

PCMAG Status

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DESY

EUDET Extended SC Meeting JRA1

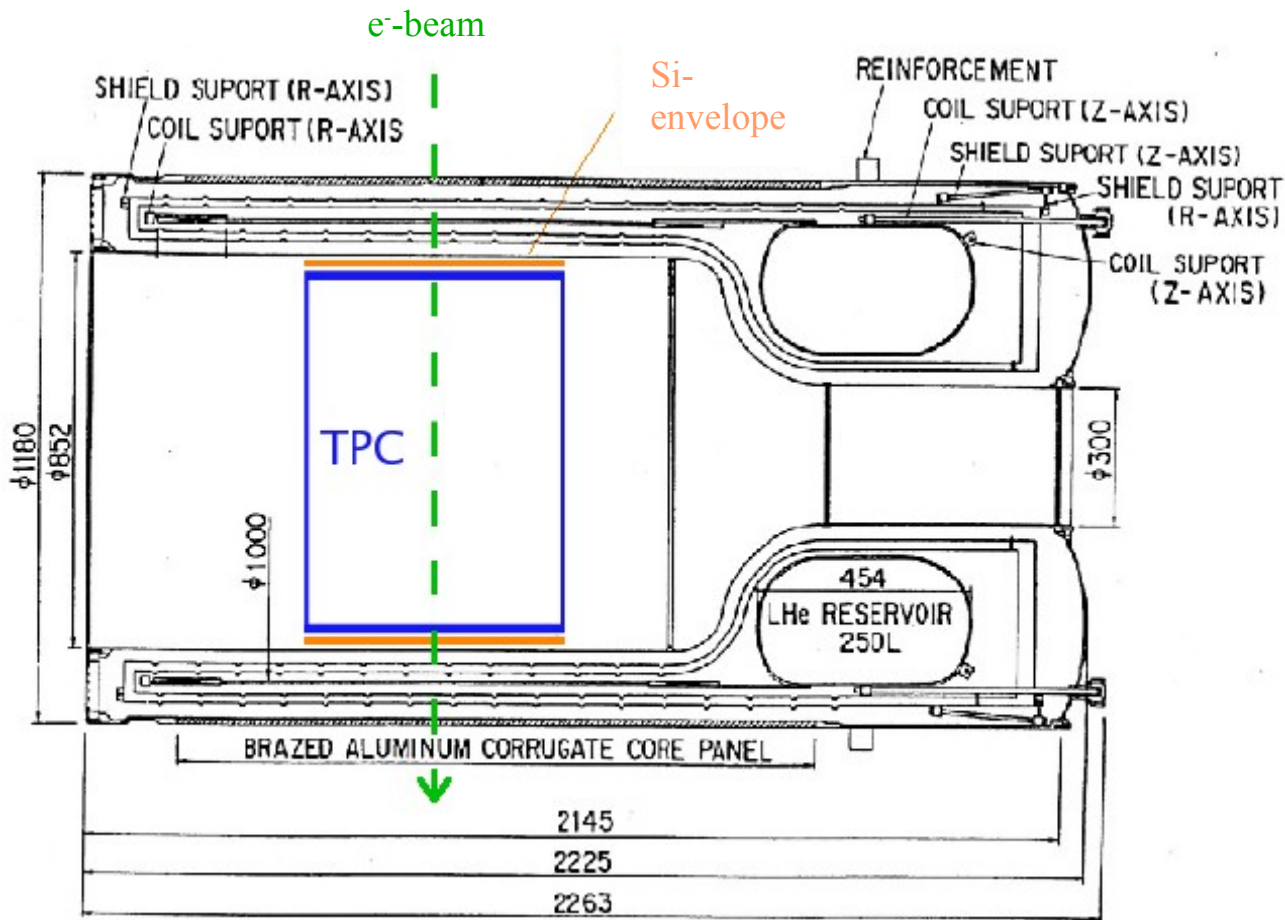
31-Aug-2009



EUDET

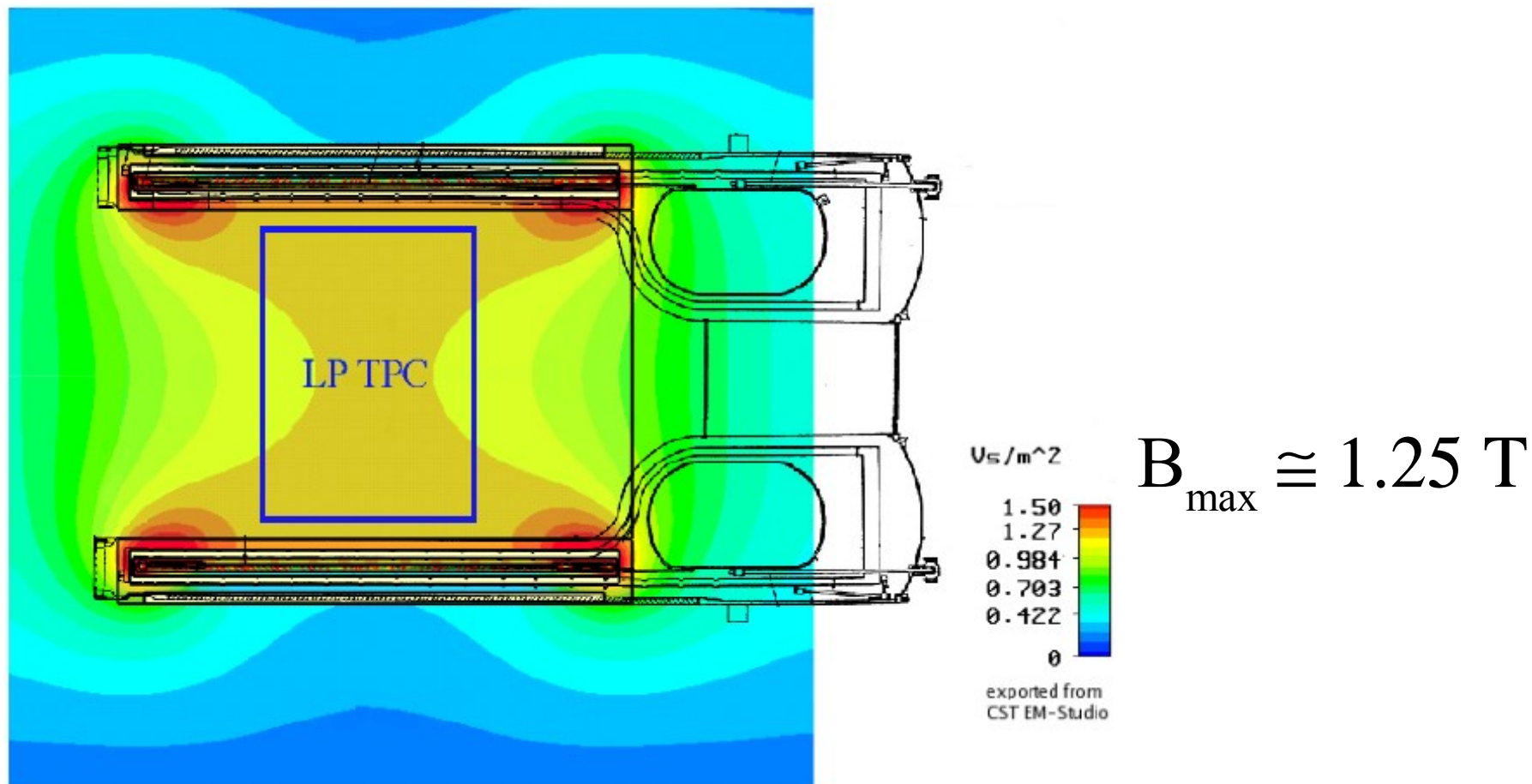
Detector R&D towards the International Linear Collider

- Permanent Current Magnet
- Superconducting coil
- B_{\max} (520 A) = 1.25 T, B_{nominal} (430 A) = 1.0 T
- PCMAG at DESY-II test beam: T24/1
- Initially installed in December 2006



$$B_{\max} \cong 1.25 \text{ T}$$

L. Hallermann, DESY



P. Schade, DESY

- **Field map has been created**
- **Model based on data from field mapping campaign**
- **Error in field map between 5 to 10 Gauss, slightly worse than expected**
- **Most important component: $\Delta B_z = 5.7$ Gauss**
- **Design of Hall sensor cards was not optimal**

- **Two Hall sensors are permanently installed in PCMAG**
 - **One in the “bottleneck”**
 - **One at the front side of the magnet**
- **Together with the reading of the current of the PCMAG power supply, the permanent probes will give a redundant check of the overall magnet's field strength**

- **Modifications:**
 - **2 permanent sensor cards had to be replaced**
 - **Positioning of an NMR probe in the PCMAG's center → calibration cross-check**
 - **Excitation of PCMAG (2-3 current values)**
 - **Calibration with NMR and the two sensors to obtain new reference values**

- ◆ **Improved sensor cards have been developed by NIKHEF and CERN**
- ◆ **First production batch of cards installed**
- ◆ **Four of them were made available for PCMAG**
 - ◆ **Two cards to replace the installed probes**
 - ◆ **Two cards to be attached to the TPC**

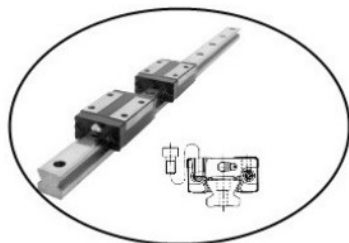
- **Increased diameter of He exhaust line**
- **Original safety valve leaked**
- **Touch protections installed**
- **PCMAG newly-arranged**
- **New LHe transfer line → safe and convenient operation**
- **Bypass flow meter for He exhaust installed**



