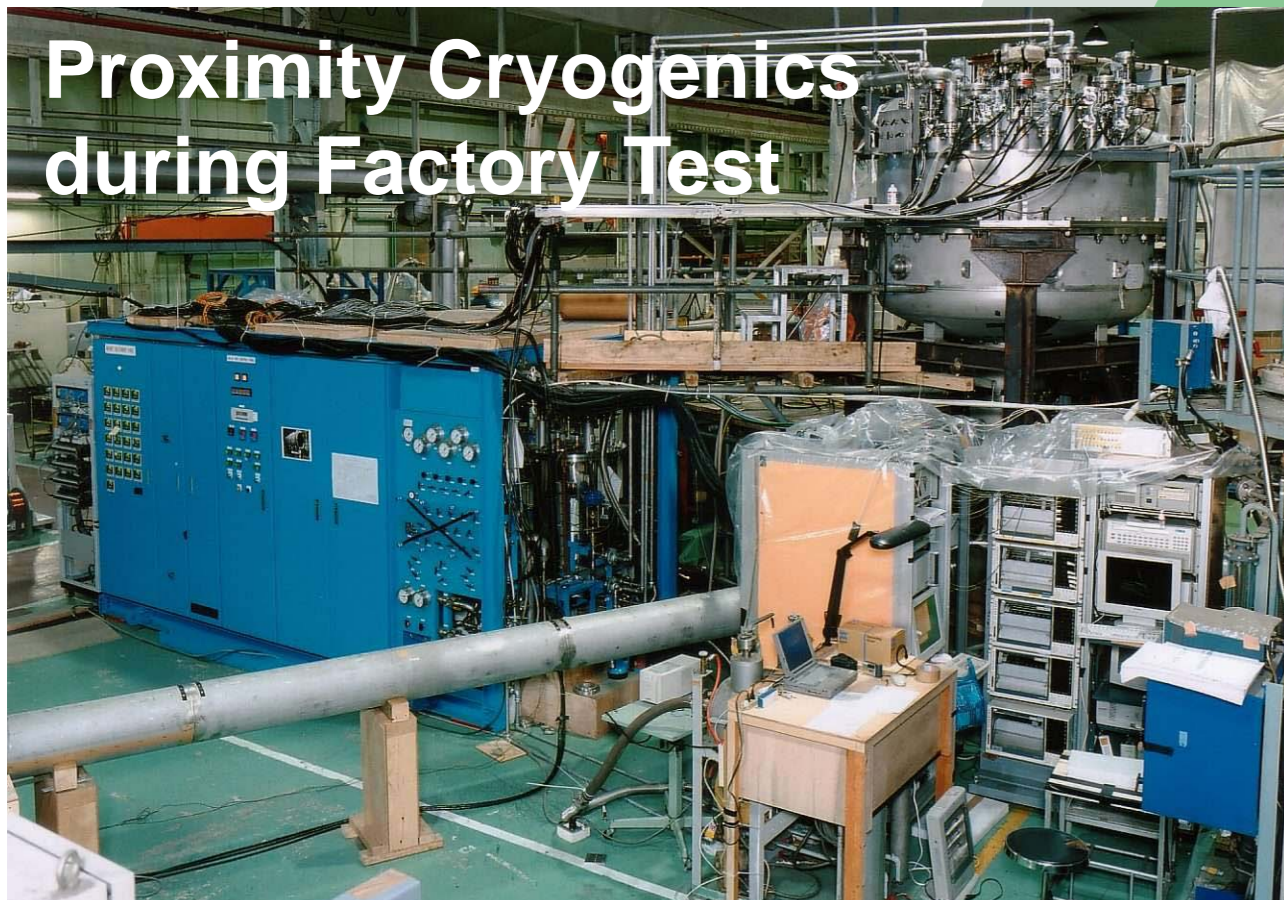


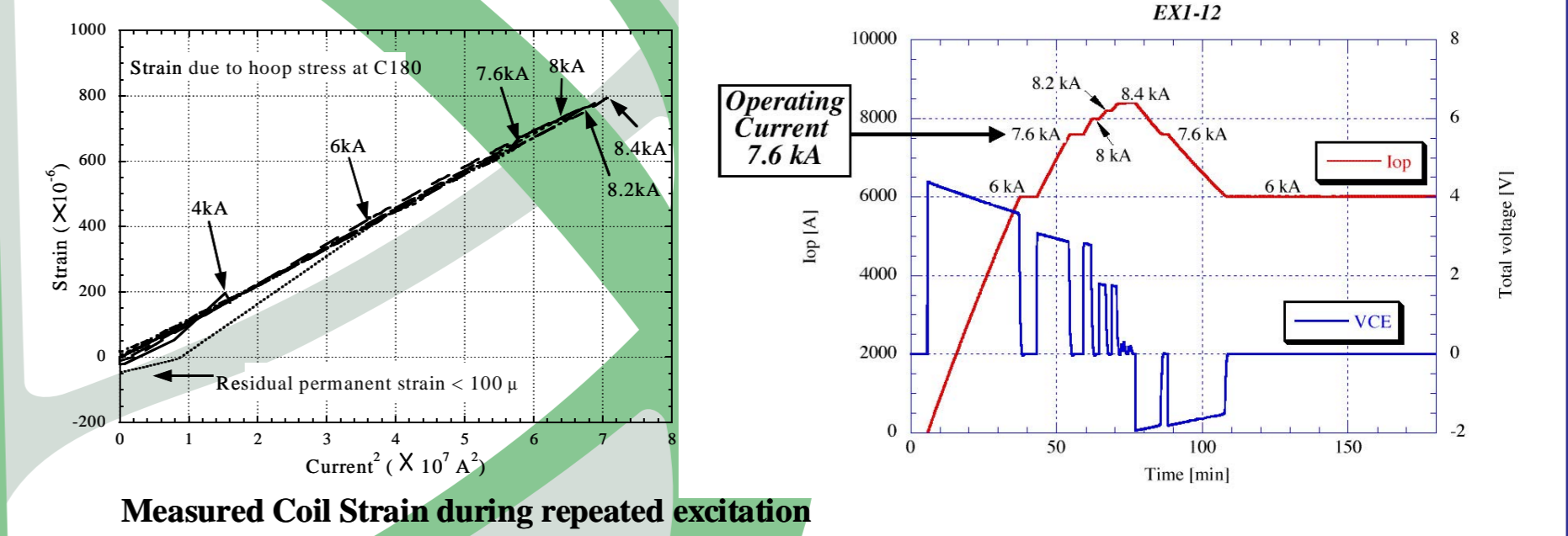
EXTENSIVE TESTING BEFORE INSTALLATION

The central solenoid has been constructed in Japan with final destination the ATLAS detector in the LHC tunnel. Solenoid and its proximity cryogenics system were tested in Japan before shipment to CERN. At CERN, the solenoid and calorimeter were integrated in their common barrel cryostat, cooled down and tested before installation in the underground detector hall.



