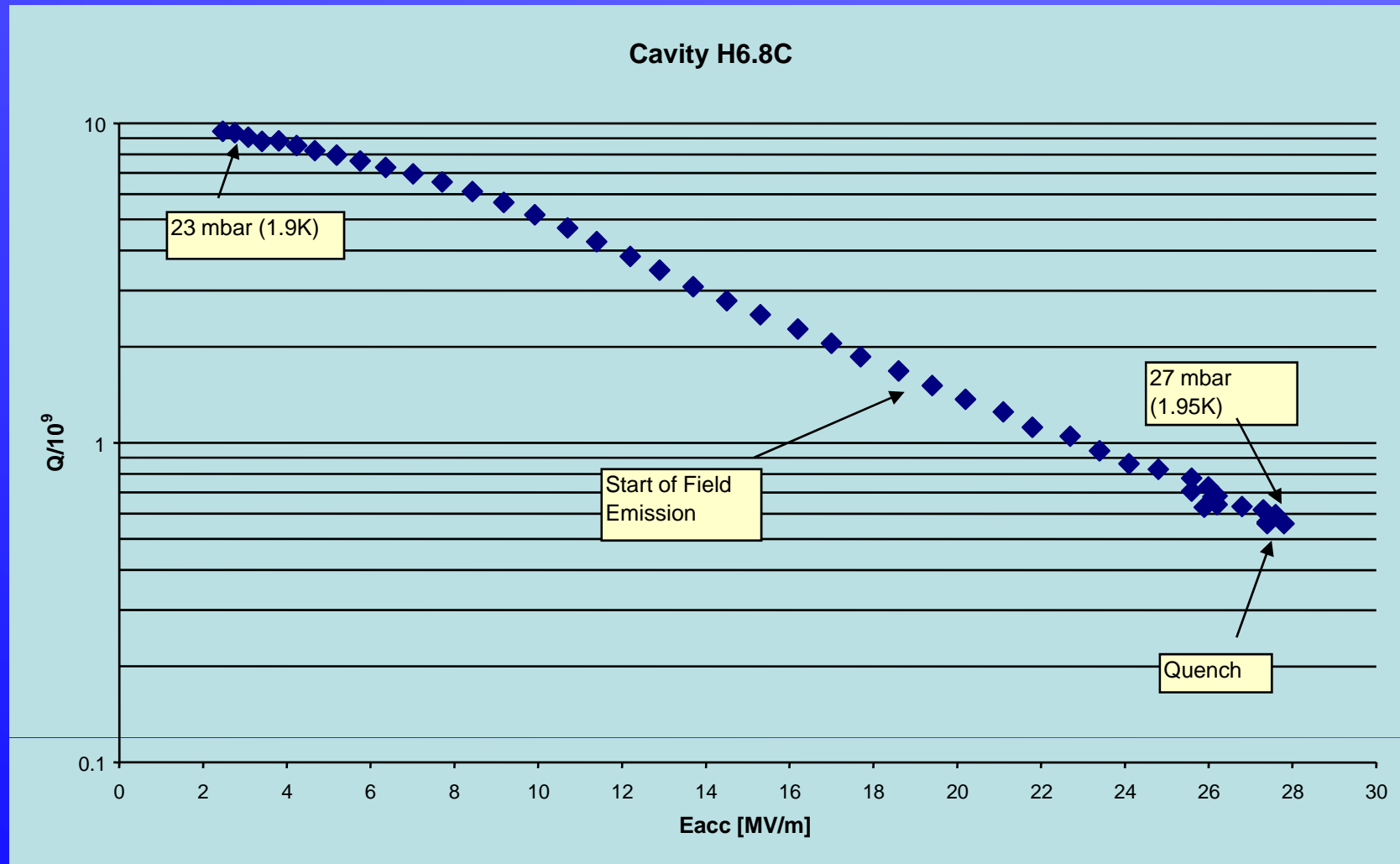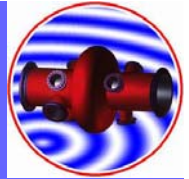
Discussion

- Cryo-installation upgrade needed (as documented in FP7 proposal Dec 2007)

- 2 CERN staff + 1 FSU in charge of SC test infrastructure and LHC exploitation !

- Number of prototypes

- LHC, SOLEIL experience showed approx 2.5 vertical measurements per validated cavity !

- Pre-series

- Big number for main series