



Recent results of D1 short model magnet test

**Andrea Musso – Ezio Todesco on behalf of KEK team:
Tatsushi Nakamoto, Michinaka Sugano, Sun Enomoto,
Kento Suzuki, Yukiko Ikemoto**

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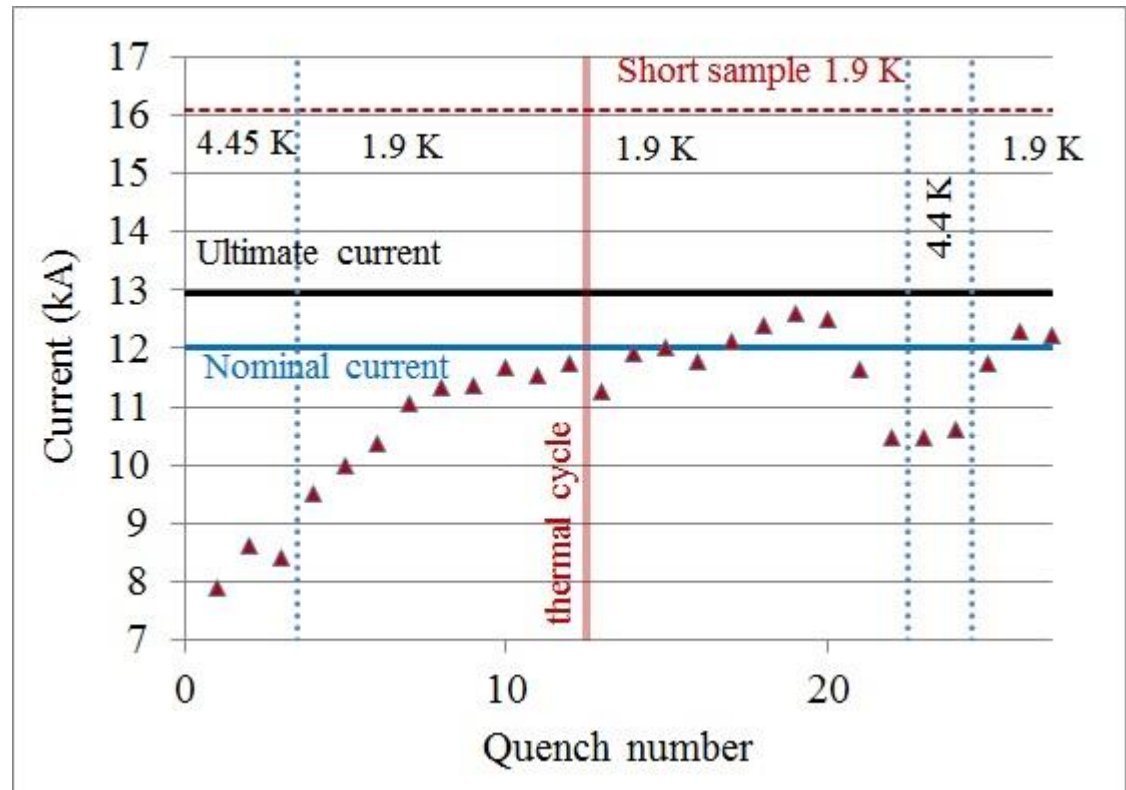
Summary

- Performance Result after the first cold test of model magnet #1(a) [MBXFS01]
- Upgrade and assembly of the model magnet #1(b)
- Training quench performance of #1(b)
- Preparation of Model magnet #2

Quench performance of MBXFS01(a)

(HCMBXFM001-KJ000001)