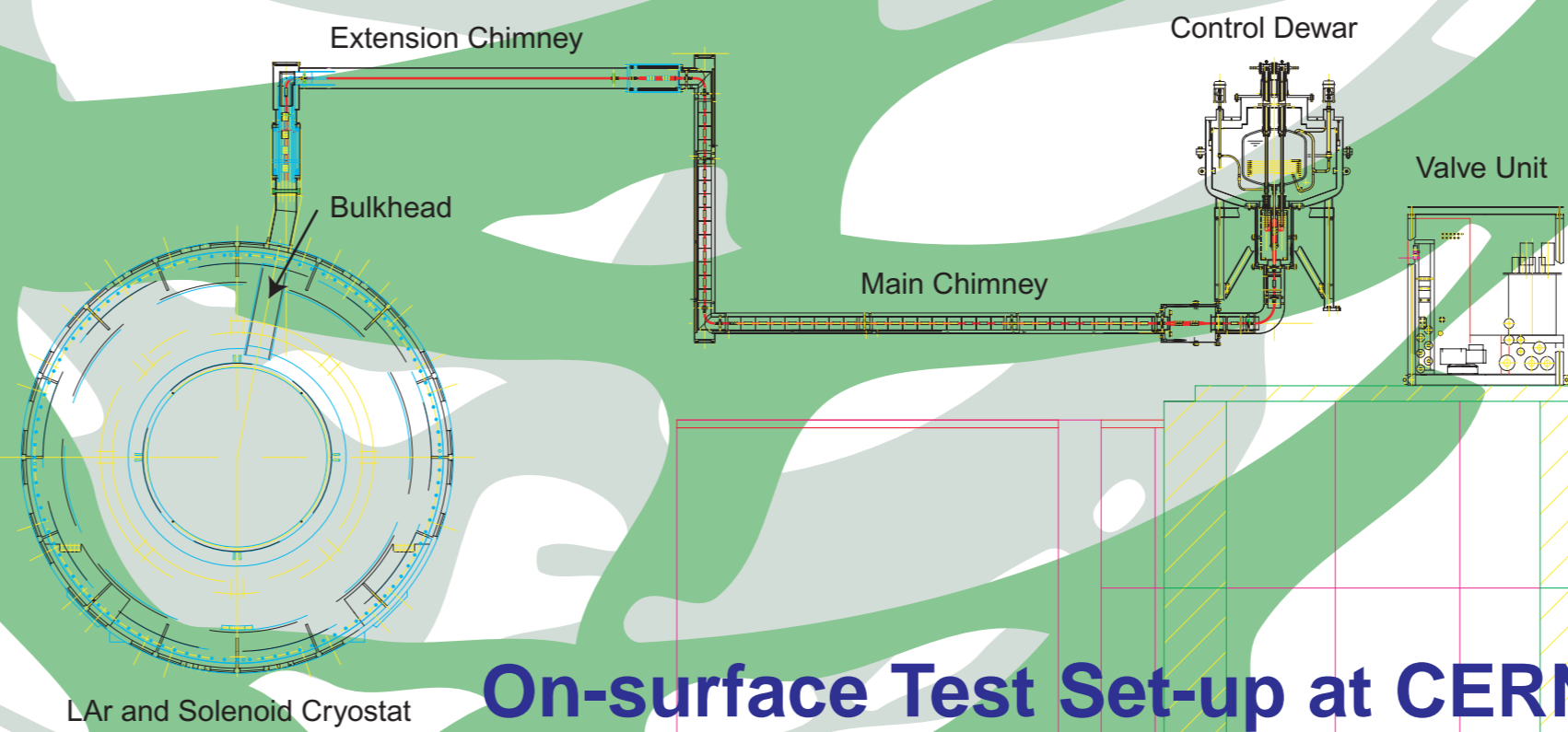
