

High precision measurement of special profile sections in the production line

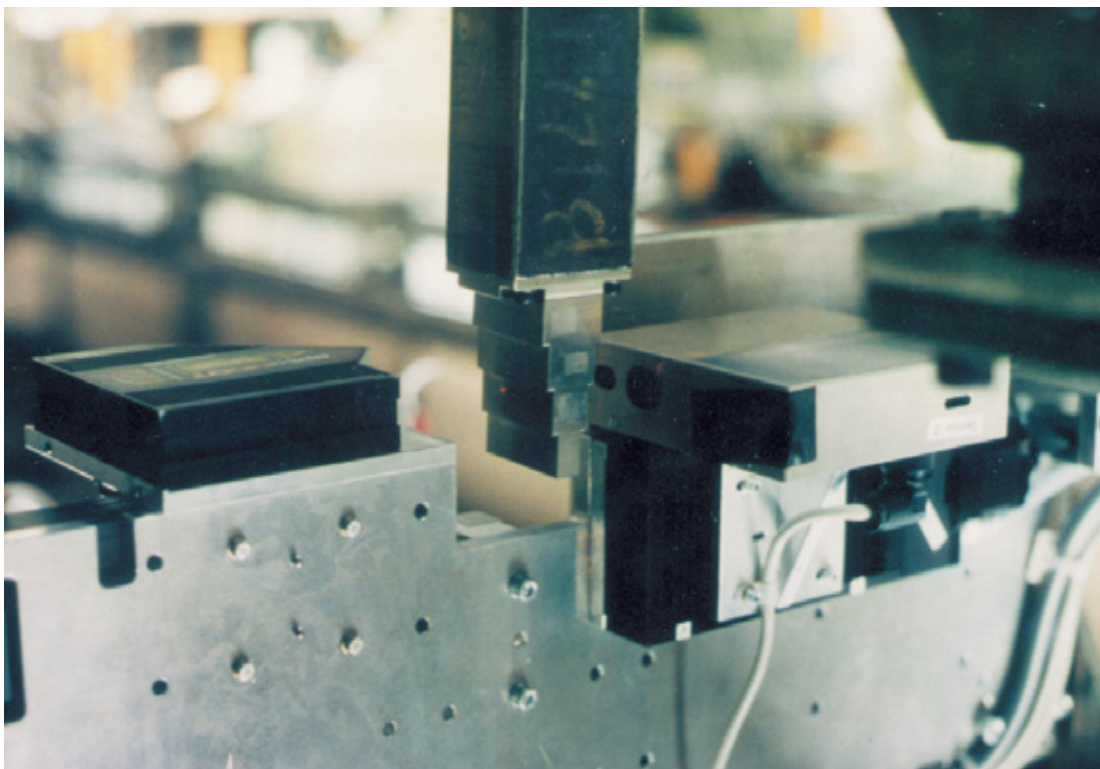
In the plant research department a fully automatic system for optical geometry measurement has been developed, constructed and integrated into a production line for lift profile rail sections. The system acquires the deviation of ± 0.2 mm from straightness in both axes, the length of the section and the thickness of the rail web to ± 0.02 mm in two tracks. From this a measure of the parallelism of the running surfaces is derived. The optical sensors are mounted on a position slide in a C-shaped measurement yoke. During the measurement movement, the measurement deflection along the precision rail is acquired. The measurement result is archived and displayed in graphical form on the monitor of the system computer. Rails outside of the profile tolerance specification are identified with a color code. An automatic calibration of the measuring heads to a comparison standard is carried out continuously to reduce measurement errors.

Measurement system requirements

- Measuring range: 5 mm
- Accuracy: $\pm 5 \mu\text{m}$
- Resolution: $1 \mu\text{m}$
- Bandwidth: 1 kHz
- Reflecting target surfaces

Reasons for the system selection

- Non-contacting and therefore wear-free.
- High measuring accuracy even on shiny surfaces.
- Small measuring spot diameter, large base distance.
- Rugged system version, easy fitting and operation.



