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COLNATEC RC CRYSTAL PROVEN MOST ACCURATE FILM THICKNESS SENSOR

Independent German test lab confirms RC™ crystal non-responsive to thermal shock

Gilbert, AZ-December 2, 2011- Colnatec LLC, thin film industry's leading designer and manufacturer of high-end sensors, control systems and quartz crystals for deposition systems, has released the news that their patented RC™ quartz crystal has been independently tested and verified by a German thin film lab to be thermal shock resistant. Thermal shock is responsible for thickness errors that can destroy today's most sensitive electronics, so a shock-resistant crystal enables manufacturers to reduce yield loss and improve film thickness control.

"The RC™ represents the solution to a long-standing film thickness measurement problem--the spiking of the rate when a crystal is first exposed to source radiation," said Colnatec CTO, Scott Grimshaw. "The RC™ crystal gives our customers, particularly thin film lighting and display manufacturers, a significant edge in controlling their process."

The measurement of film thickness during a vacuum deposition process can be accomplished with great accuracy and precision using a quartz crystal microbalance, or QCM. A film thickness sensor measures the change in resonance frequency of an oscillating quartz crystal while a thin film coating is collecting on its surface. Under controlled conditions, it is possible to achieve atomic level resolution of the film thickness. In practice, however, this is rarely achieved.

As the coating builds up on the surface of the crystal, the resonance frequency decreases. For ultra-thin film thickness measurements, such as in Organic Light Emitting Diode (OLED) displays or solar cells, a combination of frequency shifts caused by thermal shock, stress and film build-up can lead to thickness errors of 100% or more. As a result, the efficiency and functionality of the electronic device is seriously compromised.

Because the RC™ crystal will not show a rate spike when the deposition source shutter is opened, and it maintains a consistent reading as coating accumulates, thickness measurements are more accurate. Sub-nanometer thin films are almost impossible to measure with standard crystals because the thickness overshoots during the thermal shock period.

"It is quite impressive that the RC quartz doesn't show any negative effect on the shutter action," stated Ralph Kempter, test lab director. "Also there's no drift when the shutter is closed. Really impressive."

RC crystals can be used in place of standard AT-cut quartz in all commercially available film thickness monitors and controllers. They provide significant advantages in the measurement of nanometer films used in the manufacture of OLED's, precision optical interference films, or next generation electronic devices.

About Colnatec
Colnatec designs, and manufactures high-end sensors, control systems, quartz crystals and electronics instrumentation used in the production of thin film solar cells, OLED displays, optics, high speed electronic devices and semiconductor wafer. Colnatec is the holder of numerous patents, the recipient of

a Department of Energy Phase I & II SBIR research grants for a revolutionary sensor to be used in manufacturing of CIGS solar cells, and one of 8 winners of the Arizona Commerce Authority Innovation Challenge Grant Program to promote innovation in the technology sector. Colnatec website http://colnatec.com/ or call (480) 634-1449.

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