



Measurement of pre-stressed steel

An inspection system for incoming goods inspection has been developed for a manufacturer of pre-stressed concrete, which detects the profile depth of delivered batches and continuously records this information to a database. A minimum profile depth of pre-stressed steel is critical to the quality and resistance of the pre-stressed concrete components. The profiling is rolled on to the pre-stressed steel using an imprint roller. For this reason, the profile depth must be detected across the complete range of the imprint roller.

The measurement system consists of a linear axis to which the laser sensor is mounted and an operated roller prism for inputting pre-stressed steel. During movement of the sensor through the linear axis the measurements are recorded and combined to a bi-dimensional profile over the complete length of the imprint roller. This means that very tight tolerances of 0.03mm for the profile depths must be adhered to. The software calculates the profile depth for each imprint.

The measurement system operates at a repeatability of $\pm 0.005\text{mm}$. An extensive database offers full supplier and batch traceability of the pre-stressed steel used. Furthermore, any errors due to rework or further processing are avoided.

For this task, InSystems utilises the optoNCDT 1700 laser sensor. By using the higher precision optoNCDT 2300 series, the repeatability of the measurement axis can be significantly increased.

Advantages

- Monitoring of the minimal profile depth
- Random quality check
- Measuring values support batch complaints regarding the manufacturer or pre-stressed steel
- Archived proof of the quality checks as part of the quality audit for the certification of railway sleepers by Deutsche Bahn

