MISTRAS has developed the Tablet UT™, a convenient, portable Ultrasonic Testing (UT) system with the power, functionality, and features of a computer. From that fusion comes unparalleled connectivity and versatility harnessed within an industry-leading 10.4-inch dynamic touchscreen display. This breed of features and functions puts the Tablet UT™ on the cutting edge of Non-Destructive Testing (NDT) equipment – a position MISTRAS has led since the 1970s.

The Tablet UT™ is a high-speed data acquisition and imaging system that provides full A-, B-, and C-Scan displays, thickness testing and data logging, RF spectrum analysis with waveform storage, Time of Flight Diffraction (TOFD), flaw detection, and corrosion mapping. But what sets the Tablet UT™ apart is its on-board image replay and analysis capabilities. Since the Tablet UT™ is both testing system and computer, it has the power and versatility not only to allow users to perform UT testing but also analyze the results seamlessly.

No longer do users have to export data from the testing system to analyze results. Instead, they can remain in the field and perform their image replay analysis, which allows for further examination depending on test results. The Tablet UT™ also comes with up to three-axis motion control with 1, 2, or 3-axis encoder inputs and four-function pulser. Nor does a user ever have to leave the field to transmit or share test results. Thanks to the Tablet UT™’s Wi-Fi and Bluetooth connectivity, users can wirelessly transmit results and data in real-time. And with Ethernet and two USB outputs, the Tablet UT™ has the versatility, power, and scalability of an industrial computer. Built on a multi-core platform, the Tablet UT™ runs Microsoft™ Windows 7™ operating system along with UTwin™/Tablet UTwin™, giving it the functionality, personality, and features of a lab computer.

MISTRAS offers the innovative Pocket UT®, a battery-operated, handheld, stand-alone, full C-Scan data acquisition system. Portability and ease of use, coupled with its full A-, B- and C-Scan capabilities and optional TOFD capability, make the Pocket UT® System (along with available companion scanners or other compatible devices) ideal for on-site inspections. It quickly assesses the presence, depth, shape, and orientation of cracks, flaws, corrosion, erosion, delamination, and internal anomalies in a variety of structures, materials and surfaces.

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The Pocket UT® can operate as a conventional thickness meter (for spot readings), a basic flaw detector with RF display and alarm gates, or in either active B-Scan or full C-Scan modes. The system has a bright, back-lit LCD color touchscreen and an easy-to-use keypad for fast entry of common commands and data. Weighing approx. 2 pounds (.9 kg), the Pocket UT® uses the Windows-CE™ operating system and integrates all Ultrasonic components together in a rugged, rubber-encased enclosure. With a replaceable and rechargeable battery pack, the system can also operate via the included 100-240 Volt AC/DC adapter/charger. The system includes internal spike, square wave, and tone burst UT pulser/receiver, data acquisition software, motion control hardware and software, signal capture, display, analysis, replay, transfer, or storage. Companion scanners include automated or manual X-Y scanners (using a variety of transducers), or a single-axis RUS Scanner.
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MISTRAS Products & Systems Division develops leading-edge technologies and manufactures products for non-destructive testing and predictive maintenance. These technologies include advanced Acoustic Emission, Ultrasonics, Vibration monitoring and resistivity systems.

We combine the skill and experience of our certified technicians, engineers and scientists with our advanced enterprise software and other proprietary product offerings to deliver a comprehensive portfolio of solutions, ranging from routine NDT inspections to complex, plant-wide asset integrity assessment and management solutions. Our enterprise software is at the core of our portfolio as it enables us to integrate all of the NDT solutions we offer.

ABOUT OUR UT SOLUTIONS

MISTRAS Group, Inc. offers a full line of Ultrasonic (UT) products and inspection systems designed to fit the needs of any testing market. From immersion systems and large-scale gantries, to single or multichannel systems; UT boards and software, to system scanners and accessories, MISTRAS’ UT solutions fuse the necessary engineering, design, and production capabilities to create a dynamic product line. Those comprehensive offerings embody our mission to be a one-source provider of asset protection solutions.

UT testing measures the propagation of mechanical vibrations (ultrasonic waves) through a material to examine properties, detect discontinuities, measure thickness, determine elasticity, and more. MISTRAS designs and manufactures all major components of our UT solutions in-house. Therefore, we maintain total control over product specifications, pricing, system performance, and customer satisfaction. It also allows us to offer certain custom, made-to-order systems. No matter your industry, testing market, or need, MISTRAS has the UT testing solution.

