



**INSTRUMENTATION AND TESTING.** A wide range of properties requires diverse instrumentation and test technologies. Manufacturers are turning to mobile instruments that are easy to operate and have extensive software. Test equipment is increasingly being networked in order that the experiment can also be monitored from the workplace.

# Mobile and Networked Control

Plastics are penetrating into ever more areas of everyday life. With the increased use of plastic parts, demands on plastic articles are also becoming stricter. For product quality, it is important to provide evidence that the required properties are realized. In the interests of product liability, the focus is increasingly on not only mechanical properties, but also the long-term behavior under environmental effects. Moreover, many parts are directly in the customer's view. The optical and tactile appearance of plastics, in interaction with other materials, is therefore also subject to strict requirements. Suitable instrumentation and testing technology can provide evidence and documentation that the required properties are achieved. A variety of different methods and technologies have become established.

## Krüss

### Determining the Surface Energy

For measuring the surface energy of plastics, Krüss GmbH, Hamburg, Germany, has developed the MobileDrop. The mobile unit permits contact angle measurement on inclined surfaces or very large samples. It can be operated with one hand and in conjunction with a notebook computer (Fig. 1). The MobileDrop HT high-

Translated from *Kunststoffe* 9/2010, pp. 102–106. **Article as PDF-File** at [www.kunststoffe-international.com](http://www.kunststoffe-international.com); Document Number: PE110525

temperature model extends the unit's application range to hot surfaces. Moreover, Krüss presents a metering head that permits reproducible standardized measurements due to a precisely adjustable metering volume.

► Hall 10, booth D04

## X-Rite

### Reproducible Colorimetry

X-Rite Europe GmbH, Regensdorf, Switzerland, has expanded its range of colorimeters (Fig. 2). Three pressure sensors ensure that the multi-angle spectral photometer is correctly positioned. Moreover, a patented workflow routine supports the user with text and image information to specify the precise measurement point. Information about the measurement position, painting line or number is entered automatically and

assigned to the correct reference via the measurement data.

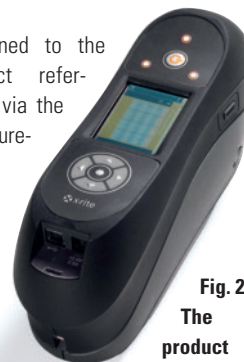


Fig. 2. The product family of multiangle spectral photometers offers high repeatability in colorimetry (photo: X-Rite)

All the equipment in the family requires very short measurement times of about a second. Depending on the model, measurements are performed from up to six effect angles. The units thus offer higher repeatability even on flexible or curved surfaces. The in-

struments can be used in the automotive and packaging industries, and with machinery and plants, to control color and maintain color control.

► Hall 10, booth A75

## Q-Lab

### Weathering Service

The Q-Sun xenon test instrument from Q-Lab Corporation, Cleveland, USA, simulates the entire spectrum of sunlight, including UV, visible and infrared light. The instrument controls the relative humidity and is equipped with a spray device. According to the company, this results in low system costs for the user.

With a weathering service, Q-Lab offers its customers the possibility of outdoor weathering in Florida or Arizona, and lab weathering. The results are also analyzed and documented in the lab.

► Hall 10, booth C26

## Erichsen

### Unifying Color and Gloss Control

Erichsen GmbH & Co. KG, Hemer, Germany, presents extracts from its material and surface testing product ranges. To obtain a uniform appearance of products, the color and gloss must be controlled. This was the reason for developing the Spektromaster 565, which allows both properties to be measured simultaneously (Fig. 3). The mobile color and gloss measurement instrument is easy to →



Fig. 1. The MobileDrop permits contact angle measurement on inclined surfaces or very large samples (photo: Krüss)



**Fig. 3. The SpektrMASTER 565 measures the color and gloss of plastic parts simultaneously** (photo: Erichsen)

meter tests, solvent resistance and wipe testing.

The Scratch Hardness Tester 413 can be used for testing the scratch resistance of various products according to needs. The scratch load can be adjusted in steps of 0.01 N. The differently adjustable test tips allow fine trends in the variation of scratch resistance or

scratch hardness to be detected.

operate thanks to the clearly structured menu and four cursor keys. Another feature is testing the scratch resistance of surfaces. The Lineartester 249 scratch hardness test instrument is equipped with an electric motor and electric scratch-through detection. A variable test rate can be set. Combined with the extensive accessories, there are further applications in scratch testing, to-and-fro abrasion testing, Crock-

The tensile test machines of the Unimat Plus series are intended for part tests and for standard material tests, and are characterized by ease of operation. Test specifications can be generated on the computer and transmitted to the machine. Additionally the system can be operated without an external computer.

