Experience in the Module Assembling at KEK

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The process of the module assembling was tried using the prototype module assembly jigs of KEK to make the full Electrical Module. The process is described with the photos of the jigs. Experience from the trial is summarized.

Introduction

- Module assembling jigs being proposed by KEK were prototyped
- The jigs were used for assembling the full doublesided Electrical Module for a demonstration
- Lessons learnt from the trial is summarized in this report







XYR stage



XYR stage and stands

Japan cluster Module assembly system for centre-tap module 04 May,1998 T.Kohriki



Metrology machine (at KEK)

T. Kohriki

Physics, IPNS, KEK

- Manufacturer
- Model
- Stage size (XY)
- Z motion
- Resolution (X, Y, Z)
- Linear accuracy (X, Y, Z)
- Calibration
- Reproducibility
- Optics/display

- Mitsutoyo
- MF-1030TH-special
- 500x250
- (Measuring range 300x100)
- 150 mm
- 0.5 µm
- 3+0.02xL μm
- (L=length in mm)
- N/A
- N/A
- 1/2" CCD



3D pictures of XYR stages and stands

















T. Kohriki, KEK May 1998 **3D** pictures for steps 8 and 11







Hybrid gluing
Wire-bonding
Post cure 50°C/12houres.
Burn-in.
Electrical check.



Lessons learned

- Usage of two "linear-bushes" was no trouble
- Movement of detector was 5 µm when it was transferred to the vacuum chuck, plausibly due to the movement of the bottom stage, not due to the flying detector
- There was problem in the "one-step" gluing of the double-side detectors simultaneously:
 - Use of "Masking sheet" method
 - Time lag of application of glues on two sides of the baseboard

- Difference in the viscosity of the glues in two sides introduced the thickness difference: one side of the glue was thicker than the other, by 10 \sim 30 μm

- In case of "two step gluing", we need a glue-dispensing method

- Baseboard was positioned by using "dowel pins". Since the tolerance of the holes and the pins were tight, a caution was required to remove the detectorbaseboard assembly from the pins -- easily break the "neck" between the facing and the detector
- In sum, KEK prefers to go "two step gluing"