



Ameritube Testing Services

Ameritube LLC commitment to quality of our product is unprecedented in the industry.

Ameritube provides the following inspection capabilities.

1. Mechanical (hardness, tensile, elongation)
2. Dimensional (100 % diameter, wall, length and min/max variation)
3. Micrographic grain size, flaws examination
4. 100 % Eddy Current,
5. Positive Material Identification, utilizing [XRF equipment](#) manufactured by [Innov-X Systems](#), the leading manufacturer of portable tube-based (i.e. no isotopes) x-ray fluorescence spectrometry equipment. More information on the next page.
6. Hydrostatic testing
7. Air Under Water

Ameritube also offers an independent inspection services capabilities provided by:

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Positive Material Identification

Along with Eddy current testing Ameritube utilizes the process of Positive Material Identification (PMI) as one of the more specialized non-destructive testing methods. With Positive Material Identification the alloy composition of materials can be determined. While Ameritube engineers push the boundaries of material capacities to their limits in the design, assurance that the proper material is used becomes ever more important.

There are two methods for PMI:

The XRF-principle (x-ray fluorescence) is one of the methods for PMI. Ameritube equipment used contains low radioactive sources (isotopes) or x-ray tubes. The exposed material reflects the radiation, generating energy. As every element has its own atomic structure, this reflection will generate a different energy level for every element. This energy is measured and detected, thus identifying the alloy elements.

The other method for PMI is Spark emission spectrography. Spectrography is based on optical emission. The equipment consists of a probe which releases a spark that is used to vaporize the material being analyzed. The atoms and ions in this vapor produce a spectrum which can be optically measured and then recalculated to determine the components of the material.

Material properties like structure difference and heat-treatments have no influence on the results of the PMI measurements. However, it is important that the surface is identical to rest of the material. Oxides, coatings and dirt on the material will influence the identification results. Also the surface must be smooth. Elements that can be identified using PMI include: Ti, V, Cr, Mn, Co, Fe, Cu, Zn, Ni, Se, Nb, Mo.

When dealing with exploitation licenses and preventive maintenance of technical installations, Non Destructive Testing and Examination (NDT/NDE) are indispensable techniques. NDT/NDE offer also the necessary guarantees when quality, expense saving, business security and safety is in order, for both existing and new installations. NDT/NDE decreases the risk of leakage or other defects, which increase the business integrity and safety within the installation and can save expenses.

NDT - Positive Material Identification.

The Objective

Ameritube engineers understand that traceability of proper material is ever more important. In addition to compatibility issues, several other reasons can exist for material



specification including design, corrosion resistance, and compliance to codes and standards such as ASME Boiler and Pressure Vessel Code.

Ameritube quality procedures are put in place to document materials as they are received and as they move through the production process, but what happened to those raw materials before they arrived at the receiving dock? Each time raw material changes hands - from copper exploration to casting facility, from processing plants (e.g., pipe, tube and fittings) to subcontractors – the opportunity for error increases, resulting in questionable material quality.

The Solution

With Positive Material Identification (PMI) the alloy composition, and thus, the identity of materials can be determined. If a material certificate is missing or/and you need to be certain about the type of material used, PMI as an NDT method is the best solution. Positive Material Identification is particularly used for high quality metals like stainless steel and high alloy metals.

The XRF-principle X-ray fluorescence is one of the methods for PMI. The equipment contains radioactive sources or a low voltage x-ray generator, which sends out radiation. The exposed material then sends temporarily element specific radiation back, generating energy. As every element has its own atomic structure, this reflection will generate a different energy level for every element.

This energy is measured and detected, thus identifying the alloy elements. The disengaged radiation is very low and extra safety means are not necessary. The important advantage of the XRF-method is that it in service can be executed without damaging the material. Directly after the inspection, you will receive the results.

Spark emission spectrography

Spectrography is based on optical emission. The equipment consists of a probe which releases a spark that is used to vaporize the material being analyzed. The atoms and ions in this vapor produce a spectrum which can be optically measured and then recalculated to determine the components of the material.

Why Ameritube LLC?

Ameritube LLC has the knowledge, expertise and experience to perform conventional and advanced NDT inspections around the world using our unique network. Ameritube LLC can help you in improving the reliability of your processes and assets.

Ameritube Services for Positive Material Identification

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With our portable equipment a measurement is possible almost everywhere. This measurement could be on heat exchangers, steel constructions or petrochemical installations. Material properties like structure difference and heat treatments have no influence on the results of the PMI measurements. However, it is important that the surface is identical to rest of the material.

In a very short time the plant or components and raw materials can be mapped into any Asset Integrity Management System in order to prevent unexpected failures or extension of maintenance periods.

Ameritube LLC offers positive material identification (PMI) Service also combined with other advanced or standard NDT methods.

For NDT - Positive Material Identification Ameritube uses portable gun Model a-2000. Manufactured by Innov-X System Inc. Woburn, MA