



MISTRAS

A World of NDT Solutions

SERVICES
DIVISION

A Member of the MISTRAS Group Inc.



TANKCARE™ . . . Total NDT Solutions for the Inspection and Data Management of Above Ground Storage Tanks

Combining the experience of CONAM and QSL-Plus

Comprehensive Tank

No Tank Too Big or Too Small
... *We test them all!*

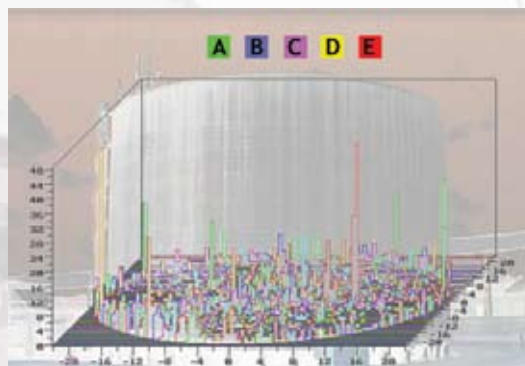


Above Ground Storage Tank (AST) Condition Monitoring with TANKCARE™

Tank inspection programs were initiated by OEM's and testing agencies with the creation of API Standard 653 for the Inspection, Repair, Alteration and Reconstruction of Above Ground Storage Tanks. The purpose of the inspection was to determine if the tank was safe for continued service from a mechanical integrity standpoint. The original inspection plans were strictly regulatory compliant, utilizing traditional manual NDT techniques, such as visual, ultrasonic and settlement surveys. These were used for both In-Service and Out-of-Service inspections.

To help tank owner's comply with the strict requirements of EPA's SPCC and OSHA's 1910.119 regulations, MISTRAS Services Division offer **TANKCARE™**, a turnkey solution to AST inspection and maintenance.

Our approach blends the regulatory compliance of API 653 with the Risk Based Inspection philosophy. Our RBI approach allows owners to inspect those assets that have the highest probability of potential problems. It also considers the consequences of such a failure. As a result, we recommend the Out-of-Service inspection of tanks that exhibit potential problems, while continuing to operate assets that are in good condition. The continued operation of healthy tanks, along with dramatic reductions in maintenance dollars spent to prepare tanks for traditional internal inspections (including cleaning, degassing and waste disposal) provides our clients with tremendous profit gains.



TANKPAC results showing 3-D plots of located corrosion and leak sources. Our proprietary classification software grades all AE sources from A-E (best-worst).

TANKCARE™ begins with an engineered analysis of the tank inventory's history. It progresses to creating the approach that yields the best value for our clients. Next, we prescribe global inspections that include Acoustic Emission TANKPAC™, Annular Ring Long Range Ultrasonics and Automated Ultrasonic Thickness, using remote crawlers, that determine an individual asset's integrity quickly and cost effectively, while it is in operation.



The results of the global inspections determine the next course of action. If these global inspections determine there is a potential problem, an internal inspection that complies with API 653 code requirements is performed. The internal inspections include some combination of visual, ultrasonic thickness, magnetic flux exclusion and vacuum box inspections.

Areas of noncompliance are analyzed by our engineering staff to determine the proper course of action to get the tank back on-line.

TANKCARE™ Offers:

- TANKPAC™ Technology Package, based on Acoustic Emission (AE) proprietary classification techniques
- Tank Annular Ring Long Range Ultrasonic Inspection
- API 653 In-Service
- Ultrasonic Thickness Readings (automated/manual)
- API 653 Out-of-Service Internal Inspections using traditional Non-destructive Testing (NDT)
- Magnetic Flux Exclusion
- Engineering Analysis and Recommendations
- Comprehensive electronic data management using TTMS™ Software
- Cleaning and waste disposal

Condition Monitoring



TANKPAC™

TANKPAC™ is an Acoustic Emission Technology Package that determines the condition of tank floors without the need to empty and clean the contents of the tank.

Benefits of TANKPAC™

- **Advanced Sorting** - before the tank becomes severely damaged, TANKPAC™ separates “good” tanks from “bad” tanks.

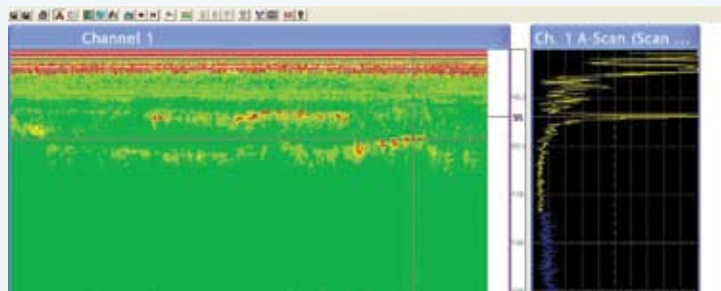
- **Prevention of Environmental Losses** - early identification of potential leaks directs further internal inspections to the tanks in most need of attention.
- **Maintenance Prioritization** - suspect tanks are prioritized for further internal inspections, while sound tanks are scheduled for further In-Service testing.

