

HYDROTECTOR



Oceaneering Asset Integrity provides a simple moisture measurement gauge designed for the rapid detection of water moisture in the thermal insulation of pipes and vessels. The instrument is designed as a screening tool to rapidly locate areas of trapped moisture where corrosion may be likely to develop under the insulation. The cost-effective technique reduces the costly requirement to remove and re-insale insulation.

One person comfortably deploys the instrument and there is no need for a continuously demarcated controlled area as the instrument is constantly supervised when the source is exposed.

Operation

The device contains a small quantity of sealed radioactive material that emits fast neutrons but also gamma radiation. This is provided by an Americium 241 Beryllium neutron emitting compound of low activity; approximately 1.85GBq (50 milli Curies) with a 458 year half-life. These “fast” neutrons

travel outward in all directions from the base of the hand held instrument penetrating the material under test. Some of these neutrons are reflected back towards the detectors mounted in the base of the Hydrotector head producing a pulse. These backscattered neutrons are called “thermal” neutrons. The number of pulses is proportional to the amount of Hydrogen atoms contained in the test material and therefore by inference, the likely concentration of water moisture.

Since many materials other than water contain hydrogen, the Hydrotector is normally used to take a relative measurement. The operator takes test readings in several areas where the item should be “dry” given a particular configuration i.e. if a horizontal pipe, the operator would test at the highest part of the pipe. This would establish a baseline giving the operator an idea of what count rate for this configuration should be. Testing along the length of the pipe, suspect areas would indicate by the count rate increasing, normally on the bottom, indicating wet insulation.

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