- Assembly => ended April 2016
- Cold test => May 2016



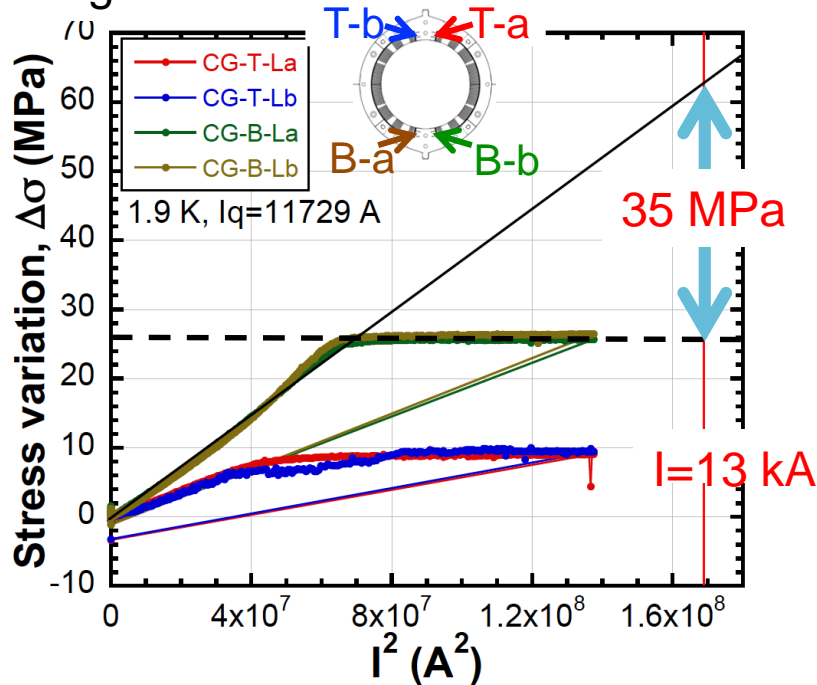
- Nominal current reached after thermal cycle and 13 quenches
- Ultimate current was not reached
- De-training and erratic behavior

Insufficient azimuthal coil pre-stress in MBXFS01

MBXFS01(a)

