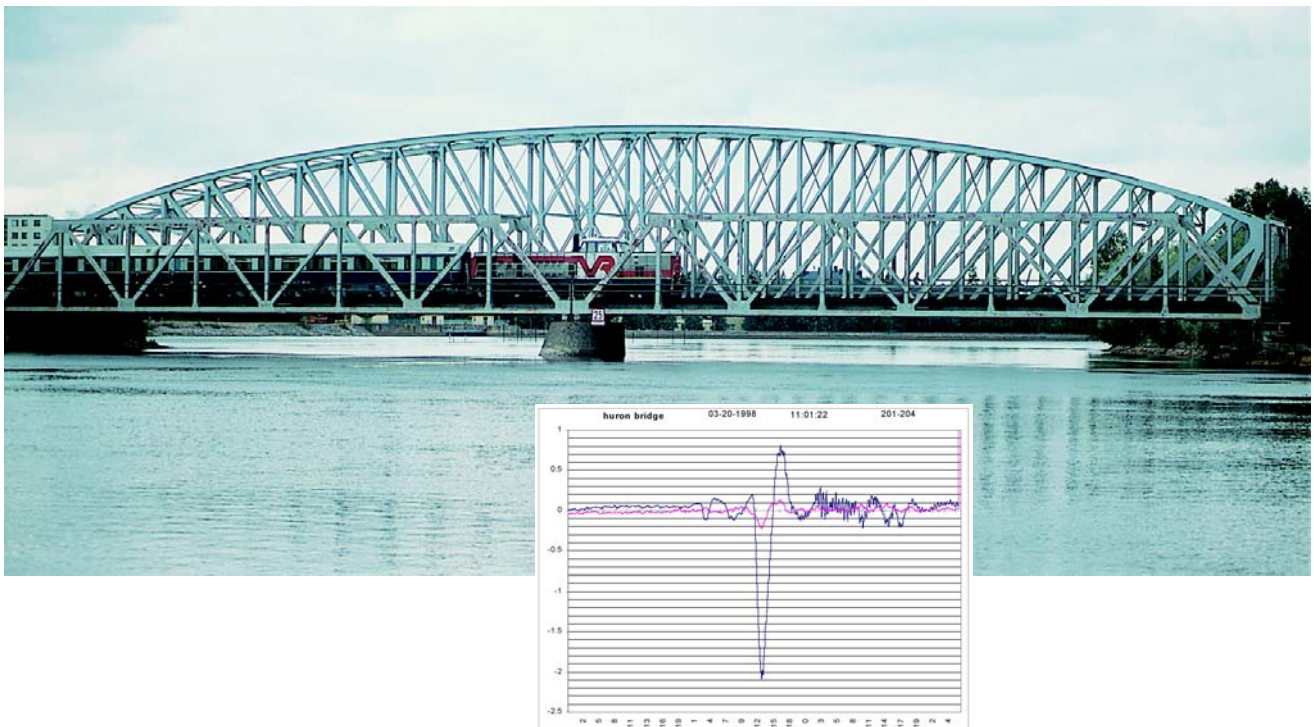


Optical measurement of the dynamic behaviour of large structures

- vibration
- bending
- displacement of
- deflection
- torsion
- bridges
- masts
- towers
- chimneys
- buildings

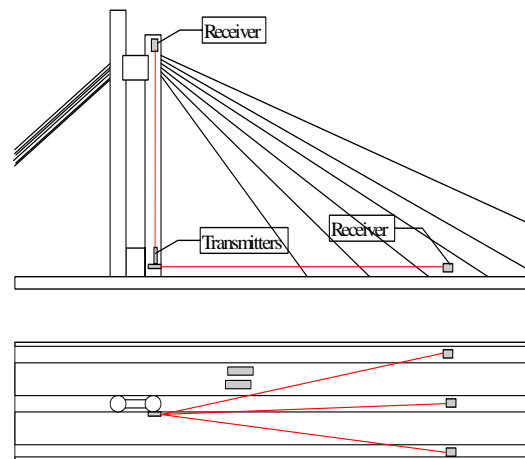
Laser-based position-sensitive measurement has been one of the main areas of activities in the field of optoelectronic measurements at Noptel. A potential application for this technology is measurement of the dynamics of large constructions as bridges, towers, buildings and masts and movement of other moving objects.

The Noptel position measurement devices allow measurement of a large scale of different variables in the behavior of large constructions.



Position Sensitive Measurement

The Noptel system is based on the optical position sensitive measurement. The diode transmitter forms a reference line from the transmitter to the target. The receiver monitors continuously the changes in the position of optical beam. When the structure moves, the target moves respectively and the optical detector in the receiver detect the movement. The movements in the x and y coordinates are then calculated, processed and data supplied to a PC computer, for example.



Measurement environment

The sensors are meant for outdoor use. The technique is planned to eliminate the interference of the (solar) background radiation in outdoor applications. The main environmental factors that can affect measurement are marked temperature gradients in the air and powerful air currents. Whenever possible, outdoor measurements are best performed under moderate conditions in order to attain the best results.

The measuring principle and technique described here has proved to be useful for measuring the movement of large objects. The results obtained in applications show that the system provides valuable information for evaluating the design criteria of large constructions under changing loading conditions.

Due to the good transportability and reinstallability of the measuring system, the same equipment can be used in many different

applications as well as in fixed installations. The measuring speed is high enough to analyze even the fastest movements of constructions and the resolution and accuracy high enough for the smallest deviations encountered with rigid constructions.

Features

- continuous measurement
- distances 0 to 400 m
- measuring area up to 4 m
- high speed measurement
- for outdoor use
- portable
- eye safe

