

Product Information

Automatic Testing of Plastics: Polar Specimen Feeding



Pic 1: Automated specimen feeding system in „Polar“ construction

Automated tensile and bending testing on plastic specimen

(including option of expanded temperature range)

Zwick has designed an automatic testing system especially for the plastics industry with which the mechanical characteristics of plastics can be determined. This testing system, in "Polar construction", can perform tensile or bending tests to Standard ISO 178, ISO 527-2 and ASTM D638, at room temperature or in an expanded temperature range of - 40 to + 150 °.

A 5-axis industrial robot is used for specimen transport. The specimen, which are marked with a bar-code label, are placed in a variable magazine with 200 individual places. Before the actual tensile or bending test, the bar-code of the specimen is read and the cross-section is calculated by measuring the thickness and width, optionally at 3 positions.

For tests at room temperature, the specimen are placed in the specimen grips or laid on the adjustable bending table, according to configuration of the testing machine. For testing with expanded temperature range, the specimen is placed in an interim magazine with 7 individual places within the temperature chamber, for heating or cooling.

After the specimen has reached the required temperature in the interim magazine, it is placed in the testing holder by the robot and tested.

The empty position in the interim magazine is immediately filled with a new specimen by the robot. This special interim magazine in the temperature chamber allows several specimen to be brought to the required temperature simultaneously. In this manner, the testing machine can be used almost continuously without long waiting times for specimen.

In order to make the operation of the testing system as simple as possible, test programme testXpert and operating system WINDOWS NT is used to control the entire system.

The testing system can be equipped with additional measuring instruments, e.g. hardness testers, to fulfill individual customer requirements.

If tensile and bending tests are to be performed alternatively, a wider testing machine with two test axis can be used. The manual re-equipping of the machine is then no longer necessary.

If desired, the testing system can be connected to a customer's LAN (Local-Area-Network), such as WINDOWS NT or NOVELL. Data input and evaluation can then be performed by any Personal Computer in the network.

The flexible robot system allows testing of other specimen forms and materials as well as components.

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Pic 2: Feeding of the sample into the chamber



Pic 3: Taking a tensile sample out of the magazine

Main uses of automatic specimen feeding

- * The modular system makes an economical adaptation to specific customer requirements possible
- * Because of the low test costs per specimen, a testing system with automatic specimen feeding amortises itself within approx. two years
- * The order of testing can be controlled by the operator with individual loading of specimen and free selection of where the specimen gripper picks up the specimen
- * The universal and easy operation of the automatic testing system is guaranteed through collection of all system functions in the operational masks of the Zwick user's software testXpert

Further advantages of the automatic specimen feeding

- * Reproducibility of the testing requirements even over a long operating time, no influences through different operators
- * Secure documentation and statistical long-term control of process and production (also in the sense of DIN ISO 9001)
- * Unmonitored testing ("ghost shift"), loading of the system by untrained personnel possible

- * "All from one source": Zwick takes over everything from consultation until service, for the testing machine, as well as for the automated specimen feeding
- * The Zwick maintenance and calibration service is officially recognised by the Physical-Technical Institute (PTB) as a DKD-calibration laboratory. Zwick is thereby authorised to check materials testing machine on location and issue DKD calibration certificates for the measurement units for force and extension measurements.

For further information contact

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