

ULTRASONIC TESTING REDUCES INSPECTION TIME

SITHE ENERGIES' 1,000 MW regeneration plant in Oswego, New York, has a staff of 14 people to maintain the plant's instruments and controls and its electric and mechanical systems. With this modest number of maintenance personnel, Sithe Energies is always looking at ways to optimize plant maintenance and operations. One of the technologies that has been successfully used at the Oswego plant is ultrasonics for the diagnostic analyses of leaks in tanks and piping and for detecting grease levels in bearings.

The plant has a number of double walled storage tanks, varying in size from 30,000 to 100,000 gallons capacity. These tanks store a variety of fluids including various chemicals and demineralized and potable water. Each year the tanks are inspected for leaks.

In the past the tanks were inspected for leaks by flooding the cavity between the walls of the tank and then checking hydrostatically for leaks. Unfortunately, this was not only messy it was also very time consuming. The plant, therefore, started to look at alternative methods for inspecting the tanks. The end result was the purchase of a hand-held ultrasonic instrument and tone generator from UE Systems, Inc.

ON SITE APPLICATION

According to Dave Mott, a technician with Sithe Energies, non-destructive ultrasonic testing of the outer wall of

the tanks involves placing a tone generator on the outer wall

of the tank and listening for leaks. In operation, the warble pulse signal from the generator floods the cavity between the inner and outer walls of the tank and penetrates any leaks in the tank. Using the ultrasonic instrument the technician scans and listens for a high pitch warble that indicates a leak.

The ultrasonic instrument is used to scan the tank's seams, joints, gaskets, pipefittings, vents, drains and man-way doors. When a leak is detected it is either tagged for later repair or repaired at that time.

Although the instrument was originally purchased for detecting leaks in the tanks, the plant has found many other uses for the instrument. These include checking grease levels of bearings and, in conjunction with vibration analysis, detecting incipient bearing failure. It has also been used to find leaks in underground piping.

Mott says the technicians use a stethoscope pickup with the instrument to monitor bearings prior to adding grease and also as grease is added. When adding grease the technician listens for a change of frequency, or amplitude, until the reading corresponds to a previously set baseline. The



Checking grease levels using ultrasonic leak detector.

baseline is determined when the bearing is initially filled with grease.

The ultrasonic leak detector is a pistol shaped, battery operated device that weighs about two pounds. Circuitry in the leak detector translates the high-pitched ultrasounds to acoustic signatures in the human hearing range. These signals are transmitted to a set of headphones worn by the operator. A meter on the back of the detector displays the intensity of the sound waves.

Depending upon the severity of the leak the plant has been able to reduce downtime dramatically. According to Mott, payback for the leak detector was less than one year. Mott also says that the instrument is easy to operate and it takes a technician very little time to become proficient in its use.

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