

# Rotating Steel Bridge, Bremerhaven, Germany

osmos

Integrated safety for structures



Optical Strand on main bearing on road side

## Fatigue monitoring of an old mobile structure

### Client

Bremen Ports

Based on the monitoring data an optimized fatigue calculation will be based on.

### Structure

Riveted steel construction from 1929. Rotating construction in order to open the shipway in a lockage. Steel quality is a so called Union steel with bad welding performance. The bridge consists of two railway tracks and a two lane street.

### Instrumentation Installed

- 4 Optical Strands
- 4 temperature sensors
- 1 monitoring station



Lifting of rear end of the bridge to remove the bearing before rotation

### Context

A detailed fatigue calculation for the whole framework considering the loads from original static calculation showed no safety against fatigue in some parts of the framework.

### Initial Results

The identification of the actual traffic loads during one year offer a lower number of bridge rotations and a lower strain due to traffic and rotation.

### Client's Needs

The client wishes to monitor the strain to verify load assumptions and the maximum strain in critical construction parts.

### Client Benefits

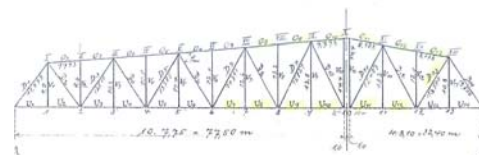
Compared to fatigue calculation the monitoring data offer a realistic determination of load impact on the structure. This means an extended lifetime of about ten years.



Special welding fixations of the Optical Strand on the beam



TÜV Rheinland Group



Fatigue calculations showing loads value by elements