

emp-partner

Long-Term Results of the HLS at the Swiss Light Source (SLS)

Edi Meier
Edi Meier + Partner AG, Geophysical Engineering,
Winterthur, Switzerland www.emp-winterthur.ch

Fuqiang Wei, Leonid Rivkin
Paul Scherrer Institute, Villigen, Switzerland, www.psi.ch

Hilmar Ingensand
Swiss Federal Institute of Technology, Institute of Geodesy and Photogrammetry
Zürich, Switzerland, www.geometh.ethz.ch

XXIII International FIG Congress, Munich, 6-13 October 2006

1

emp-partner

Swiss Light Source (SLS): Paul Scherrer Institute, Switzerland

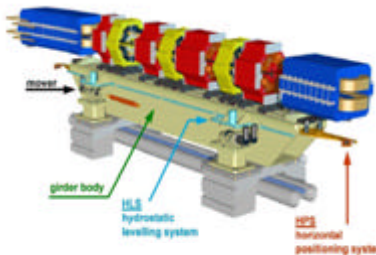


XXIII International FIG Congress, Munich, 6-13 October 2006

2

emp-partner

Girder SLS




Schlott et al. 2000

XXIII International FIG Congress, Munich, 6-13 October 2006

3

emp-partner

HLS Levelsensor: from the lab experiment to the prototype

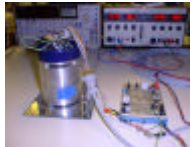


Technical data required for SLS: (realized)

Range: +/- 2.5mm (14 mm)

Resolution: 2 Microns (< 1 Micron)

Accuracy: 10 Microns



Schlott et al. 2000


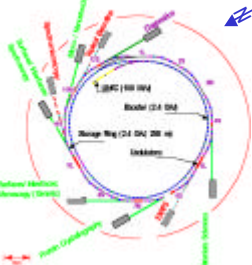
XXIII International FIG Congress, Munich, 6-13 October 2006

4

emp-partner

Hydrostatic Levelling System HLS

*Collaboration of EMP, Winterthur, Streckeisen Seismometer Factory, University of Stuttgart
Stanford Linear Accelerator Center, geomETH, Paul Scherrer Institute*

