

HIGH-TEMPERATURE UNIAXIAL TENSILE CYCLIC TEST OF STEEL

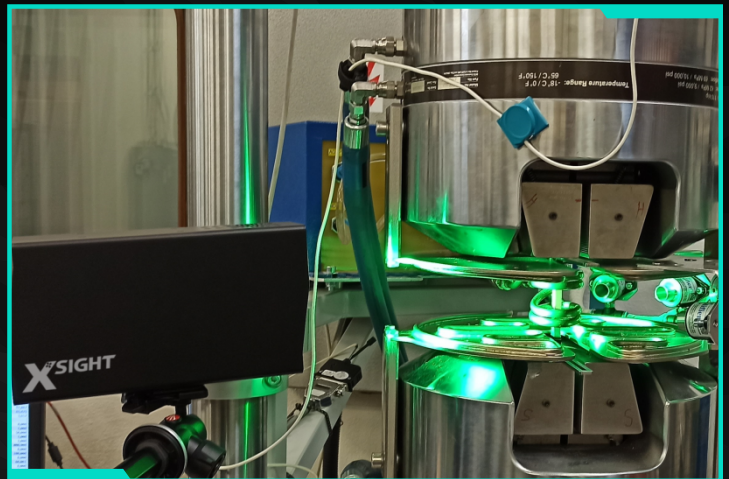
APPLICATION SPECIFICATION

Standardized steel dogbone samples were measured with the X-Sight HT system.

The HT is a special high-temperature optical extensometer suitable for measurements up to 1400 °C. HT is suited not only for measurement using furnaces but for any application which requires high-precision reading over a small field of view.

Initially, the HT system was positioned at the correct distance in front of the sample. There was no need to calibrate the system. The system was already precalibrated thanks to the advantage of using a telecentric lens.

After the setup process, the steel specimens were marked with a speckle pattern on their surface. Because of the significant changes in the recorded appearance during the test and heating, it is more suitable to mark the specimens instead of relying on the natural pattern. The use of the auto-shutter function ensured that the test is not affected by the changing lighting conditions of the specimen.



High-temperature uniaxial tensile test setup

KEYWORDS

- ▶ High-temperature
- ▶ Cyclic test
- ▶ Tensile test
- ▶ Furnace

TEST SETUP

- ▶ HT measuring system
- ▶ Alpha DIC SW modules: Axial Strain (A), DIC Area, Post Process (PP)
- ▶ Measuring tools:
 - Line probe
 - DIC Area probe
- ▶ Steel dogbone specimen

OUTPUT

- ▶ Elongation cyclic curve
- ▶ Full-field strain analysis

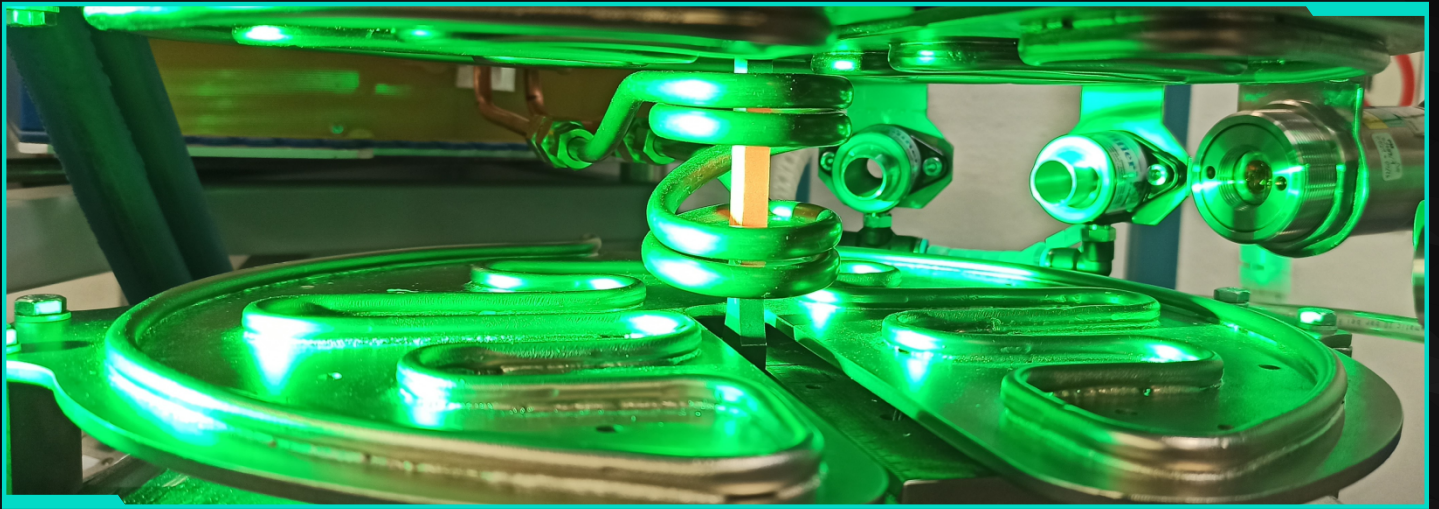
- ▶ Highly precise and accurate measurements up to 1400 °C
- ▶ Turnkey systems & solutions
- ▶ Real-time and post-process evaluation

- ▶ Multi-probe measurement
- ▶ High sample rate real-time strain distribution
- ▶ Easy-to-use and intuitive user interface

WHY CHOOSE X-SIGHT?

