

WPM Leipzig
Testing Machines



Instrumented Impact Tests



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Determining the Strength Behaviour of Metals and Plastics by means of Instrumented Notched-bar Impact Tests

The instrumentation is a metrological upgrade of pendulum impact testers and drop impact testers to carry out instrumented notched-bar impact tests based on Charpy and impact bending tests based on Izod or Bruggen. So, it is possible to determine the characteristics of force and bending depending on temperature and material. The main fields of application are quality assurance and development of new materials and heat treatment.

When carrying out a notched-bar impact test, a standard specimen notched at one side is loaded by the impact of a striker fixed at a pendulum arm or drop slide. This loading results in the irreversible fracture of the specimen. By means of measurement technology applied on the instrumented striker, the force affecting the specimen and the resulting bending can be measured.

Measurement Device for the Instrumented Test

Main components of the metrological upgrade:

- Instrumented striker (using strain gauges)
- Switch cabinet (separate switch cabinet at the basic device)
- Self-developed control and evaluation software with computer

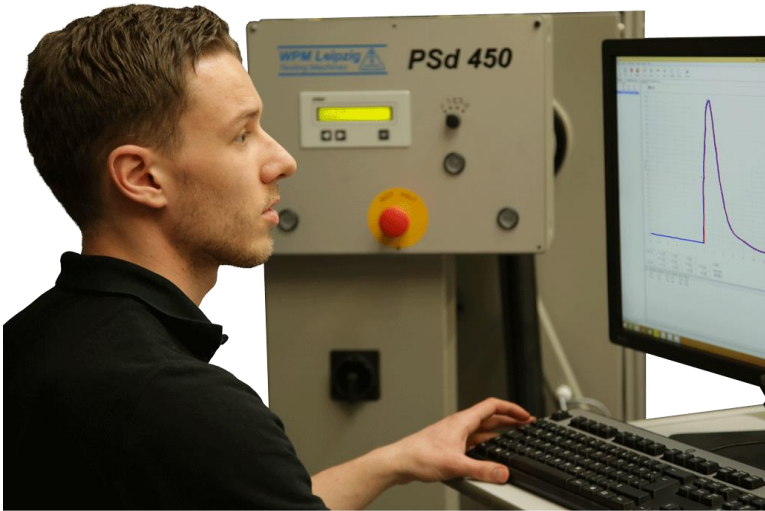
Beside the possibility to trigger the data acquisition externally, the appeal of the measurement technology lies above all in the high sampling frequency and the possibility to include further transducers in the system.

The force-time-characteristic is measured with a sampling frequency of 60 MHz. The measurement amplifiers have a cutoff frequency of 100 kHz. If necessary, up to 4 channels for one striker each adapted to the amplifier can be provided.

The described system was tested successfully with practice partners.



Evaluation Software ImpaSax



ImpaSax is the best tool to acquire measurement values and to generate reports and statistics for instrumented and not instrumented impact tests. Beside the graphic display of measurement values, automatic algorithms are included to evaluate the measured values according to ISO 14556.

After each impact test, measured values are recorded automatically, given that there is a connection to the pendulum impact tester. Before each impact test, the specimen-specific information (specimen

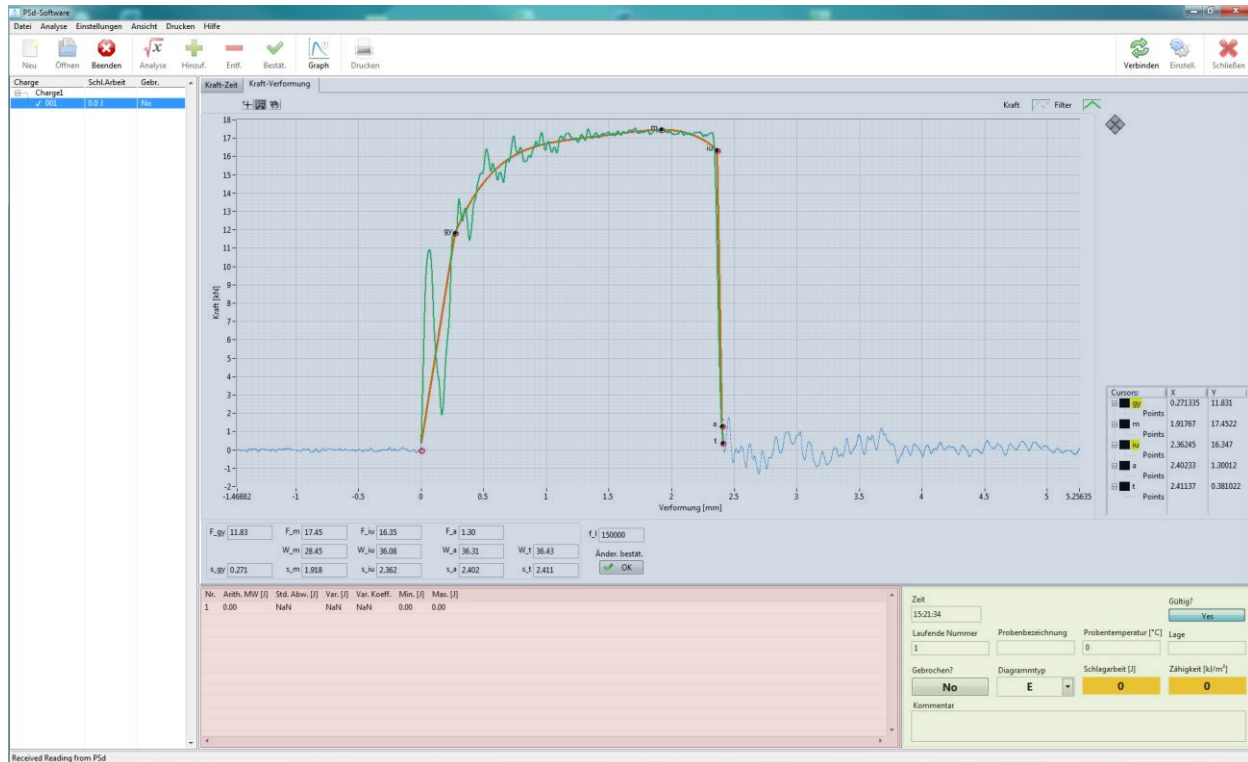
denomination, specimen temperature and position) can be adapted. The adapted information is applied for the next impact test.

ImpaSax can be installed on every common computer. Thanks to the familiar Windows interface, an easy operation is guaranteed.

The evaluation software makes it possible to document the test in a report. This report can be archived electronically. All results are saved in files. The result data can be exported for further evaluation in other programs (e.g. MS Excel).

Thus, the evaluation software can be integrated in the quality assurance system of your company. The standard report contains editable elements which can be removed or adapted.

User Interface



Result Panel

The result panel in the main panel shows an overview of all notched-bar impact tests carried out of the current measurement series. You can see all specimen specific information as well as date and time of the test.

Statistics Panel

The statistics panel shows the different statistics values of the impact tests already carried out. The statistics is generated according to the statistics settings.

When generating a statistics, groups out of the single tests are created according to the set number of consecutive tests. Each line in the statistics panel contains the statistical values of the tests of one group.

Specimen Specific Parameters

The panel for specimen specific parameters contains various control and display elements. Depending on the function of the control elements, before or after an impact test, changes have to be made to link them to the respective test. Changes of specimen specific parameters are not shown in the result panel before the impact test is carried out.

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