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Ultrasonic evaluation is usually associated with one-sided thickness measurement, particle size measurement or subsurface fault detection, but this technology continues to grow as its uses widen, particularly in the area of real-time inline process control.

The Ultrasonic Process Analyzer by UTEX Scientific Instruments Inc. allows users to make inline measurements of the physical properties of polymers and food products. Using a patented ultrasonic technique, the UPA can measure such properties as the blend ratios of two or more polymers, cooking cycle measurements for food processing, cure rates of polymers like those used in contact lenses, and physical properties such as viscosity, molecular weight and particle size.

Before this, such measurements were taken offline, says Matthew Oleskiw, marketing manager at UTEX. "You would take a sample from the process, run it to the lab--of course it's curing all the while--and then put it into the lab equipment to measure."

Inline monitoring of a production process using the UPA system means real-time information can be used to adjust process controls faster. This reduction in testing time, and improvement of the accuracy of the measurements, means that product quality improves while costs due to production waste go down.

UTEX and other nondestructive equipment manufacturers believe that many companies don't think of nondestructive methodologies like ultrasonics when considering measurement equipment. For instance, noncontact form and density measurements can be taken on contact lenses while they're curing.

"There's a lot that we can offer," says Oleskiw. "We need to open the realm of how NDT and metrology fit together."

#### More choices

The demand for tighter tolerances and networkability has driven metrology companies to design equipment that measures faster with ever-increasing accuracy and communicates more easily with the manufacturing environment. As traditional technologies like touch probes continue to evolve and newer technologies such as ultrasound, interferometry, laser, radar and vision become faster and more accurate, the applicability of these technologies increasingly overlap, giving users more options when selecting metrology equipment. Now more than ever, users can select from among several technologies to find measuring equipment that meets their specific needs of accuracy, throughput and cost.

#### About the author

*Dirk Dusharme is Quality Digest's technology editor. Letters to the editor regarding this article can be sent to [letters@qualitydigest.com](mailto:letters@qualitydigest.com).*

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