► Hall 10, booth E20

### Atlas Material Testing Accelerating Aging

A complete range of test instruments and services for accelerated weathering and outdoor weathering is showcased by Atlas Material Testing Technology GmbH, Linsengericht, Germany. Among other products, they are presenting the Sepap 12/24, a mercury vapor lamp test instrument. With accelerated photochemical aging, the user can analyze the degradation mechanisms of naturally aging polymers at a molecular level. The test samples are uniformly exposed to the light source on a rotating carrier, so that the surface temperature of the samples can be precisely controlled.



**Fig. 4. The Atlas UVTest fluorescence tester instrument for accelerated aging simulates the spectral energy distribution of sunlight** (photo: Atlas)

With the Atlas UVTest, the company has launched a fluorescence test instrument for accelerated aging (Fig. 4). The built-in UV fluorescence lamps permit homogeneous exposure of the samples. Safety devices such as float switches and a protected water feed supply system make the instrument more robust. The spray water consumed can be repeatedly used. The fluorescence test unit can be controlled via a touchpanel.

For their Xenotest and Suntest xenon arc instruments, Atlas is providing a software update. This allows the instruments to be operated via an Ethernet or Internet connection. It permits the test workflow to be monitored and instrument messages to be additionally sent by e-mail.

► Hall 10, booth G55



**Fig. 5. The UV200 global UV test instrument performs weathering tests based on acid rain** (photo: Weiss)

### Weiss Umwelttechnik Simulating Precipitation and Acid Rain

Weiss Umwelttechnik GmbH, Reiskirchen-Lindenstruth, Germany, too, is presenting weathering test instruments. On the UV 200 global-UV test instrument, the user can vary the UV component of the radiation, the temperature, moisture content and precipitation (Fig. 5). The influencing factors can act on the test specimen individually or in any desired combination. In addition, a part can be sprayed with acid rain (pH ≥ 3). The radiation unit is located in the door, which simplifies maintenance. Aging of the lamps is compensated by a dimmable ballast. This ensures uniform exposure of the samples.

With the WT3 and WK3, Weiss is also presenting the latest developments in temperature and climatic

cabinets. The test cabinets are particularly robust and have a convenient touch display. Remote access to the instrument is possible via a network interface and web server. The authorized user can thus access running tests and display test data and messages over the internet. To improve operational reliability, an additional desludging device for cleaning the water, automatic water replenishment and self-cleaning humidity sensor are integrated.

► Hall 11, booth E76



**Fig. 7. The tilting rotating drums with traversable frame keep small plastic parts in motion during tempering** (photo: Vötsch)

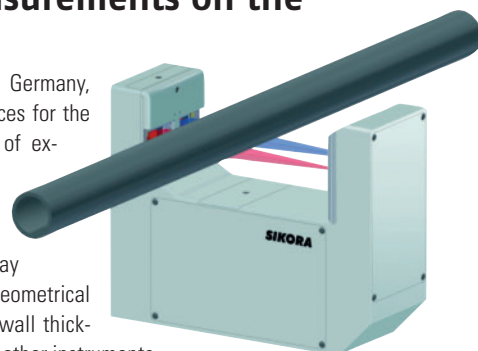
### Vötsch Industrietechnik Tempering of Small Parts

For tempering small parts, such as sealing rings, Vötsch Industrietechnik GmbH, Reiskirchen-Lindenstruth, Germany, has developed the VTU tempering oven with rotating drum

### Sikora Online Measurements on the Extruder

Sikora AG, Bremen, Germany, presents various devices for the online measurement of extruded pipes and tubing. In addition to the X-Ray 6000, equipped with long-life X-ray tubes, for measuring geometrical parameters, such as wall thickness and eccentricity, other instruments permit temperature and homogeneity measurement of the melt, and contactless length measurement (Fig. 6).