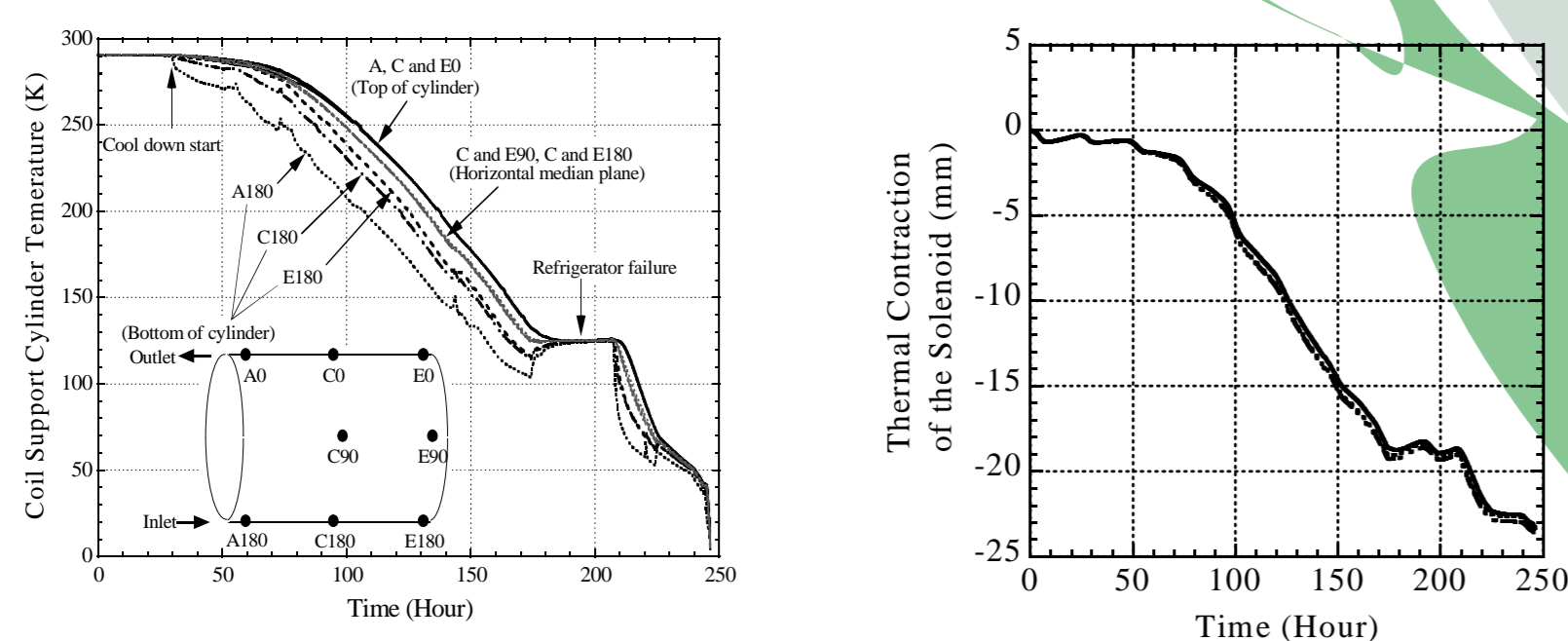
EXCITATION