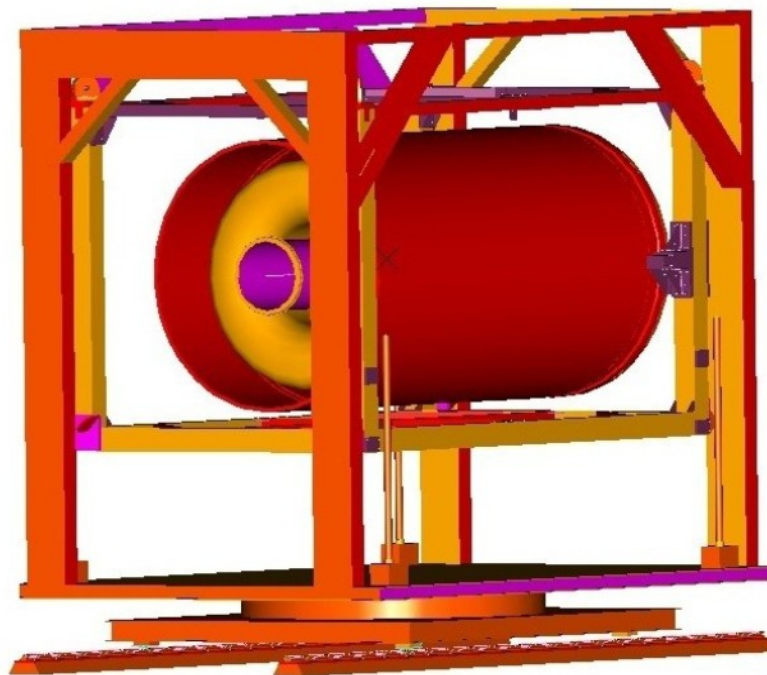
Design Study of the Magnetmovementtable



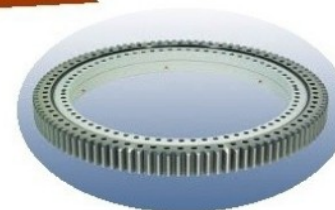
Power Jack

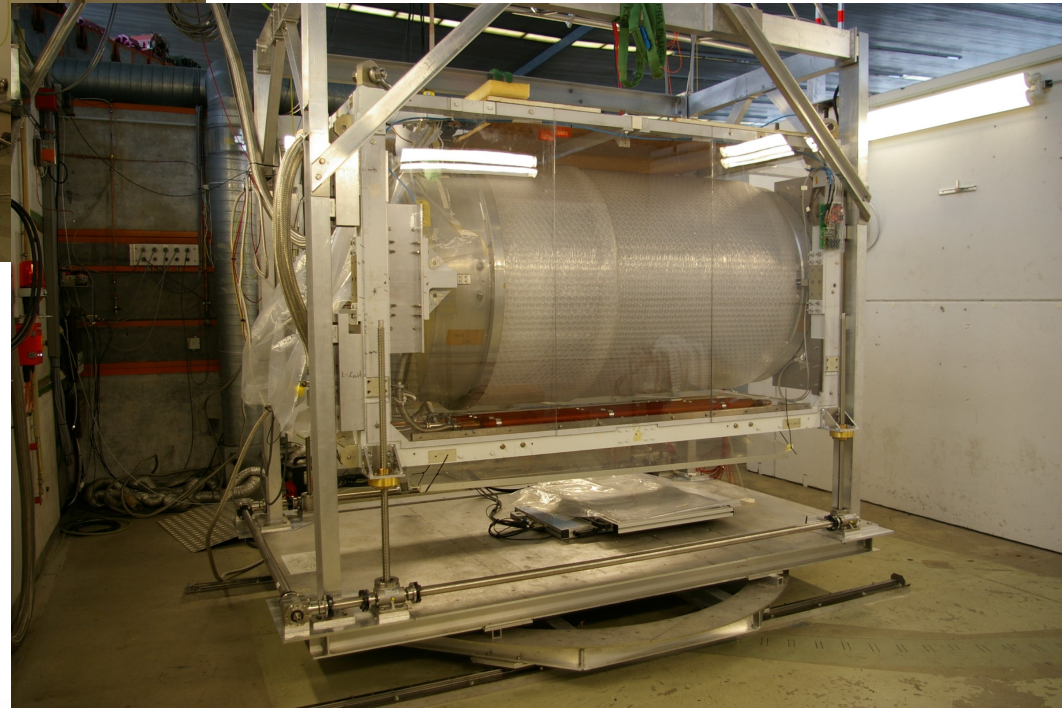


Linear guiding



Bearing





- ▶ **Field mapping produced and implemented in Analysis Software**
- ▶ **Operational and safety issues have been solved**
- ▶ **PCMAG has been repositioned due to space issues**
- ▶ **Final handover by KEK colleagues in Sept. 2008**
- ▶ **TPC support structure has been installed**
- ▶ **PCMAG stage has been installed**
- **New permanent Hall-sensor readout cards to be implemented**