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REMOTE ETHERNET UT MODULE

The Remote-UT Module is a compact, yet complete, stand-alone Ultrasonic System in a rugged weather-resistant enclosure. It can even be battery operated (optional) when used in conjunction with a portable scanner. It contains a complete, embedded Windows 7™ operating system with several communication interfaces, an Ultrasonic pulser and receiver, a 100 MSPS digitizer, a real-time UT digital signal processor, and up to 3-axis motion controller.

The RE-UT works well with Gantry or large immersion systems when configured as a remote pulser/receiver, and as a digitizer when configured to a host computer. And it can even be configured as a complete UT Flaw detection system that also includes 3-axis motion control, PC and C-Scan software.

KEY FEATURES:
- Installed closer to transducers on Gantry or immersion system for lowest noise operation
- Single element or annular array transducer configurations available
- Complete system for portable scanners
- Full UTwin™ C-Scan software operation
- CPU interface via Ethernet as remote pulser/receiver
- Multichannel use for tubing and bar inspection with scrolling digital strip chart display
- Simultaneous pulse echo and thru-transmission
- Retrofit to existing UT Gantries and scanners

UTC-110

The system concentrates recent developments in microelectronics, in accordance with the requirements of Ultrasonic control, to form a portable, versatile, efficient, and intuitive UT immersion data acquisition, imaging, and analysis system – all powered by a USB link.

Ready to work in echo mode or transmission, this module has two input encoders and can be integrated into a rugged enclosure. It’s suitable for embedded applications requiring real-time Ultrasonic data acquisition. The UTC-110 is ideally positioned as a measurement tool for on-site inspections, training centers, OEM and laboratories.

A standard UTC-110 comes with one encoder input, expandable to two on request. Operable in pulse echo or thru-transmission mode, users can view A-, B-, or C-scan.

USB-8M

The ultimate multichannel USB solution for data acquisition, imaging, and analysis. It has eight Ultrasound independent measuring channels and simple settings for each individual channel – all powered by an easily accessible and highly portable USB link. In addition to its multichannel capabilities, the USB-8M module provides two encoder inputs that allow seamless interfacing with any mechanical part and B-Scan/C-Scan mapping.

The USB-8M’s versatility and portability in MISTRAS products provide cost-effective solutions to a wide range of Ultrasonic and other NDT applications. The multiple scan viewing capability coupled with its software and multichannel applications make the USB-8M a perfect tool in environments like railway, pipeline and weld inspections. Its multichannel data acquisition, imaging, and analysis is ideal for field testing, industrial plants, training centers, and research labs.

CALL US TODAY + 1(609) 716-4000
UT Boards

**AD-IPR-1210-PCI (12-BIT DIGITIZER)**

A 12-bit analog to digital converter with an integrated, high-performance 300-volt (400 optional) pulser/receiver module. A 10-layer SMT printed circuit board creates a low-noise, high-speed PCI-bus card designed for wide bandwidths, yet fits into one standard PCI slot. Available as an integrated unit or as a stand-alone (analog/digital only board for use with other internal or external pulser/receiver options).

**KEY SPECIFICATIONS**
- 30 MHz bandwidth
- -20 to +80 dB gain in 0.1 dB steps
- 6 selectable high pass filters at 0.5, 2.0, 4.0, 8.0, 12.5 and 22.5 MHz
- 6 selectable low pass filters at 2.0, 5.0, 7.5, 12.5, 17.5 and 30 MHz
- Distance amplitude correction

**ARB-1410 ARBITRARY WAVEFORM GENERATOR**

A PCI-bus based, highly precise (14-bit), high-speed (100 sample/second) unit that generates an extensive variety of simple or complex arbitrary waveforms. The board uses DDS frequency synthesis to generate an analog output waveform and the entire system is housed on a single PCI card. It features selectable smoothing filters with an optional high-voltage amplifier (+150V) and optional output multiplexer for sensor arrays.

The ARB-1410 is ideal for use in Acousto-Ultrasonics instruments like the TSCOUT™ (see Page 10), to synthesize waveforms for Acousto-Ultrasonics signal generation or Guided Wave Inspection.

**1616 UT NODE**

This single channel pulser/receiver node has a 4-channel multiplexer for four single or dual-crystal transducers.

