



**HIGHLY RELIABLE
COST EFFECTIVE**



**TESTING
at the
Speed
of
Sound**

**LEAK
CONTINUOUS ON-LINE
DETECTION
ULTRASONIC MONITORING
SYSTEMS**

- *FAST RESPONSE*
- *REAL-TIME TESTING*
- *HIGH VOLUME TESTING*
- *CHOICE OF TEST MODES: GROSS OR FINE*
- *UNIQUE MODULAR SENSITIVITY VALIDATION*
- *MODULAR "PLUG & PLAY" CIRCUITRY*
- *LOW MAINTENANCE*
- *EASE OF INSTALLATION*



Discover The Economics of Ultrasound

UE LEAK DETECTION SYSTEMS

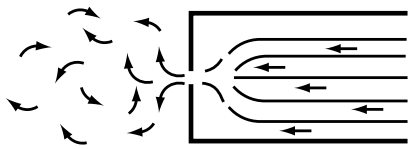
DS-386 SERIES REAL-TIME LEAK DETECTION SYSTEM

UE ULTRASONIC LEAK DETECTION SYSTEMS ADVANCED ULTRASONIC MONITORING

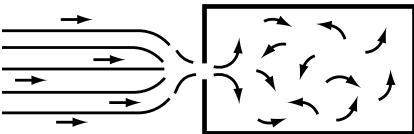
Imagine, an instrument so sensitive and so fast that it can sense the human eye blink, and display it on a meter when it happens! Welcome to the marvelous world of UE Systems Ultrasonic Monitoring. Systems so sensitive, so versatile, they can detect a wide range of leakage from gross to fine in a variety of configurations.

UE LEAK DETECTION SYSTEMS OFFER VARIETY, FLEXIBILITY

UE Leak Detection Systems provide design flexibility. A part may be tested or a component monitored through one of three modes.



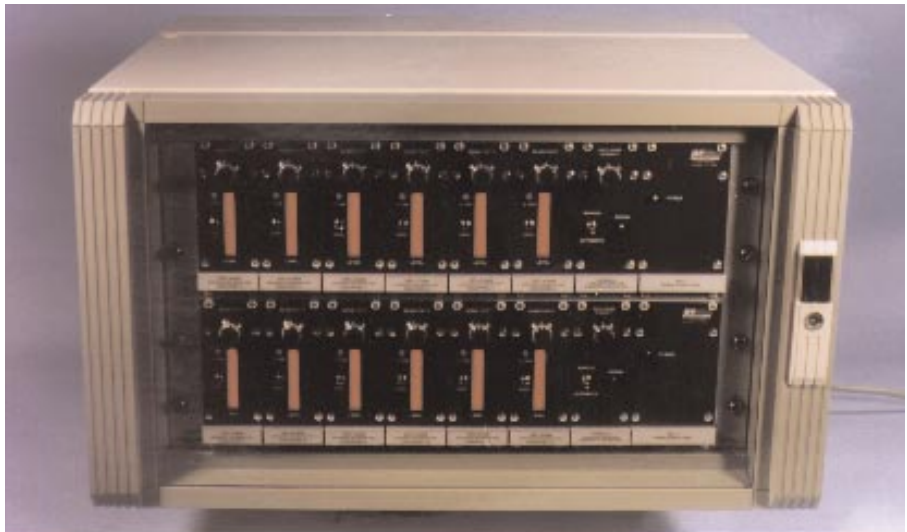
PRESSURE: During a pressure leak, as the fluid escapes it produces a turbulent flow with strong ultrasonic components. Since ultrasound is localized to the point of emission, the leak can be readily detected. Leak rates as low as 1×10^{-3} ml/sec. may be detected.



VACUUM: A gas passes from the atmosphere side to the vacuum producing a turbulent flow that generates ultrasound. Since the ultrasound is produced in the vacuum side, the detectable leak rate is slightly lower than that of a pressure leak.

LIQUID LEAK AMPLIFICATION:

For low level leaks that fall below the threshold limits of either the pressure or vacuum method, this patented test uses a liquid with a low surface tension that is applied to the test area. When a gas passes through the fluid film, a small bubble forms and immediately collapses. The "bursting" produces a strong ultrasonic signal. Leak rates as low as 1×10^{-6} ml/sec. are capable of being detected. The advantage of this method is that, aside from low level leaks, gross leaks that, under pressure might push the liquid aside, will be detected.



The DS-386 System comes complete with cable, controls, and one Transducer per channel.

24 HOUR SUPPORT FOR YOUR AUTOMATION SPECIALIST...

UE Systems Engineering Staff is here to make sure you get the correct system for the job. We have the expertise to recommend whether or not to use Liquid Leak Amplifier, what type of Sound Isolation Enclosure you may need or advise on specialized testing formats for difficult configurations. As you study the Liquid Leak Amplifier Application Examples and the Sound Enclosure descriptions, bear in mind that you can contact us any time for advice via e-mail, fax or telephone.

Typical Liquid Leak Amplifier Application Examples

DM: Dunk Method:

The parts are immersed in LLA and the excess liquid is recycled through a filter to remove contaminants.

WM: Waterfall Method: The parts are run under a waterfall of LLA and the excess liquid is recycled through a filter to remove contaminants.

