



POSITIVE MATERIAL IDENTIFICATION (PMI)

DETERMINE THE IDENTITY OF YOUR MATERIALS

While engineers push the boundaries of material capacities to their limits in the design, traceability of proper material becomes 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.

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 the mill to service centers, from processing plants (e.g., pipe, tube and fittings) to subcontractors - the opportunity for error increases, resulting in questionable material quality. With

Positive Material Identification (PMI) the alloy composition, and thus, the identity of materials can be determined.

If a material certificate is missing or not clear and you need to be certain about the type of material used, PMI is the solution. PMI is particularly used for high quality metals like stainless steel and high alloy metals.

DO YOU SOMETIMES MISS A MATERIAL CERTIFICATE? SGS PROVIDES MATERIAL PASSPORT

INSPECTION TECHNIQUE

There are two methods for PMI

■ 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 vaporise the material being analysed.

The atoms and ions in this vapour produce a spectrum which can be optically measured and then recalculated to determine the components of the material.

APPLICATION

With our portable equipment a measurement is possible almost everywhere. This measurement could be on heat exchangers, steel constructions or petrochemical installations. Also sorting of big bulk of metals is possible.

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.

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

THE SGS EXPERTS

SGS Industrial Services has the knowledge, expertise and experience to perform conventional and advanced NDT inspections around the world using our unique network. Our service offer varies from Guided Wave and the conventional NDT techniques to Risk Based Inspection (RBI/AIM), Time of Flight Diffraction (TOFD), Corroscan, Positive Material Identification (PMI), Magnetic Flux Leakage (MFL), ACFM, Leak Testing, Thermography, Electromagnetic Testing (ET), RFEC, IRIS, Digital Radiography, Radiation detection RVI and Endoscopy inspections.

We are pleased to inform you anywhere around the world about how SGS can help you in improving the reliability of your processes and assets.

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