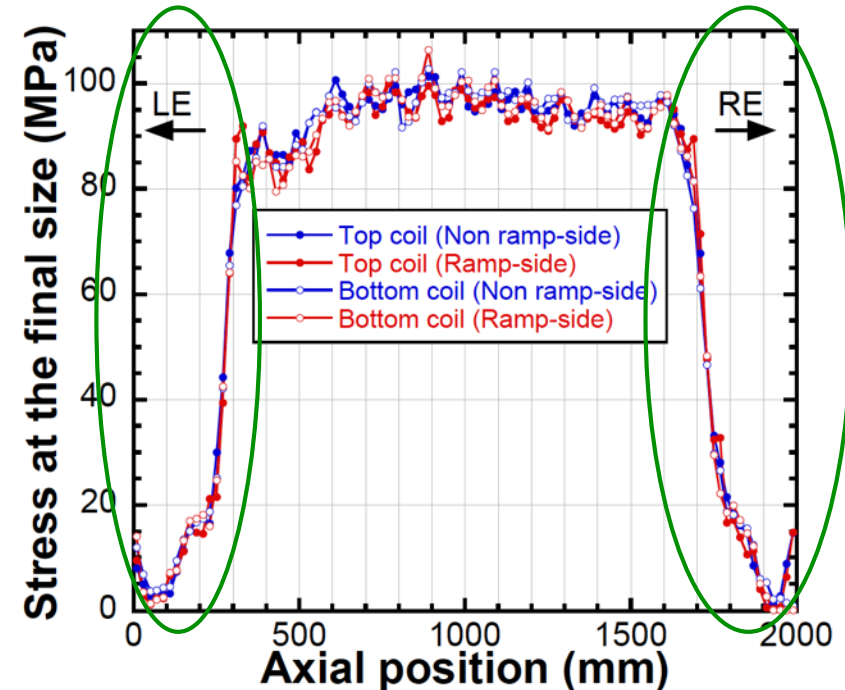
Straight section

Variation of coil pre-stress at pole during excitation



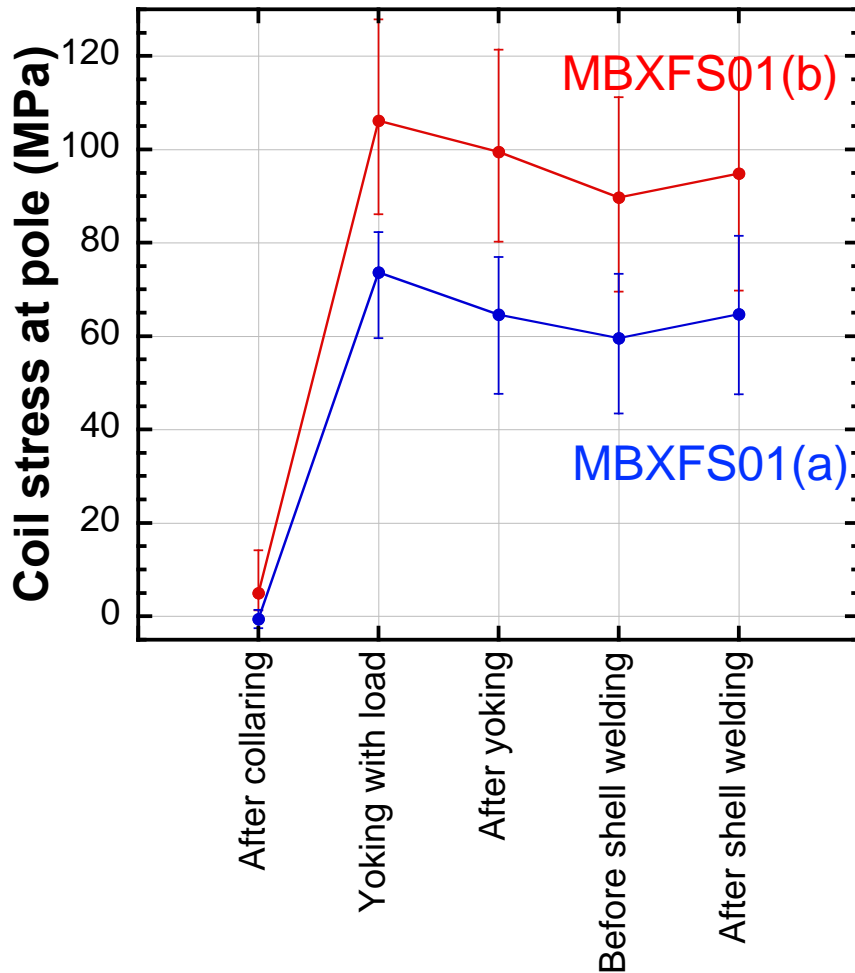
Coil end

Coil size measurement after curing



- Proposal to increase the pre-stress and the axial pre-load
- During the review in July 2016 the decision was officialized