The receiver has 12-70 dB gain with 200 kHz - 20 MHz bandwidth. The pulser is square wave 10-50V. Wireless communication between the node and other software/hardware components is possible using Zigbee or Hart. An SD memory card or data logger mode optimizes data acquisition and storage.

The 1616 UT node is also ultra-low power with a two-year battery life possible at one measurement per day. It’s designed for intrinsically-safe certification and use in the oil & gas and petrochemical industries.

**UTC 110 OEM, MINIATURE UT BOARD**

The UTC 110 OEM, is a very small, high performance pulser/receiver (P/R) and acquisition board, ready to use as a digital UT system for original equipment manufacturers. It’s ideal for industrial and laboratory applications for use in single or multichannel systems in flaw detection and/or Time of Flight Diffraction (TOFD) measurements.

**KEY SPECIFICATIONS**
- 100 samples per sec.
- Bandwidth: 0.9 - 30MHz (-6dB)
- Dimensions: 60 x 27 x 12 mm (2.4 x 1.1 x 0.5 in.)
- Power consumption: 3 watts (USB)
- USB interface to PC
- I/O: 2 Encoder inputs, pulser/receiver, TT Connectors

www.mistrasgroup.com/utsolutions
UTWIN™ SOFTWARE

UTwin™ is a third-generation Windows™ data acquisition, imaging, and analysis software system with intuitive pull-down menus, independent C-Scan pages and feature icons. It has multiple real-time A-, B- and C-Scan displays, coupled with powerful post-processing modes (zoom, pan, size/measure, RF replay, cluster characterization and Excel export capabilities). Users can customize any mix of A-Scan (RF, full wave, positive or negative half wave), B-Scan (real-time or post-analysis (except RF waveforms)) or C-Scan (amplitude, TOFD) displays on one screen. UTwin™ supports up to eight UT channels from multiple sources (PCI cards, multiplexers, or external pulser/receivers).

KEY FEATURES INCLUDE

- Flexible hardware configuration for new systems, upgrades and custom installations: multiple pulser/receiver (P/R); multiple analog to digital (A/D) converter; multiple axis scanner (stepper motor).
- 16 axes motion control with or without encoders and optional motorized manipulator support
- Real time display of and acquisition of A-, B- and C-scan
- Multiple gate settings (currently up to 4 for standard UTwin™; custom systems can provide more)

OPTIONAL FEATURES INCLUDE

- RF waveform storage and replay, with changing gate and analysis settings
- Weld analysis
- TOFD (Time of Flight Diffraction)

TCPWIN™ SOFTWARE

TCPwin™ is one of the most flexible and complete transducer characterization programs (TCP) available. TCPwin™ features the abilities to utilize waveform and spectrum graphs, including frequency and signal data; to output a comprehensive calibration report; and to be used on a standard immersion system with the UTwin™ option. Its user-friendly configuration offers reporting and display formats for any user while still following ASTM-E1065 Standard Guide for Evaluating Characteristics of Ultrasonic Search Units. TCPwin™ provides the ultimate tool required to document your transducer specifications. It can be supplied as an upgrade to our existing systems or as a new addition.

WAVEFORM & SPECTRUM GRAPH REPORTS

- Transducer information
- Test set-up
- Time domain results
- Frequency domain results
- Loop gain calculation

COMPLETE SYSTEM CONFIGURATION

- PC with Windows™ XP
- UTwin™ – TCP Software
- Immersion tank and 3-axis scanner
- AD1210-IPR pulser/AD board
- SMC-PCI motor controller board
- UPK-MB-Ball, test block and ball targets

TRANSDUCER BEAM PROFILING

The plots and graphs can be configured individually or combined as shown above.

PLOTS AND GRAPHS

- Aperture scan graph
- Beam field graph
- Amplitude – distance curve
- Beam profile curve
Transducers & UT Scanners

**UT TRANSDUCERS**
Our transducer product line is entirely commercially available and is offered in such classifications as:
- **Contact** (straight or angle beam)
- **Immersion** (flat or focused)
- **Dual element**
- **Annular**

**μRUNNER, SIMPLE TOFD AND HAND SCANNER**
The μRunner is a simple hand scanner for use with two UT probes and wedges (sold separately). The μRunner includes a single-axis wheel encoder for tracking distance with the UT test. The μRunner can be used in the laboratory or in low-volume TOFD, weld or Phased Array test applications.

