

Abstract:

***Measurement uncertainty in mechanical testing***

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Confidence in the correctness of a measured value can be described by specifying the measurement uncertainty. The previously determined measurement uncertainty, which is assigned to a measured value, thus makes a statement as to in which interval the correct value is to be expected with which probability.

With ZwickRoell's testXpert III testing software, every user is given the opportunity to have measurement uncertainties calculated according to their own specifications for each test, assigned to the measurement and characteristic values, and output in the test reports together with the measurement and characteristic values.

The measurement uncertainty is composed of uncertainties of several component groups. Essential component groups are: The measuring system, which supplies the raw data for the measured and characteristic values, and the testing process, in which the mechanical test on a material testing machine runs entirely.

ZwickRoell has now extended the testing software testXpert III to determine the measurement system-related uncertainties so that this measurement uncertainty component can be automatically calculated and output. The current calibration results are taken into account, which are either stored directly in the testControl II during calibration by the ZwickRoell Service or manually transferred from the calibration certificate after external calibration.

With this testXpert III extension, Zwick implements a European Working Agreement for determining the measurement uncertainty in metal tensile testing and relieves the user of a complex calculation of the measurement system-related uncertainty for each metal tensile test.

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