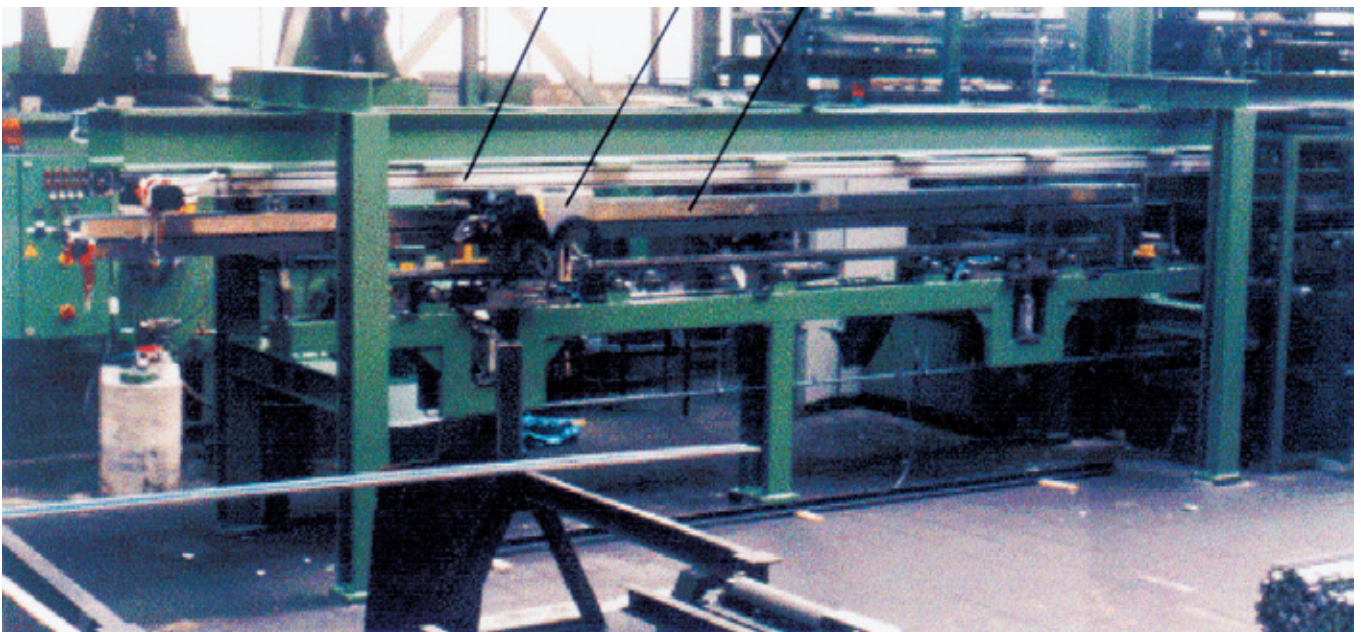
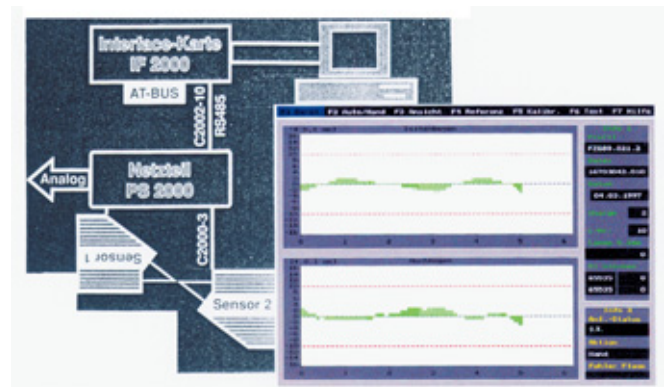
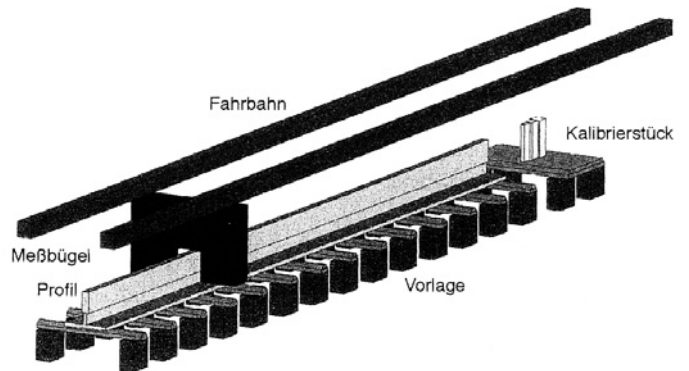
Application

Ambient conditions

- Temperature: 10-35 °C
- Medium: air
- Interference fields: none

Measurement system structure

- 2 x ILD 2000-S
- 2 x C 2000-3
- 1 x PS 2000
- 1 x C 2002-10
- 1 x IF 2000
- 2x Teach-in on glossy measurement object surface
- 1 x System computer



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