**V NOTCH TRANSDUCER TUBE FIXTURE**
The SPH 718, spring loaded holder for use with our DK718 and DC718EE series probes allows for more consistent coupling and less rocking on small diameter pipes and tubes thanks to its 2 axis v-notches and spring load design.

**SINGLE ELEMENT WHEEL PROBES**
The Single Element Wheel Probe uses Sonatest Ltd. Rubber technology for near-dry Ultrasonic coupling. Using a single element 15mm immersion probe, it is designed to operate between a 1MHz and 10MHz and is available with a low pressure 38mm tyre (shown) and a higher pressure 25mm tyre. It is complete with an optical position encoder and can be connected to any conventional flaw detector such as the Tablet UT™ with encoder cable adapter.

**RUNNER 100, SMALL TOFD HAND SCANNER**
The Runner 100 is a small, rugged, four-magnetic-wheeled hand scanner for use with two UT probes with wedges (sold separately), in ferro-magnetic, small pipe (3-inch diameter or higher) and flat plate inspection applications. Its ruggedness and small size enables inspections in small areas. Recommended in TOFD, weld and field test applications.

**RUNNER M & 2M, RUGGED TOFD HAND SCANNERS**
Very rugged, three-magnetic-wheeled NDT scanners with single encoder for testing high volume, ferro-magnetic, pipe (>8” diameter) or flat plate. With integration wedges (sold separately) and water couplant connections, the two UT probes for the Runner M and four UT probes (two sets) for the Runner 2M are ideal for harsh environments, TOFD, weld and Phased Array field testing applications.
**MOTORIZED X-Y SCANNER**
Stepper motor with 15” x 18” scan envelope and suction feet (optional magnetic or vacuum suction cup feet). Comes with AC power supply and is interfaced with Pocket UT® and Tablet UT™. Standard LSI transducer fixture mount so LSI bubbler/gimbal and swivel transducer holder can be attached.

**MOTORIZED X-Y SCANNER WITH THRU-TRANSMISSION**
Stepper motor with 15” x 18” scan envelope and suction feet (optional magnetic or vacuum suction cup feet). Comes with AC power supply and is interfaced to Pocket UT® and Tablet UT™. Thru-transmission fixture included for use with Non-Contact (Air-Scan) Ultrasonics.

**MANUAL X-Y SCANNER**
A traditional dual-axis operated scanner moves strictly in X and Y coordinates. Has 15” x 17” scanning envelope, universal sensor holder and suction cup feet. Encoder feedback interfaced for C-Scan imaging with Pocket UT® and Tablet UT™. Internal X and Y encoders provide precise positioning information.

**MINI-SCANNER**
With its magnetic wheels, this fully-automated scanner is ideal for inspecting flat plate surfaces or pipe down to 3” diameter — even in the vertical or upside down position. It can scan at speeds as high as 7” per second. Included with the Mini-Scanner are a two-axis power supply, and UT connectors for the Pocket UT® and Tablet UT™.

**TOFD HAND SCANNER**
Time of Flight Diffraction (TOFD) Hand Scanner is supplied with dual-angle beam irrigated wedges and transducers to transmit and receive diffraction of Ultrasonic waves generated to view weld quality. Includes two each 45, 60 and 70 degree irrigated shoe wedges and choice of 2.25 or 5 MHz ½” diameter transducers. Fully integrated use with Pocket UT® and Tablet UT™.

**MINI-B SCANNER**
High temperature (500°F), four magnetic wheeled UT line scanner with single axis encoder. Comes with high-temperature dual element UT sensors, two sensor cables, encoder cable with connector for use with Pocket UT® and Tablet UT™, couplant feed tube, and carry case. Can scan circumference of high-temperature pipe diameters over 3”.

**RUS SCANNER**
A single-axis, encoded, magnetic-wheeled hand scanner designed for the inspection of highly-curved or flat metal surfaces. Its spring-loaded, dual-crystal, dry-contact wheel transducer eliminates need for surface preparation or messy couplant. It can function in temperatures up to 195°F and is ideal for use on bridges, piping, and storage tanks.