Model magnet 1a Vs. 1b pre-stress



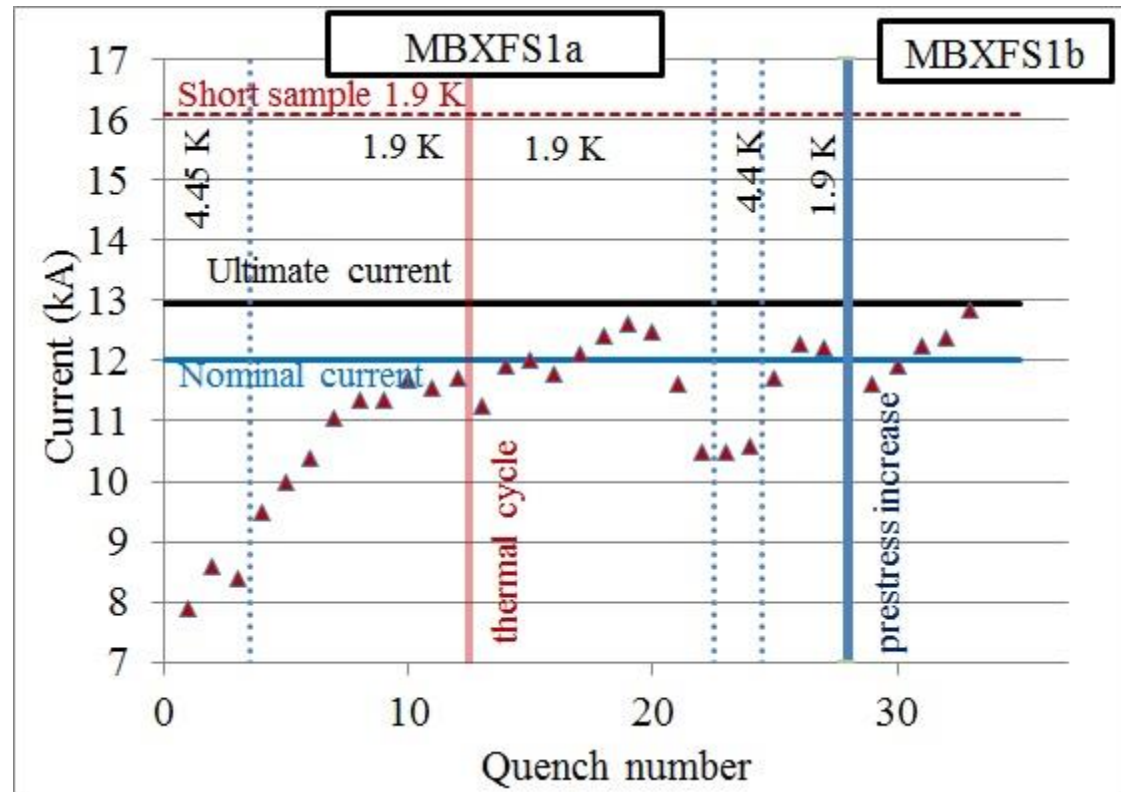
Pre-stress is given by yokes

Activity	Δ (Mpa)
After collaring	6
Yoking with load	33
After yoking	35
Before shell welding	30
After shell welding	30

- 0.8mm shims added in the mid-plane
- Magnet re-assembly Autumn 2016

Quench performance of MBXFS01(b)

- Cold test => February 2017



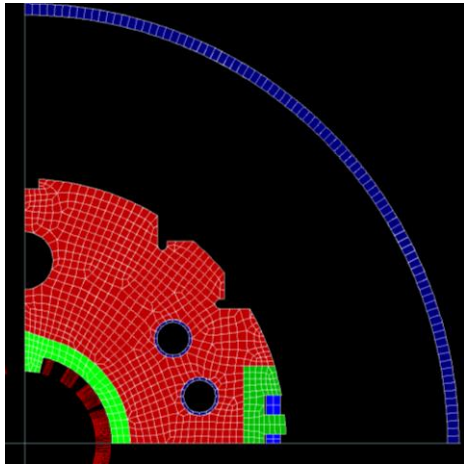
- Nominal current reached after 2 quenches
- Ultimate current reached after 5 quenches (plateau 1')
- Plateau at nominal current 1h

Design change in MBXFS02

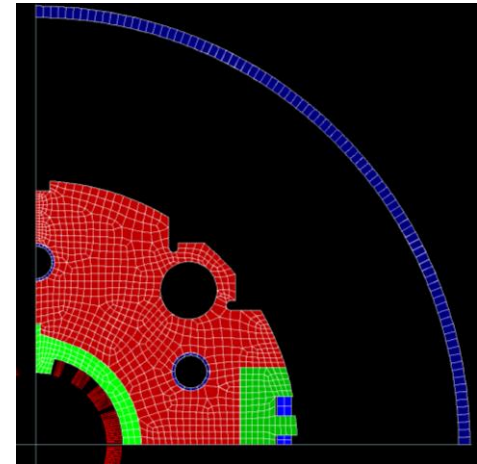
- The cross section design needs to be changed following a request from CERN in order to be in line with the adjacent magnets (simplified interconnection)
- The magnetic measurement and the simulations (2d and 3d) need fine adjustment to meet the required specification

For these reasons the model magnet #2 will have a different cross section

Model magnet #1 cross section



Model magnet #2 cross section



Conclusions

- The test of model magnet #1a showed a lack of pre-stress
- The magnet was disassembled and assembled again with shims in the mid-plane
- The test of model magnet #1b showed a good behavior and the problem seems to be solved
- Model magnet #2 will be manufactured starting in August 2017, with a new cross section as requested by CERN
- Model magnet #2 will have a new (final) cross section