Online Monitoring during girder re-alignment at SLS (Swiss Light Source) accelerator

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SLS: Swiss Light Source

Accelerator SLS at the Paul Scherrer Institut (PSI), Switzerland
Image of synchrotron light

Vertically polarized synchrotron radiation at SLS

Girder Concept

[Diagram of girder concept with labels: girder body, ULS hydrostatic levelling system, HPS horizontal positioning system, horizontal reference surface, vertical reference surface]
**Girder Motion Control**

![Image of girder motion control](image)

**HLS: Hydrostatic Levelling System at SLS**

Collaboration of EMP, geomETH, Winterthur, Stanford Linear Accelerator Center, Paul Scherrer Institute

![Image of HLS](image)

**Levelsensor: Installation on girder**
Sector Average and Single Signals

Average values of sectors
West, East, South, Nord

Pitch and Heave Changes

0.8mm heave
Reference Line
Correction of Misalignments

HLS Feedback Pitch recorded in Sector 2
Normal Online Record of HLS Signals

Record during Alignment

Fast response:
Summary and Outlook

- HLS is a suitable tool for **long term** monitoring giving a perfect deformation history.

- The HLS is a suitable tool for **real-time** monitoring for girder alignment control.

- Also **dynamic** measurements are possible. In that case a model of the water flow according to the desired precision is needed.

Thank you for listening and good-bye!