**M-SCAN SCANNER**
Miniature single-axis-encoded, single magnetic wheel scanner for inspection of either flat or curved surfaces. Universal sensor clamp for sensor mounting or bubbler mounting is included, as well as a 2-meter encoder cable to interface with the Pocket UT® and Tablet UT™.
Large Custom UT Scanners

**UT GANTRIES**

MISTRAS offers the ultimate in precision UT Gantry Systems. Strategic partnerships with several NDT Gantry manufacturers provide the best mechanical Gantry and motion-control package available. Combine those features with MISTRAS’ UT digital data acquisition package and complex contour following abilities, and the results are full-featured Gantry capabilities customized to meet any customer’s unique needs. Full integration with UTwin™ (see Page 5) and the Remote UT™ Module (see Page 3) means customers get the pinnacle in UT data acquisition, imaging and analysis proficiency no matter the size of the asset.

**EXIT CONE INSPECTION SYSTEM**

Featuring heavy-duty construction, this is a prime example of MISTRAS’ custom-building capabilities. This 7-foot vertical Gantry Bridge has a 5-foot turntable and is capable of pulse echo or thru-transmission testing with either Water Squirter Nozzles or Non-Contact (Air-Scan) UT. With motorized axes X, Y, Z, R and G, the turntable is mounted onto X/Y transition table while the thru-transmission search tubes are gimbal supported and mounted onto Z-axis. Comes complete with industrial computer, UTwin™ with cluster analysis and RF storage, AD-IPR-1210 P/R - A/D Converter Board, SMC-PCI-8, motor control board and driver encoder feedback, pulser/receiver and transducers, manual manipulators and submersible pump.

**CUSTOMIZED SYSTEMS**

MISTRAS can provide unique scanning solutions to meet the customer’s requirements even if they fall outside of our standard system product line. Our engineering capabilities enable us to evaluate and design the mechanical, UT, and software configuration that will best fit the inspection requirements and offer a system customized to meet those needs.

Or customers can choose from a variety of custom systems that have solved similar issues in the past and could work for you. No matter, MISTRAS has the knowledge and capabilities to construct, implement and support your large-scale scanning needs, custom or standard.
Line Scan Thermography™ (LST™) in a non-contact inspection method developed by NASA using dynamic thermography in which a heat source scans an object’s surface while an infrared camera moves in tandem. LST™ has been previously used for thickness testing of boiler tubes, and it is now being applied to composites. The dynamic heat application allows observation of a variety of subsurface defects.

Given the novel heat application and image generation procedures, LST™ lends itself for inspection of large areas. This technique produces a real-time digital image of the section inspected, and it is easily implemented both in the field and in different manufacturing processes, making it easier to deploy than other thermography techniques better suited for laboratory analysis.

**LINE SCAN THERMOGRAPHY™**

- Delaminations
- Voids
- Corrosion
- Wall thinning
- Paint adhesion
- Moisture ingress
- Skin to core disbonds
- Porosity
- Wall thickness

**LST™ SCANNING CART**

Designed to travel over flat surfaces, like a composite deck plating of a ship, to thermographically inspect for imperfections. The system has driven wheels to deliver continuous rolling scans of the deck.

**PORTABLE SCANNER**

This light and portable scanner is equipped with an active suction cup, enabling attachment to flat and slightly curved surfaces like a composite fuselage. Adapted with magnetic wheels to attach to metallic surfaces like boiler tubes, the scanner has stepper motor driven axis to move the camera and heat source over the test object.

**GANTRY**

LST™ isn’t just a portable scanning function. Line Scan Thermography™ can also be mechanized and subsequently attached to a Gantry or an existing scanner, which provides one axis of motion. Customized scanners can also be provided to meet any customer requirement.

**ADVANTAGES OF LST™**

The capabilities of the LST™ to examine large-scale components make the cutting-edge thermographic technique impressive. Yet its advantages are more than just large-scale testing capacity.

Lateral motion provides heating uniformity and allows image processing capabilities that improve distinction among defect region, image noise, and sound area — providing the clearest representation of any prospective fault or defect. In addition, those large-scale inspections don’t cause any loss in resolution — no matter the size of the inspected component. So a scan of a large subject will be no less sharp and provide no less information than a scan of a normal-sized component.

And the image reconstruction procedure provides an intentional in-plane variation in heat disposition that can be used to analyze material with directional properties.

**SUMMARY**

The LST™ technique has been used successfully for non-destructive testing of laminate composites of different thicknesses, and honeycomb structures with composite skin among other materials. It can also be utilized on fiber reinforced plastics, concrete surfaces, and in general materials that will react to a thermal excitation evaluation.

