

## Product Information

### Automatic Testing of Plastics: Pendulum with Polar and X-Linear Specimen Feeding and Temperature Chamber



Pic 1: Automatic pendulum with a polar specimen feeding system

#### Automatic Izod and Charpy Pendulum impact Tester with temperature chamber

For the determination of impact strength of plastics to CHARPY according to ISO 179-1 and to IZOD according to ISO 180, the Zwick company has developed a fully automatically working testing system with two pendulum impact testers and temperature chambers.

The testing system consists of a specimen magazine which can hold 2000 specimen, a temperature chamber with refrigeration unit, an industrial robot to take the specimen out of the temperature chamber, as well as a pendulum impact tester for Charpy specimen and a pendulum impact tester for Izod specimen.

The operation of the testing system is very simple and reduced to a minimum: for every specimen series, a test contract is stored with the desired test temperature and type of test. The specimen are sorted into the specimen carrier and placed on the magazine table. The individual test series are identified via bar-code.

The automation programme sets the command temperature of the chamber on hand the stored test orders, and controls the waiting time of the specimen in the temperature chamber.

The sequence of testing is determined by the temperatures of the individual test series.

When the pre-set temperature is reached in the temperature chamber, the X-Linear Automatic Specimen Feeding system places the specimen on a transport unit in the temperature chamber. After the pre-set waiting time, the specimen in the chamber is

removed via a sluice by an industrial robot and placed in the Charpy or Izod pendulum impact tester and tested. The testing is performed within 3 seconds after removal from the temperature chamber.

The room temperature specimen are tested during the temperature chamber's cooling or heating time, in order to increase the through-put of the testing system.

#### Advantages of the automatic pendulum impact tester

The specimen can be tested in a temperature range from  $-60$  to  $+40$  °C. Because of the automatic control of the temperature chamber over the entire range and the evaluation of the force/time curve, the brittleness/viscousness crossover can be determined.

In order to have the optimum impact energy available for the testing, the measurement range of the testing system is increased by using a pendulum with two incline angles. This allows testing to be performed with two different impact energies according to type of material.

#### Expansion possibilities

With the flexible modular system of the Zwick company, the testing system can be put together according to the individual customer's requirements.

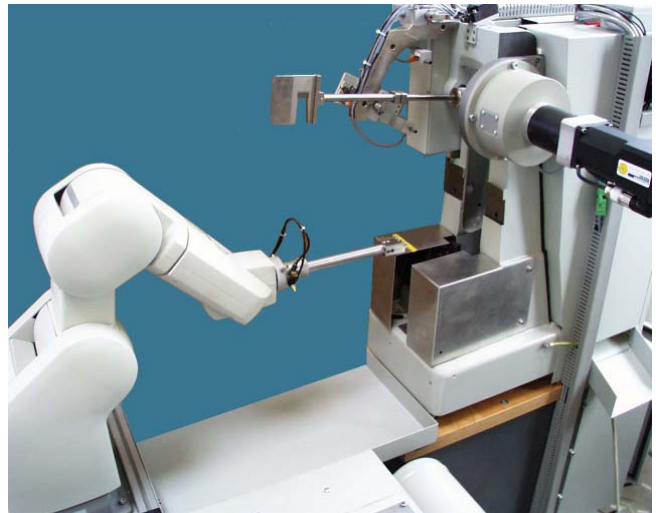
This allows, e.g. a penetration testing machine for testing to ISO 6603-2 to be integrated into the system.

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Pic 2: Specimen in the opened temperature chamber



Pic 3: Feeding of the Charpy Sample into the pendulum

#### 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
- \* Elimination of subjective influences through the high positioning accuracy of the automatic specimen feeding
- \* 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
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- \* Secure documentation and statistical long-term control of process and production
- \* 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

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