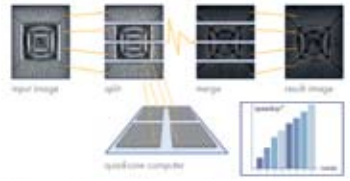
Temperature forcing

Thermonics' T-2800 fully self-contained precision temperature forcing system for electronic component testing eliminates the need for an external air supply at the test location. With a temperature range of -60 to +200˚C (-76 to

+392˚F), a small footprint, and an intuitive user interface, the unit is well suited to a variety of applications. It incorporates all necessary equipment to ensure high-quality air, including a receiver tank, aftercooler, water separator, and a heatless desiccant air dryer. It also features an integrated test arm, a pneumatically controlled test head, and an advanced self-diagnostics capability.

Machine vision software

Halcon 8.0 machine vision software from **MVTec** automatically uses quad-core parallelization (Parallel Halcon) for significantly increased performance. This automatic parallelization can keep up with manual multi-threading. Splitting to several processors, which is automatically optimized by the software, is particularly



indispensable with applications that must handle large amounts of image data such as with color or other multi-channel images, 16 or more bit images, stereo images, Fourier transform, texture analysis, surface inspection, or blob analysis. For often-used operators, such as filters for preprocessing, automatic parallelization is significantly faster with the software.

Hardness testing

Wilson Instruments' Minuteman ELT series of semi- and fully automatic systems for Knoop, Vickers, Tukon Microindentation, and Rockwell hardness testing is available in four versions. The series provides the user with a range of features to suit their microindentation and Rockwell scale testing needs and budget. The entry-level ELT1, the intermediate ELT2, and the fully automatic ELT3 are op-

tions for the Tukon microindentation testers, while the ELT4 version is for Rockwell and MicroRockwell testers. When used on a microindentation tester, the Minuteman ELT series is an upgradeable system that allows the user to start with a basic, low-cost system and progress to a fully automatic version as needs and budget change.

Impact analysis

Instron's Dynatup 9250 is designed to measure energy absorption and related impact properties of polymers, metals, composites, and resulting final components. The Dynatup 9250 drop tower

features computer control that uses Impulse, which is a complete software and electronics package designed specifically for impact testing. The Dynatup 9250 captures, plots, and analyzes the entire impact event, enabling the user to determine characteristics such as incipient damage, ductile-to-brittle transition point, maximum load, and total energy absorbed. In addition, the instrument has the capacity to test materials in extreme temperatures and is available with a specimen feeder option for high-throughput testing.

Accelerometer calibration workstation

The **Modal Shop**'s model 9155C accelerometer calibration workstation covers a complete range of accelerometer calibration needs. ICP, charge, shock, piezoresistive, capacitive, velocity, high-frequency, and low-frequency vibration sensors can all be calibrated for sensitivity and phase, verified for linearity, or resonance checked with the numerous options avail-

able for the system. Calibrations are performed using the back-to-back method according to ISO 16063-21. Customizable data reports are generated by **Microsoft** Excel that conform to the requirements of ISO 17025 for calibration certificates assisting customers who require A2LA certification.

Temperature and humidity simulation

The MicroClimate 3 from **Cincinnati Sub-Zero** is an upright environmental chamber designed to simulate a full range of temperature and/or humidity conditions. The chamber provides users with a compact space for testing small components and products for a variety of

industries. Features of the MicroClimate 3 include a small footprint that offers floor-space savings in a test laboratory, a refrigeration design that protects compressors and prolongs life by keeping cool during all operating conditions as well as uses less power, and 115- or 230-V models offer easy installation and more performance.

Precision testing

Shimadzu Scientific Instruments' Autograph AG-X series of testing machines are designed to deliver increased precision and productivity with intuitive operation and convenient support functions. The AG-X series' portable USB memory and Trapezium X software make it possible to perform efficient analysis anywhere. The "My memory—My tester" feature uses USB memory to hold data and is inserted into any AG-X machine. After testing, the USB memory can be used with an office PC to analyze data and create reports. Developed using **Microsoft** .NET technology, Trapezium X software allows scientists to combine

graphed results from separate tests, create histograms and X-bar charts, and easily access data from any Web-based environment.

Small motoring dynamometers

Sakor Technologies' MicroDyne small motoring dynamometers test small rotary devices such as motors, pumps, generators, and compressors. The four-quadrant dynamometer is designed for low-power applications. Versions include sizes from 100 W to 5 kW (0.1 to 7 hp). For applications operating at 5 kW and

above, the AccuDyne AC dynamometer system is compatible with larger rotary components as well as conventional engine and powertrain systems, hybrid vehicle drives, and electric motors. The devices offer precise speed and torque control. This feature is especially true in low-speed applications where full torque can be applied all the way to stall (zero speed). Modern drive technology also allows seamless crossover between motoring and loading modes. Advanced features include inertia simulation, engine simulation, and NVH testing capability.

Defect locator

The model PDC-20AC inline pinhole detection system from **Clinton Instrument** is a low-cost, nondestructive electronic system that instantly locates

defects in plastic tubing on the production line. An extension of the extrusion tooling, metallic mandrel, or carrier functions can be used as the grounded electrode during the test. Sound material isolates the test module from the grounded electrode allowing no arc to form. However, if the material is defective, an arc will discharge to the grounded electrode through the fault site. The test equipment detects this discharge and indicates the fault.

Material analysis

The ElectoForce 3450 test instrument from **Bose** is designed for high-frequency dynamic mechanical analysis (DMA) and quality-assurance testing of viscoelastic materials such as elastomers, polymers, and composites. Its high-performance load frame is a clean, quiet, and low-maintenance solution for a wide variety of material and component testing needs. With a maximum

dynamic force capacity of ±6 kN (1350 lb), the ElectoForce 3450 can measure dynamic properties from 0.001 to 200 Hz. A hot/cold chamber can be added to the system to provide temperature control, and an optional automatic creep compensation system is available. Applications include: DMA of vibration isolation components; dynamic characterization of elastomeric materials; fatigue and durability evaluation of engineered plastics and polymer composites, and crack growth and creep/stress relaxation.