The success of LST™ depends on proper optimization of the scanning parameters, but the simplicity of the technique and the apparatus provides significant freedom for inspection of various structures.
Packaged UT Systems

ULTRASONIC UT EDUCATIONAL SYSTEM
Combining our Pocket UT® Ultrasonic C-Scan system with a UPK-T10 Automated Tabletop Scanner gives today’s researcher the capability to “look inside” materials to detect, measure and map anomalies all while maintaining the features of a portable, high-end flaw detector. MISTRAS’ University Program lets you economically equip every lab with this powerful UT technology. It includes a full C-Scan data acquisition system coupled with full A-, B- and C-Scan capability, thickness testing and FFT Signal analysis. Includes UTwin™ replay software. The Tabletop Scanner includes a mini bridge and acrylic tank, a motorized X, Y, Z-axis with a scan envelope of 10"L x 10"W x 10"H and a stepper motor controller and motor driver.

UT PORTABLE AUTOMATED C-SCAN SYSTEM
Looking for a little larger display than a handheld system, but still requiring maximum flexibility and portability? The Tablet UT™ is the answer. The Portable Automated C-Scan System features a built in PC interfaced with a UT and motion control system. With a larger screen image and a more complete C-Scan data collection and analysis package — including UTwin™ software, the Tablet UT provides up to 3 axis of motion control and an Automated X-Y Scanner — it offers a comprehensive breed of performance and portability.

TRANSUDCER BEAM PROFILING
As part of the Transducer Characterization Program (TCPwin™ see page 5), plots and graphs can be configured either individually or combined to offer versatile imaging options. Applicable plots and graphs include:
- Aperture scan graph
- Beam field graph
- Amplitude – distance curve
- Beam profile curve
In addition to the variety of plots and graphs offered by the program, there are several different report options as well:
- Transducer information
- Test set-up
- Time domain results
- Frequency domain results
- Loop gain calculation

T-SCOUT SYSTEM
The T-SCOUT™ imaging technique is a low-cost, portable inspection system designed primarily for the field inspection of complex, thick-section composite structures. As an oblique incidence angle, low-frequency Guided Wave Acousto-Ultrasonic technique, the T-SCOUT™ is capable of detecting the presence of primary defects in multilayer composite structural elements and materials by penetrating through the different layers. It does so with a cutting-edge fusion of the latest Ultrasonic testing technology, proprietary data acquisition, analysis, and reporting control software (UTwin™), and the exciting portability produced by a coupling with a Remote Ethernet UT module.
Key features include an adjustable multi-sensor probe, integrated 4-channel UT Module (high-energy pulser, multichannel UT receiver, digital feature processing and a CPU-controlled scanning bridge).
UltraPAC™ Immersion Systems

**UltraPAC™ UPK-T10**
The UltraPAC™ UPK-T10 consists of a mini bridge, an acrylic tank, and a motorized X/Y/Z-axis with a scan envelope of 10"L x 10"W x 10"H. The UPK-T10 is ideal for laboratory or educational uses and is our most compact immersion system.

**WHAT'S INCLUDED:**
- Lab computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer

**UltraPAC™ UPK-T24**
This standard-duty immersion system has a medium duty bridge along with an acrylic tank and a motorized X/Y/Z-axis. It has a 2-foot long scanning envelope (24"L x 18"W x 12"H) with a 7" per-second scanning speed.

**WHAT'S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer

**UltraPAC™ UPK-T36**
This standard-duty immersion system increases both the scan envelope (36"L x 24"W x 18"H) and the scan speed (20 inches per second) while featuring a standard, medium-duty bridge and acrylic tank with a motorized X/Y/Z axis.

**WHAT'S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer

**UltraPAC™ UPK-T36-HS**
Heavy duty, high-speed bridge and acrylic tank with a motorized X/Y/Z-axis. The scan envelope is (36"L x 24"W x 18"H or 24"L x 18"W x 12"H) while the scan speed is greater than 20 inches per second. Our most economical heavy-duty immersion system.

**WHAT'S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer
- Water pump and filter
**UltraPAC™ Immersion Systems**

**UPK-T48-HS**
With 4-foot scan envelope (4'L x 3'W x 2'H), this has a linear motor on the X and Y-axis in addition to a motorized X/Y/Z, G and S-axis. Fastest standard immersion system (30-inch-per-second scan speed). Add-ons: Motorized manipulator and thru-transmission fixtures.