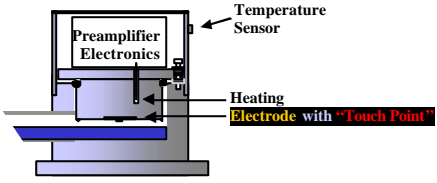
Levelsensormounted on a girder

XXIII International FIG Congress, Munich, 6-13 October 2006

5

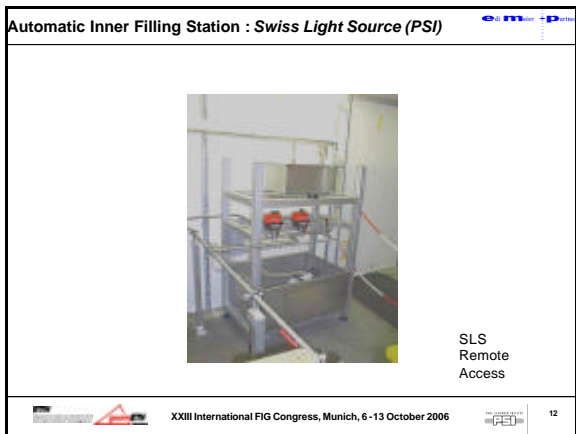
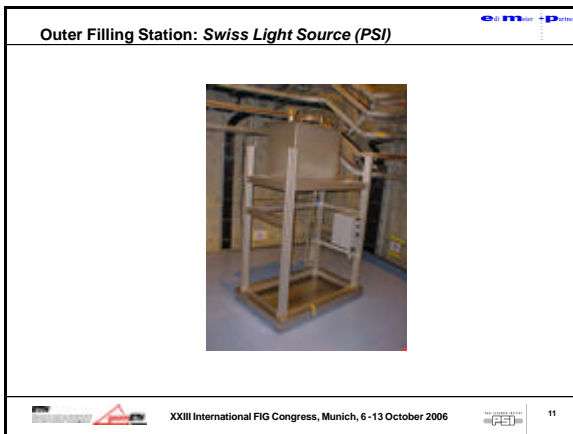
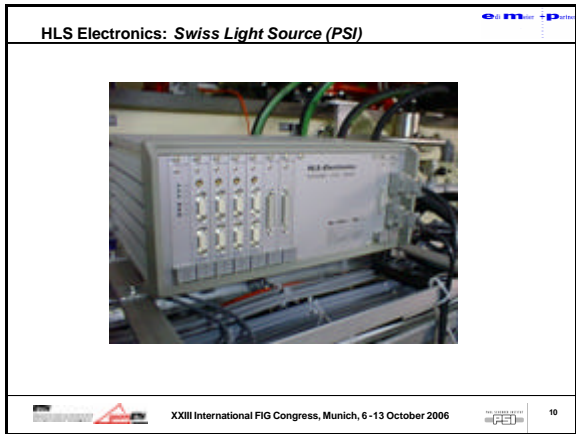
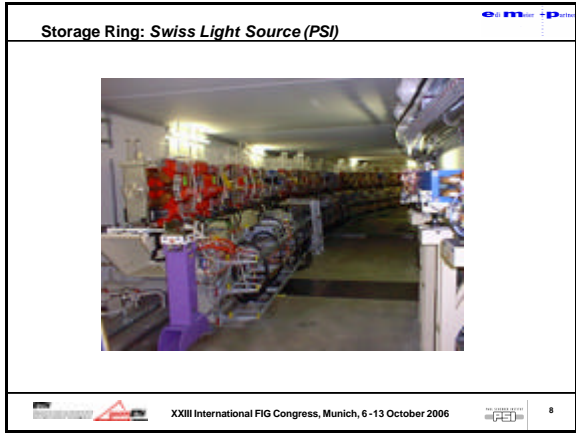
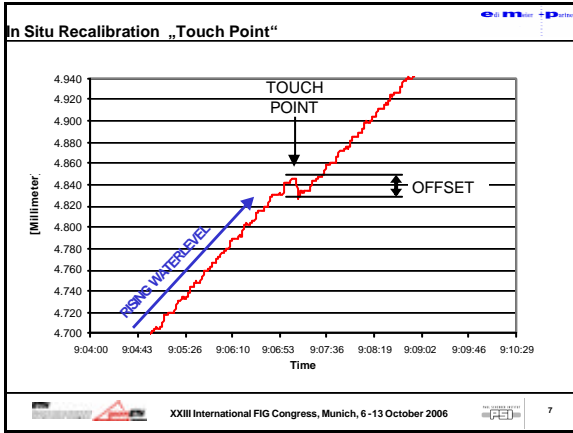
emp-partner