up to 8400A (110% Iop, 105% Bop)
 residual permanent strain < 100 mStr (elastic)



CRYOGENIC BEHAVIOUR

thermal contraction: 23.5 mm = 0.41%
 (coil length = 5700mm)

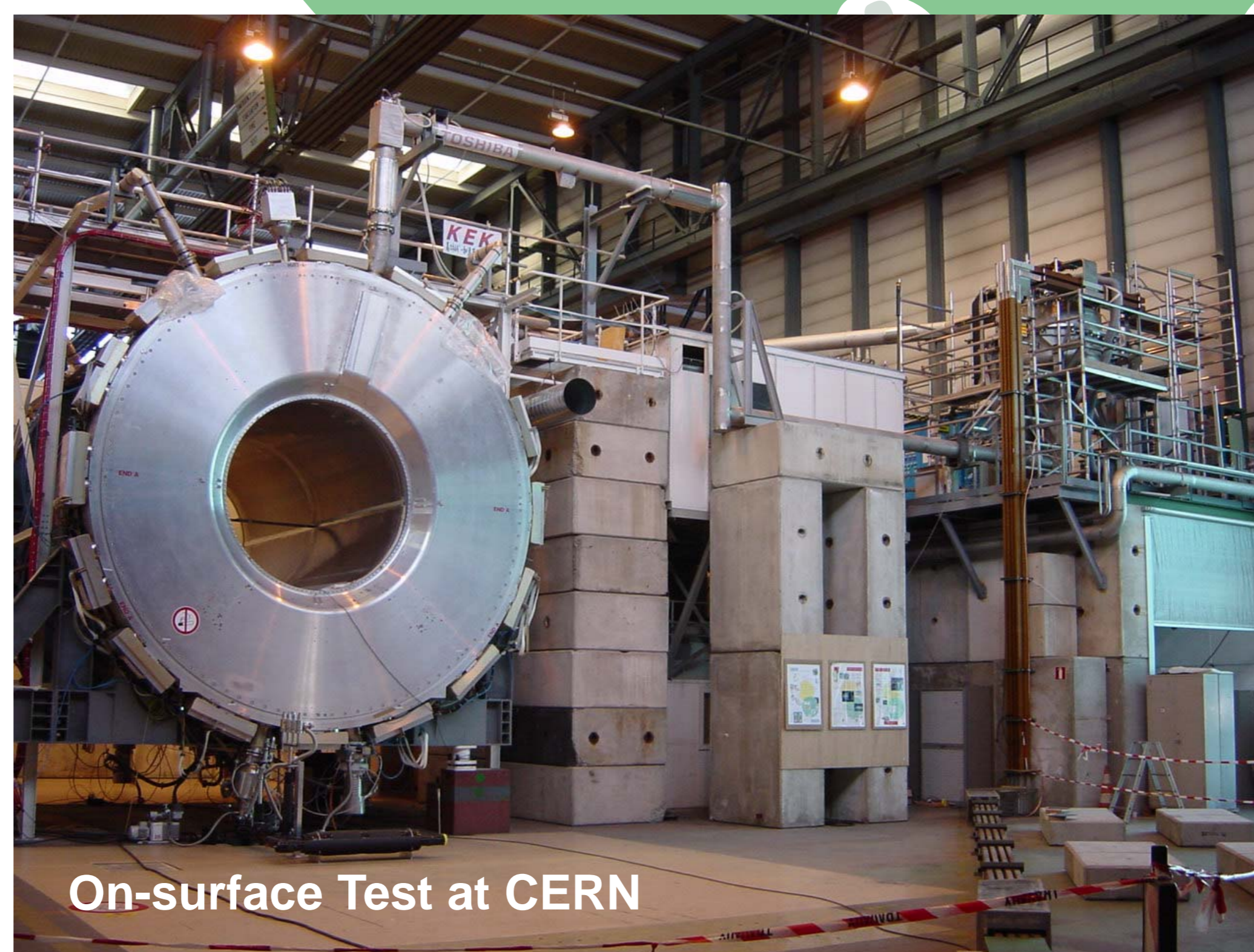


POSITION MONITORING

Potentiometers are used to monitor the displacement of the coil.