**WHAT’S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Motorized manipulator
- 5 MHz immersion transducer
- Water pump and filter

**UPK-T60-HS**
Heavy-duty, high-speed industrial system with motorized X/Y/Z-axis and a 5-foot scanning envelope (5'L x 3'W x 3'H). The scanning speed also eclipses 20 inches per second. Add-ons: Motorized manipulator and thru-transmission fixtures.

**WHAT’S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer
- Water pump and filter

**UPK-T72-HS**
Scan envelope jumps to 6 feet (6'L x 3'W x 3'H) without hurting high scan speed (more than 20 inches per second). Heavy-duty, industrial system with motorized X/Y/Z-axis. Add-ons: Motorized manipulator and thru-transmission fixtures.

**WHAT’S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer
- Water pump and filter

**UPK-T48-LM**
With 4-foot scan envelope (4'L x 3'W x 2'H), this has a linear motor on the Y-axis in addition to a motorized X/Y/Z axis. Fastest standard immersion system (40-inch-per-second scan speed). Add-ons: Motorized manipulator and thru-transmission fixtures.

**WHAT’S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Motorized manipulator
- 5 MHz immersion transducer
- Water pump and filter
A heavy-duty, high-speed industrial immersion system. Advantages include a large scanning envelope (6'L x 6'W x 4'H), turntable, and a variety of axes: motorized X, Y, Z1, Z2, A1, B1, A2, B2.

WHAT’S INCLUDED:
• Industrial computer
• UTwin™ A/B/C-Scan software
• AD-IPR-1210 integrated pulser/receiver- A/D converter board
• SMC-PCI-4 stepper motor controller board
• Motor driver system
• Dual motorized manipulator
• 36” diameter turntable with motorized lift platform

UPK-T156-HS

Combines extremely large scan envelope (13'L x 5'W x 3'H) with high scan speed (20 inches per second). Motorized X/Y/Z-axis. Heavy-duty, industrial system. Add-ons: Motorized manipulator and thru-transmission fixtures.

WHAT’S INCLUDED:
• Industrial computer
• UTwin™ A/B/C-Scan software
• AD-IPR-1210 integrated pulser/receiver- A/D converter board
• SMC-PCI-4 stepper motor controller board
• Motor driver system
• Dual motorized manipulator
• Thru-transmission fixtures
• 5 MHz immersion transducer
• Water pump and filter

UPK-T480-DBHS

This heavy-duty industrial immersion system offers one of MISTRAS’ largest scan envelope available at 40 feet (40’L x 12’ W x 4’H) while still maintaining high-speed scanning capabilities (20 inches per second). Features a motorized dual bridge each with X/Y/Z/G/S-axes).

WHAT’S INCLUDED:
• Industrial computer
• UTwin™ A/B/C-Scan software
• AD-IPR-1210 integrated pulser/receiver- A/D converter board
• SMC-PCI-8 stepper motor controller board
• Motor driver system
• Dual motorized manipulator
• Thru-transmission fixtures
• 5 MHz immersion transducer
• Water pump and filter

UPK-T240-HS

With a 20-foot scan envelope (20’L x 3’W x 3’H), this high-speed, heavy-duty industrial system features motorized X/Y/Z/G/S-axes while offering a 20-inch-per-second scanning speed.

WHAT’S INCLUDED:
• Industrial computer
• UTwin™ A/B/C-Scan software
• AD-IPR-1210 integrated pulser/receiver- A/D converter board
• SMC-PCI-8 stepper motor controller board
• Motor driver system
• 5 MHz immersion transducer
• Water pump and filter

CALL US TODAY + 1(609) 716-4000
Custom Immersion Systems

**UPK-BR20 - BAR ROTATOR**

This bar rotator immersion system accessory features rollers that allow for the rotation of cylindrical parts (tube or bar) in a horizontal matter for Ultrasonic testing.

This model has a 20-foot length capacity and a 6,000-pound maximum load. Materials’ diameter can range from 3-14”. It can even accommodate tubes or bars as short as a foot. It also has an adjustable rotating idler. All scans and indexes are fully encoded.

**UT SQUIRTER IMAGING SYSTEM**

The UT Squirrel Imaging System comes in single or multichannel configurations. Operable with a scan envelope of up to 15 feet (15’L x 3’ to 12” diameter) with a maximum weight of 1,000 pounds. It is capable of scanning in X or in rotation axis.

**WHAT’S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan full version with Cluster & Auto Analysis software
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Squirrel and immersion transducer
- Water pump and filter

**DOT 2’ CYLINDER BOTTLE SYSTEM**

This 7-channel multiplexed Ultrasonic testing system services 4-inch and larger cylindrical-shaped parts.