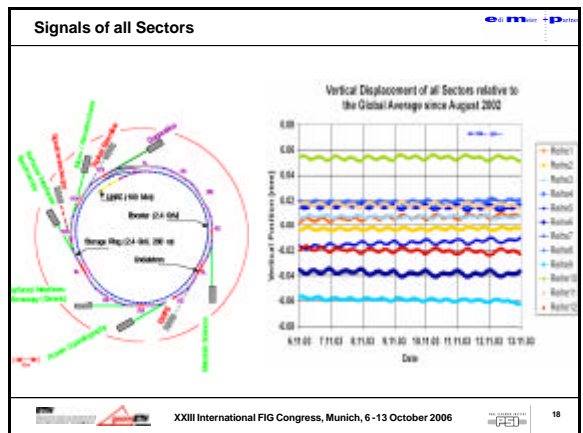
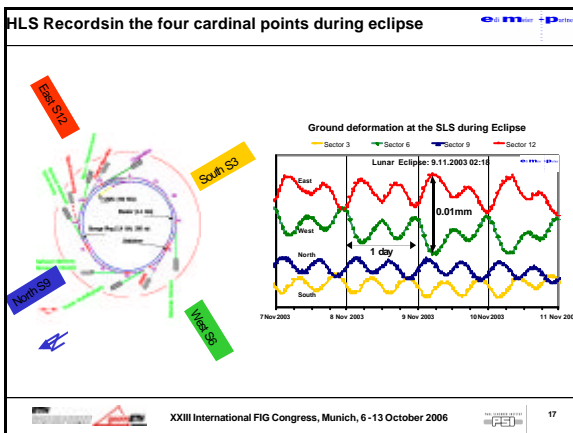
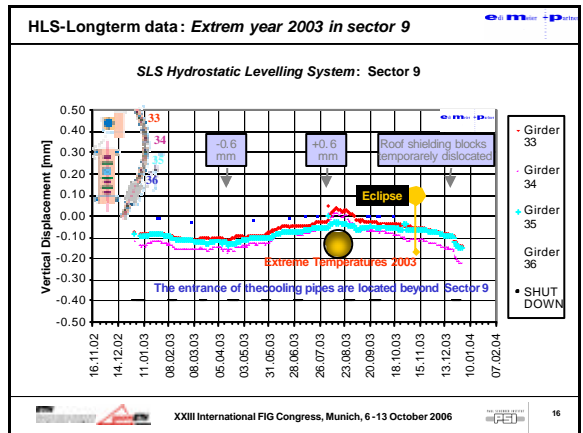
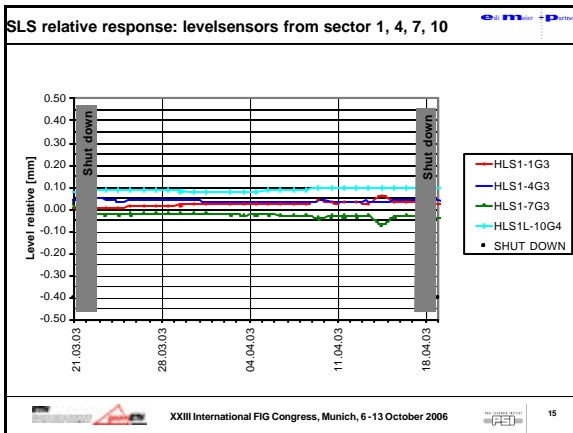
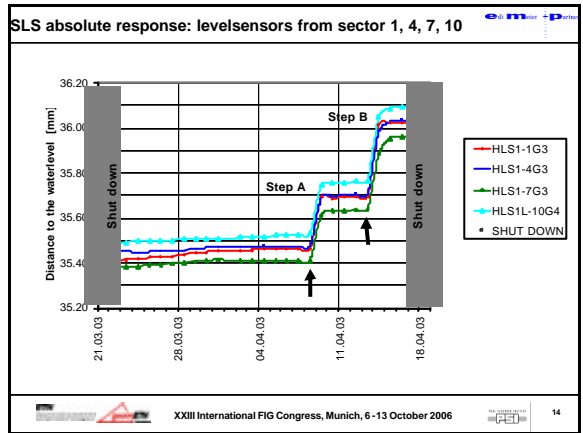
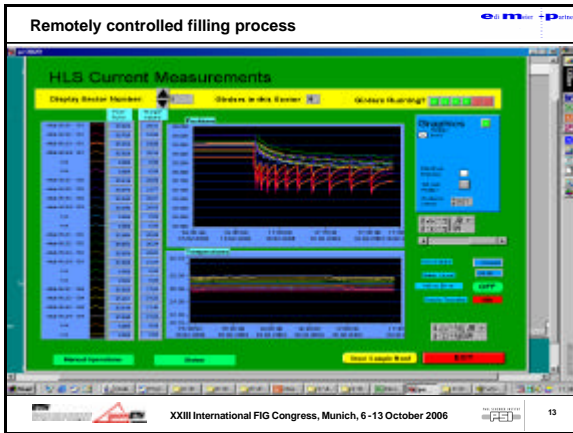
SLS Levelsensor: Cross Section



XXIII International FIG Congress, Munich, 6-13 October 2006

6







- large measuring range
- two tube connectors
- integrated analogue output

**The HLS System delivers reliable long term results
but there is still a lot to research!**

- the dynamic behaviour of the liquid in the half filled tube system should be understood better
- study of capillary effects along the measuring tube
- Instrumentation with continuously and fastly responding tiltmeters

**Thank you for your
attention!**

**have a
nice evening!**