SM: Spray (or Mist) Method:

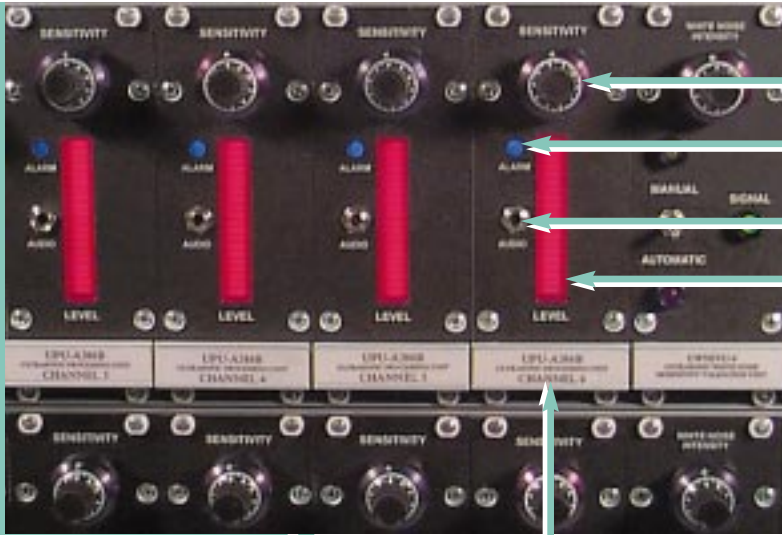
A liquid stream is directed to a particular area on the part so that the remaining areas stay dry.

An optional approach to the above applicator configurations is to use available personnel to manually apply LLA with a sponge or wet fabric directly to the test area before it passes by a scanner.

Sound Isolation Enclosures

There will be instances where surrounding ultrasounds will interfere with test results. Since ultrasound is a high frequency, short wave signal, simple test chambers or shielding techniques can be used. Enclosure barriers can be constructed using closed cell foam and/or rubber. The chamber can be constructed with sheet metal, aluminum, fiberglass, steel plate or even wood. Consult with the factory for advice.

UE LEAK DETECTION SYSTEMS



ADJUSTABLE SENSITIVITY

ALARM SET POINTS
(Adjustable Dip Switches)

HETERODYNED AUDIO MONITORING

LED BAR GRAPH

REAR PANEL:

OUTPUTS: 0-10V, 4-20 mA,
Proportional To Received Ultrasound

PLUG & PLAY CIRCUITRY

AUTOMATIC TEST VALIDATION

Only UE's Leak Detection Systems have Modular Sensitivity Validation. This unique feature assures accurate leak testing. Each microphone in the system has a white noise transmitter. The transmitter emits a white noise simulating a low level leak.

With UE's Modular Sensitivity Validation, the microphone can be challenged prior to every test. No need to wait to test per shift, hour or day. There are no orifices that can clog up . . . no stocking costs for spare test orifices.

UE MODULAR SENSITIVITY VALIDATION TRANSMITTER AND SCANNING MODULE

Each scanning module is a patented phased array of transducers designed for increased sensitivity and directionality when sensing airborne leak signals.



PLUG & PLAY - How Many Channels Do You Want?

With UE's "Plug & Play" feature you can order from 1 to 12 channels. Each channel in a UE Leak Detection System has its own signal processing module that can be easily removed or plugged into place while the unit is in operation. Since each channel is independent, it has no effect on the system as a whole. In the unlikely event that a channel is damaged, the rest of the system can carry on while the effected component is easily replaced.



WHITE NOISE GENERATOR



POWER SUPPLY

Designed With You In Mind

UE Systems standard units include so many features that in most cases all that is required is to plug them in and start testing. Should your testing require special considerations, we offer engineering assistance to meet your needs.

MONITOR / TEST LEAKAGE *TWO* WAYS

- REAL-TIME SCANNING
- LIQUID LEAK AMPLIFICATION

THE ULTRASONIC PRINCIPLE

UE Dedicated Systems sense ultrasound frequencies between 20 kHz and 100 kHz. Since ultrasound is a high frequency, short wave signal,

it has certain properties that make it an ideal medium for on-line leak detection and product quality inspection. These minute sound waves tend to be highly directional and localized. The source of emission can be located and isolated from other non-essential sounds providing accurate test results. Sensing at the speed of sound, the onset of a monitored ultrasonic event will be detected in real-time.

CUSTOMIZED SENSING SOLUTIONS

Since 1973, UE engineers have been producing unique sensor designs to meet the challenge of parts inspection. As an example, multiple test point sensing may call for an array of scanning modules placed linearly along a test path, or there may be a need for a "transducer ring" that surrounds circular parts.



TRANSDUCER RING



ULTRASONIC SENSOR ARRAY

ENGINEERING EVALUATION CONSULTATION PROGRAM Our Engineering Evaluation Consultation Program is formatted to assist our clients in designing the correct system for their needs. This cooperative program is a recommended option for complex projects. For a fee, UE will send an engineer to your facility to review the specifics of the project and work with your staff to design the proper test procedure. This may include transducer design, sound enclosure recommendations or anything relevant to the project. Start up engineering supervision may also be arranged. (For details, please contact us via phone, fax, or e-mail.)



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