**WHAT’S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan full version with Cluster Analysis & RF storage software
- MUX-8 5-channel multiplexer
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- 7-transducer head
- Seven each 5 MHz transducers
- Water pump and filter

**UPKII-T264-HS**

Heavy-duty, high-speed industrial Billet/Bar immersion system with motorized X/Y/Z/R-axis. Scan envelope (22’L x 4’W x 3’H) with 20-inch-per-second speed and bar rotator.

**WHAT’S INCLUDED:**
- Industrial computer
- UTwin™ A/B/C-Scan full version with Cluster Analysis & RF storage software
- MUX-8 5-channel multiplexer
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Bar Follower UPK-BR20 with 5-transducer head
- Five each 10 MHz transducers
- Water pump and filter
MISTRAS has recently expanded its capability to allow interfacing of our multi-axis automated systems to the latest Phased Array systems. These expanded interfacing capabilities bring together the many advances of not only Phased Array, but also precise, high-speed, motion, data acquisition. For example, scanning a 4’ wide metal plate at .030 normally requires 1600 scan lines. By utilizing a 2” wide .030 pitch Phased Array probe, only 24 scan lines are required! That’s a potential throughput improvement of more than 60 times! That increase in efficiency can translate in more profit potential and a savings in man-hours invested in the project. In addition, inspecting a part with the variable angle beam utilized in Phased Array technology maximizes detection regardless of the defect orientation, while optimizing signal-to-noise ratio. With existing immersion tanks as a foundation, MISTRAS can also upgrade and retrofit current data acquisition and imaging systems and software with improved and advanced versions. This allows customers to remain up to date without the need to overhaul an entire lab’s worth of equipment.
MISTRAS offers a full range of ultrasonic immersion systems with complete digital data acquisition packages. Typical scanners range from the mini-lab scanners, mid-size acrylic or stainless steel tanks to large plate, forging and bar rotator scanners. Three to six motorized axes of motion control, including contour following software, are also available.

**UPGRADING A CURRENT MULTI-AXIS AUTOMATED SYSTEM WITH PHASED ARRAY CAPABILITIES HAS A VARIETY OF ADVANTAGES, INCLUDING:**

- Severely decreased inspection times
- Exponential throughput production increase
- Excellent repeatability
- More accurate results
- Ability to inspect complex geometries
Immersion System Accessories

MANUAL MANIPULATOR

This features a manual gimbal/gimbal adjustment (range: +/- 90°, +/- 45°) to allow for easily adaptable transducer positioning during Ultrasonic testing. It's constructed with non-corrosive material, with brass gears available for an additional cost.

DROP-IN TURNTABLE

Stepper motor driven turntable features a self-centering three-jaw chuck and allows for the rotation of cylindrical parts (tube or bar) vertically. The 14-inch diameter platter has a 200-pound max load, while the 18-inch platter has a 400-pound max.

DROP-IN BAR ROTATOR

Motor driven rotator with encoder feedback allows for rotation of cylindrical parts (tube or bar) horizontally. The two 40-inch bar length, of one 12-inch diameters have a 2000-pound max load capacity with motor drivers and interfaces with a PCI-SMC4/8 board.

MOTORIZED MANIPULATOR

This upgrades most immersion systems by providing repeatable transducer positioning to follow contours of complex components. Lightweight and compact, it's incorporated into the Z-axis and is a valued addition to UT systems that employ squirtsers.

THRU-TRANSMISSION FIXTURE & SQUIRTERS

These attach to the Z-axis and are fully adjustable for complete transducer alignment. They can be used in an immersion or squirter configuration. Squirter assemblies come equipped with submersible pump and water flow valve.

LARGE SYSTEM MOTORIZED MANIPULATOR

Heavy-duty immersion system upgrade with Z-axis attachment and stepper motor driven gimbal & swivel axis. Allows for repeatable transducer positioning and complex component testing. Lengths: 36" and 48".

1658-5005 MINIATURE MOTORIZED MANIPULATOR

Built for speed with a 90° per-second scan time and 60° per-second acceleration. Single axis motions of up to +/-160 degrees are possible depending on combined axis positions, transducer length, and other specific conditions.

Can be supplied as an attachment to UHF search tube, will require motor drivers, power supply, and wiring, or as a completely integrated accessory into a motorized Z-axis.