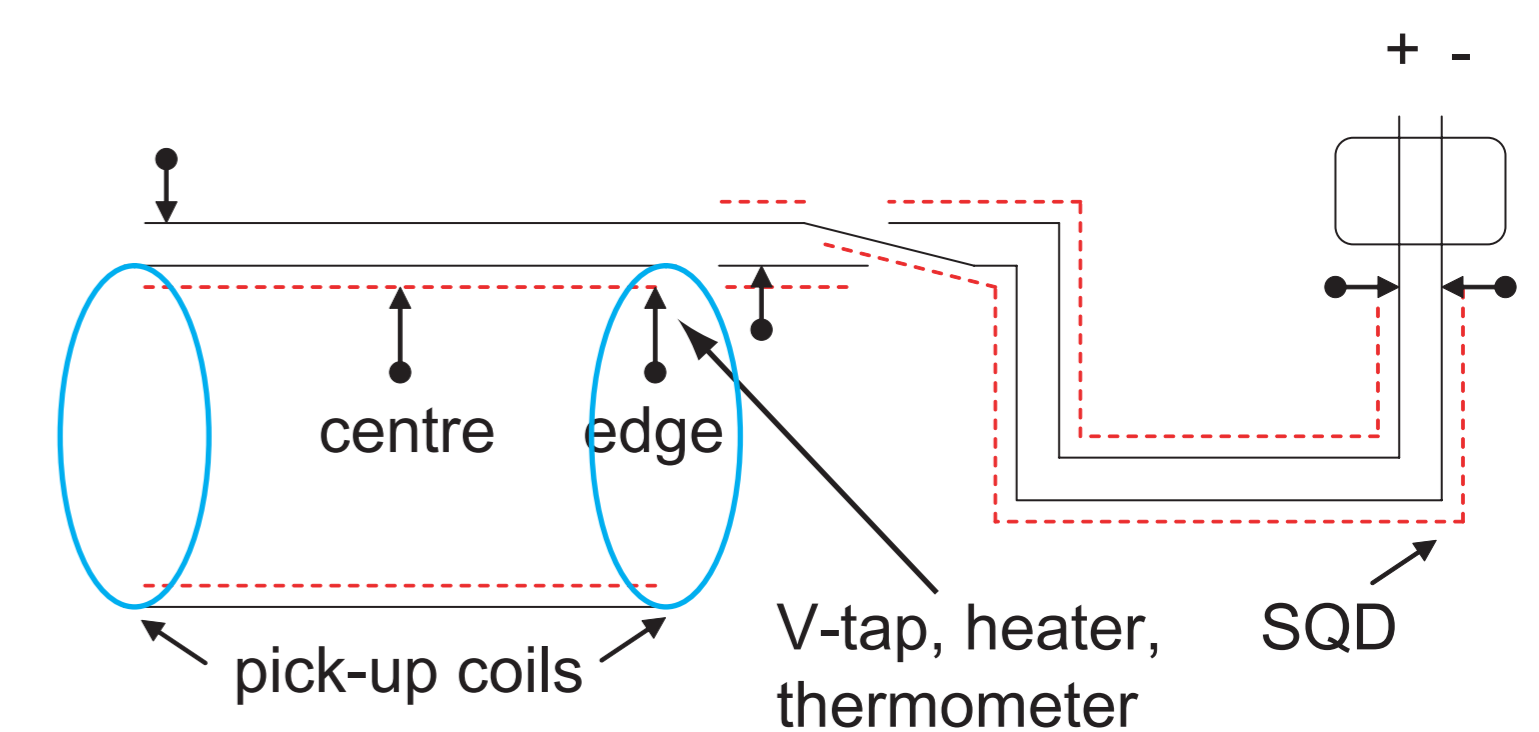


linear potentiometer



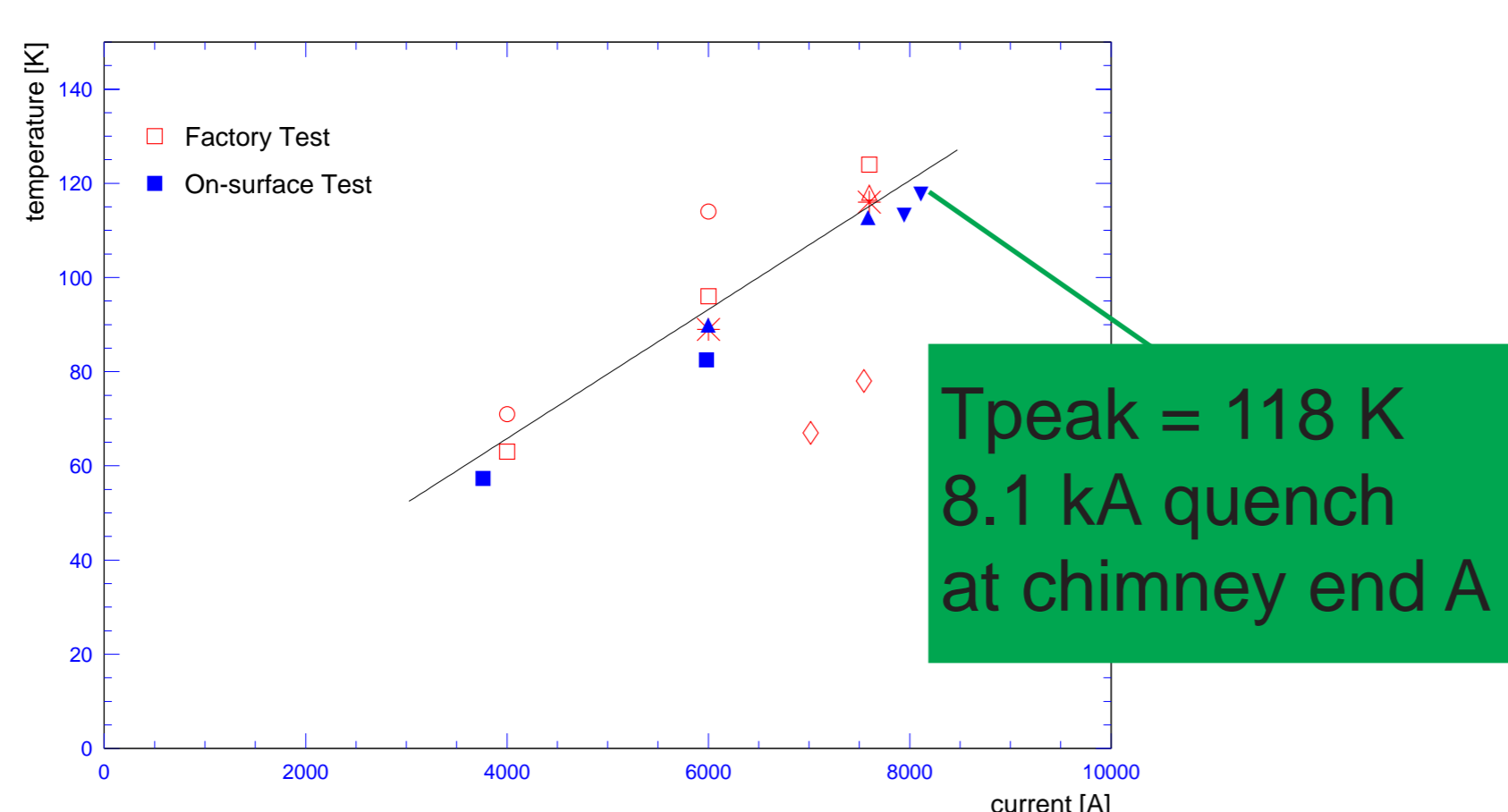
QUENCH MONITORING

Solenoid behaviour is monitored with thermometers, voltage taps and superconducting quench detectors (SQD: a small superconducting wire used as thermal switch). Two pick-up coils detect changes in the magnetic field.



SOLENOID WELL PROTECTED

With a maximum peak temperature below 120 K after a quench the solenoid is well secured. This safety is based upon a combination of pure aluminium strips for faster quench propagation and an active quench protection heater system.



QUENCH VOLTAGE EVOLUTION

The safety system detects a quench within 1 second. The fast response of the differential voltage (Vdiff) of pick-up coil and total coil voltage is shown in comparison to the voltage tap signals (Vtap).