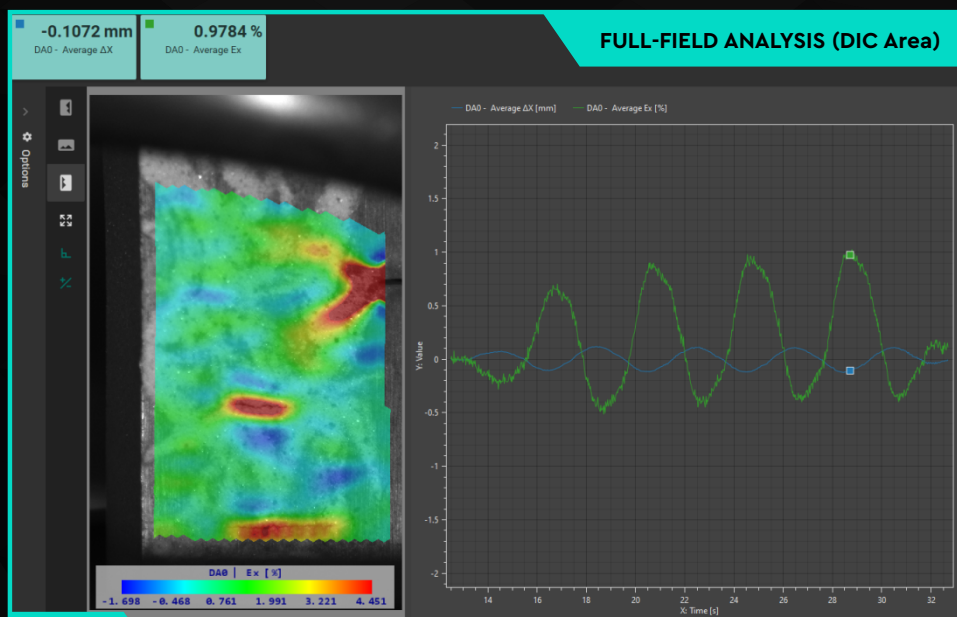
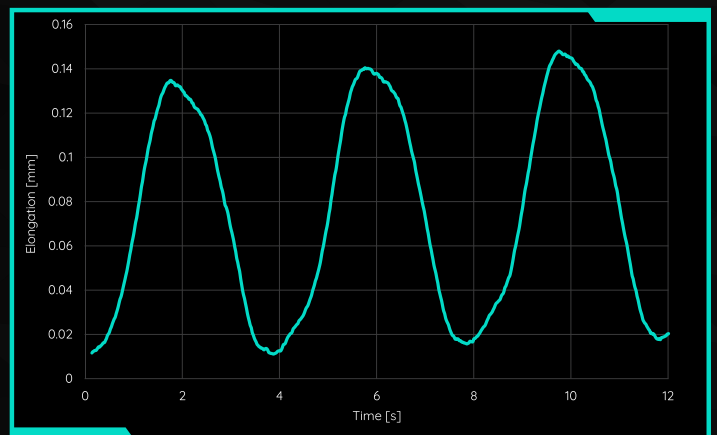
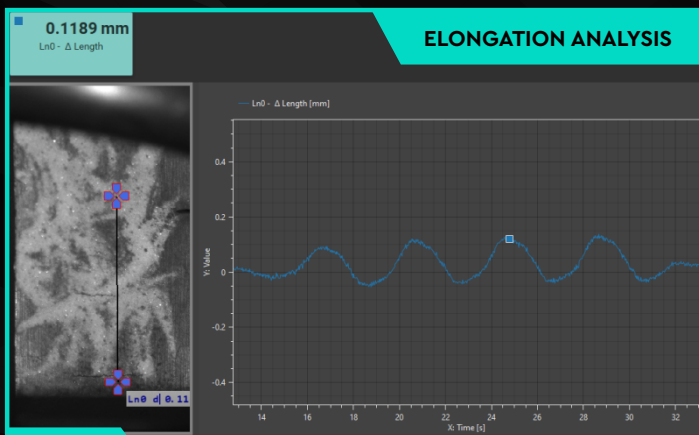
MEASUREMENT PROCESS AND TOOLS

The steel specimen was heated to 900°C, and a cyclic force load ranging from 0 to 15 kN was applied.



MEASUREMENT EVALUATION

The measured data were evaluated and processed for further definition of material properties.



With the full-field analysis it is possible to see strains of the entire specimen surface. Maximum strain values mark the locations where the cracks occur.