TANKPAC™ Procedure

To monitor the tank, highly-sensitive proprietary acoustic sensors are attached to the tank wall to detect the fracture of corrosion products, along with leaks that are active during the monitoring period. The overall condition of the floor is given a grade of A-E, and suspect areas are identified and located. The floors of all “A” tanks are considered sound, and further internal inspection is not needed for a period of 5 years. “B” “C” and “D” tanks may remain in service for varying time periods, depending on the test results. All “E” tanks should be taken out of service immediately for further inspection.

Tank Annular Ring Long Range Ultrasonic (TALRUT)

We perform a long range ultrasonic inspection of the carbon steel annular ring, without the need to remove the tank from service and clean it for internal inspection. This inspection utilizes the Large Structure Inspection (LSI) unit that is manufactured by our sister company, NDT Automation. The scanning device runs on the tank wall adjacent to the annular ring and requires the lower 3 feet of the tank to be free of obstructions.



A TALRUT inspection showing areas of potential corrosion (in red and yellow) of the annular ring. The inspection is performed while the tank is in-service.

The method uses a technique to evaluate corrosion damage to the annular ring/floor extension and tank floor, within 1.5 feet of the tank wall. This method is qualitative; therefore, indications are compared with a test plate in order to evaluate the severity of corrosion. Depending on the severity of the indications, further internal Out-of-Service inspection may be recommended.

TANKCARE™ and Risk Based Inspection

RBI techniques allow you to spend money on the areas most needed. The TANKPAC™ A-E grading system is derived from the consequences of the RBI code. It requires more detailed inspection of suspect areas and less in areas that are in compliance. We also consider the condition of the annular ring using TALRUT, which further determines the tank floor’s integrity. This provides accurate data to tank owners to help them prioritize their maintenance budgets.

Follow-up Internal Inspection



Automated ultrasonic thickness inspection utilizing the LSI System.

To more accurately determine the extent of potentially flawed areas, we inspect 100% of the tank floor utilizing Magnetic Flux Exclusion. Characterization of flaws is performed using traditional nondestructive testing techniques including: ultrasonics, penetrant, magnetic particle and vacuum box inspections.



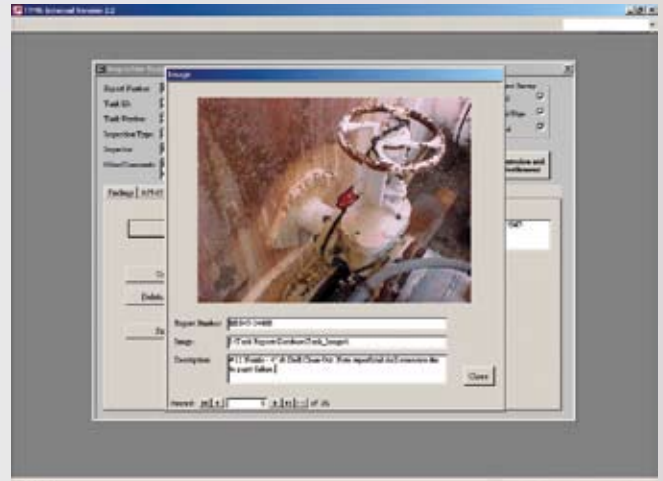
Magnetic Flux Exclusion inspection being performed during an Out-of-Service inspection to determine potential loss of material on the tank floor.

Turnkey Services

MISTRAS Services Division manages every step of the entire tank monitoring program. In conjunction with the TANKCARE™ program, we also supply associated services. Through strategic alliances, we contract the execution of required tank cleaning, product and waste disposal, scaffolding and insulating services.

Tank Data Management

To manage your tank assets, MISTRAS Services Division uses proprietary software called TTMS or Total Tank Management Software. The software's extensive database centrally locates the historical construction, alteration, repair and inspection data of each tank. It also calculates corrosion rates, reinspection dates and other engineering parameters to assure your compliance with EPA and OSHA regulations.



MISTRAS Services Division is committed to offering the most advanced and cost-effective inspection techniques in the industry. This guarantees that you receive the highest possible inspection quality to aid in your maintenance and operational decisions. When faced with the difficult decision of evaluating the condition of your tank or entire inventory, allow the experts at MISTRAS Services Division to provide the total solution that saves you money. That's why we are your "Total Tank Condition Monitoring Solution."

All of our services are supported by our unparalleled commitment to safety and customer service. Each discipline is available 24 hours a day, 365 days a year. With worldwide locations employing over 1,000 engineers, Ph.D.'s, technicians, software designers and QC professionals, our staff has the experience and know-how to meet your tank testing needs. Call the experts at MISTRAS Services Division to determine the integrity of

For inspection services nationwide, contact the main headquarters . . .

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