► Hall 10, booth G21



**Fig. 6. The Length 6000 permits contactless online length measurement of pipes and tubing** (photo: Sikora)



(Fig. 7). The drums move the plastic parts during tempering. This avoids pressure marks in the contact area with the support surface. The rotating drums are pivotable on a moving support frame. For easy charging, it can be locked in a horizontal position. Besides this charging carriage, devices are also presented, e.g. for the treatment of hanging plastic sheets.

► Hall 11, booth E76

Zwick

## Determining Flow Behavior

Zwick GmbH & Co. KG, Ulm, Germany, presents its latest generation of flow testers both as stand-alone solutions and automated systems. The Cflow is a "simple" extrusion plastometer for MFR measurement. It features the high temperature constancy required by the standard. The Mflow extrusion plastometer is designed for MVR testing with automated analysis. Users can optionally extend the instrument with, e.g., a displacement measurement system, a weight-lifting or weight-selection system.

The Xflow series also includes the Aflow, designed for extensive use (24-hour operation) (Fig. 8). The instrument has high measurement accuracy and repeatability of the measurement sequences, and an automatic compacter. The compacting pressure and time are specified in the software. The APC function optimizes the test parameters for all measurements. It is also available either as a



Fig. 8. The Aflow flow tester measures the MFR and MVR, and features an automatic compacter

(photo: Zwick)

stand-alone unit or for operation with the testXpert II software.

► Hall 11, booth B25

Instron

## Rheological and Mechanical Testing

A whole range of units – including several systems for mechanical testing and a melt flow index instrument – are presented by Instron Deutschland GmbH, Pfungstadt, Germany (Fig. 9). The high-precision Ceast MMF7028 melt-flow index tester is suitable for automated testing with up to five pre-installed weights. It also features a tilting oven. In the field of mechanical testing, universal tensile testers with pneumatic grips are demonstrated, whose jawface shields can be exchanged rapidly without tools. The system can be used for a large number of sample types, such as film or textile strips, tubes, elastomers and standard test bars. A sample carousel can be used to perform automated tests with the system. The user-friendly Bluehill 3 test software for quasi-static tests includes a large number of preconfig-

Fig. 9. The manufacturer's innovations and developments include pneumatic grips, an automatic sample carousel and a melt flow index tester with automated testing

(photo: Instron)



Gneuss

## Mercury-free Pressure Sensors

All pressure transducers from Gneuss Kunststofftechnik GmbH, Bad Oeynhausen, Germany, as of now, operate without mercury (Fig. 10). By changing over completely to the nontoxic NTX filling, the transducers offer a high degree of safety and environmental compatibility. Besides the high measurement accuracy, in many cases better than conventional sensors, they are characterized by better temperature behavior and low temperature drift. The sensors are also suitable for high-temperature applications. Moreover, depending on the type, they are available with special coatings, optionally heated membrane tip and integrated amplifier, and also for explosion hazard areas.

With its Extrusion Pressure Monitoring (EPM), Gneuss is responding to new or revised recommendations and standards for the pressure safeguarding of extruders.

► Hall 9, booth A38



Fig. 10. The pressure and temperature sensors are free of mercury; they are filled with nontoxic NTX (photo: Gneuss)

ured standard tests. Besides the system for falling-weight impact tests and a pendulum system, Instron is also presenting a data acquisition system with high resolution and a storage capacity of 64,000 test points intended for this purpose.

► Hall 10, booth J18

## Vision Engineering Microscope in Interplay with Software

With Vifox, Vision Engineering Ltd. of Emmering, Germany, presents imaging software for the Mantis Elite-Cam stereomicroscope (Fig. 11). The program allows objects like samples or components to be documented, inspected or two-dimensionally measured. This intuitive and easy-to-use software permits parameter settings to be made on the live image. The stereomicroscope enlarges from 2x to 15x. It can be easily mounted on the workplace and has shadow-free lighting by LEDs. The software can also be used retroactively with existing stereomicroscopes.

► Hall 10, booth C04



Fig. 11. In combination with the Mantis Elite-Cam stereomicroscope, objects can be documented, inspected or two-dimensionally measured with the Vifox software (photo: Vision)

## Summary

In the field of measurement and testing technology, many innovations and developments await the visitor. There is a clear trend towards making the products user friendly. Increasing importance is also attached to the mobile use of measurement and test technology. Many manufacturers place particular value on comprehensive software and networking, and more flexibility with respect to the test samples or test sequence. ■

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