

Immersion Tank Upgrade

Cost Effective Rejuvenation of Production Equipment

Application Background

A production environment immersion tank is exposed to normal wear and tear over its many years of operation. At the same time, NDE and computer technology continue to progress at a rapid rate. The net result is that components and capabilities of middle aged immersion tanks become obsolete or impossible to maintain. Faced with the costly decision of buying a new immersion tank, many owners are instead opting for a more cost effective solution: upgrading.

In one such application, WesDyne NDE Products & Technology was contracted to identify areas of an immersion tank that would benefit from upgrades. The customer then decided which items to proceed with, and also took on a portion of the upgrade work, where possible, to reduce external costs. A further cost saving was accomplished by shipping the tank to WesDyne NDE Products & Technology's Windsor, CT, facility for upgrading, refurbishment, and factory testing.



Upgrade Project Details

The immersion tank to be upgraded was 11' x 6' x 5' (without the Z-mast installed) and weighed 2000 pounds. Its scanning strokes were 4', 3', and 3', for the X, Y, and Z axes, respectively.

The following items were replaced, added or conducted by WesDyne NDE Products & Technology:

- X and Y mechanical drives (linear bearings, brakes, ballscrews, belts, pulleys, DC servo motors and encoders)
- Z and W mechanical drives (turntable, gearhead, brakes, servo motors and encoders)
- Cable management system
- 4-axis servo controller
- Once per revolution sensor on turntable axis
- AMDATA IntraSpect™ I/UX 2ⁱ UT Imaging System
- 4-axis pendant with E-stop
- Rewiring of motors, encoders and limit switches
- Tuning the servo control for optimum performance
- System integration and NDE performance test
- System manuals and acceptance test procedures
- Factory and site acceptance testing
- Operator training
- Refurbishment of rails and protective devices
- Custom controls software

Results

The entire project, including custom software, was completed within three months: from contract award to completion of site acceptance testing.

The upgraded equipment included adding UT imaging capabilities, and passed acceptance testing with flying colors. The accuracy requirement of 0.005"/ft was passed with no measurable variation (0.000") over 30" strokes.

Conclusion

Owners of aging immersion tanks have a cost effective alternative to replacement: refurbishing and upgrading. This allows the mechanical structure, tank and other durable portions of the system to be reused, thereby avoiding their replacement costs.

WesDyne NDE Products & Technology can, in turn, address only the portions of the system which require replacement or refurbishment. Whether it be mechanical, electrical, software, NDE, or project management, WesDyne NDE Products & Technology has the resources to provide solutions to all your immersion tank needs.



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