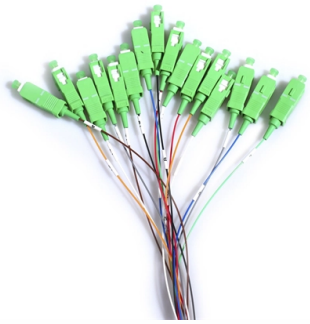
Is PMI a spectrometer



Overview

PMI Testing (XRF Vs OES): Methods, Standards & ReportingWhat is PMI testing?

Positive Material Identification (PMI) is the process of verifying the chemica.

Key Takeaways

A PMI spectrometer is an analytical instrument used for Positive Material Identification, verifying the chemical composition and grade of metals and alloys using XRF or OES technologies.

Overview of PMI Spectrometers

A PM

I spectrometer is designed to determine the elemental composition of metallic materials quickly and accurately, ensuring that components meet required specifications and safety standards. These instruments are widely used in industries such as petrochemical, power generation, oil and gas, and chemical processing, where material integrity is critical. Key TechnologiesX-Ray Fluorescence (XRF)Non-destructive technique that excites atoms in a sample with X-rays, causing them to emit characteristic secondary X-rays.

Provides rapid identification of elements in metals, alloys, and other materials with minimal sample preparation. Ideal for field inspections, weld verification, and alloy sorting. Optical Emission Spectroscopy (OES)Uses an energy source to excite atoms in a sample, analyzing the emitted light spectrum to identify elements.

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Capable of measuring trace elements and carbon content, which is critical for calculating carbon equivalency in steels. Often used for more detailed analysis where precise quantification of multiple elements is required.

Laser-

Induced Breakdown Spectroscopy (LIBS)A laser pulse vaporizes a small portion of the material, and the emitted light is analyzed to determine elemental composition. Useful for rapid carbon equivalency testing and differentiating alloys with nearly identical compositions.

Applications

Material Verification: Ensures that purchased or in-service components match specified alloy grades. Weld Inspection: Confirms compatibility of base and filler metals to prevent failures. Corrosion Analysis: Detects elements that influence susceptibility to flow-accelerated corrosion (FAC) or high-temperature hydrogen attack (HTHA).

Regulatory Compliance: Meets standards such as ASTM, API 5L, API RP578, ASME Section IX, ISO 17025, and A2LA.

Advantages

Portability: Many PMI spectrometers are handheld or portable, allowing on-site testing in remote or hard-to-access locations. Speed: Provides results in seconds to minutes, reducing downtime and inspection costs. Accuracy: Capable of detecting trace elements like phosphorus, sulfur, boron, and carbon at low limits.

Non-

Destructive: XRF and LIBS methods do not damage the sample, preserving components for continued use.

Examples of PM

I SpectrometersPMI-MASTER Smart (OES): Portable high-performance analyzer for carbon content, nitrogen in duplex steels, and FAC analysis. X-MET8000 (XRF): Handheld, non-destructive analyzer for rapid alloy verification and small-spot measurements. Niton Apollo (LIBS): Provides fast carbon equivalency calculations and alloy differentiation in the field.

SPECTR

O xSORT (XRF) and SPECTROTEST/SPECTROPORT (OES): Field-deployable analyzers for comprehensive PMI applications. In summary, a PMI spectrometer is an essential tool for industrial material verification, combining speed, accuracy, and portability to ensure safety, compliance, and reliability in critical metal components.

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Article Content

PMI Testing (XRF Vs OES): Methods, Standards & Reporting

What is PMI testing? Positive Material Identification (PMI) is the process of verifying the chemical composition of metallic materials to ensure they match the specified grade.

Positive material identification

Positive material identification (PMI) is the analysis of a material, this can be any material but is generally used for the analysis of metallic alloy to establish composition by reading the quantities by

PMI Technologies: What''s the Difference Between XRF, LIBS, and

The common term used in the industry for performing any of these techniques is known as Positive Material Identification (PMI). All three technologies are used in a variety of ways to ensure

Portable Spark OES Spectrometer | PMI-MASTER Smart | Hitachi

When you need to reliably analyze steels and other alloying materials like aluminum, nickel, and copper in a safety-critical environment, you need an OES spectrometer that rapidly delivers the analytical

PMI Testing Guidelines: Complete Guide to Positive Material ...

Portable Optical Emission Spectroscopy (OES), also known as Spark Testing, is another method of positive material identification (PMI) to check for all the required elements including carbon.

Positive Material Identification | PMI Testing | Hitachi High-Tech

Unsure which analyzer you require for PMI inspection? Answer four questions to find an analyzer tailored to your needs

Positive Material Identification, PMI, Thermo Fisher Scientific ...

Powered by laser induced breakdown spectroscopy (LIBS), this analyzer delivers speed and confidence for carbon equivalency testing of metals and alloys in the field.

Positive Material Identification (PMI): Simple Guide

What is PMI? Positive Material Identification (PMI) is a quick, non-destructive test used to confirm the exact alloy and grade of a metal. It tells you what the material is made of—right on the

XRF PMI Machine (Gun)

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Positive Material Identification is the detection of materials through non-destructive element spectrometry in samples of metals, steel, and alloys, which is used to check the component

Spectrometric Analysis for Positive Material Identification (PMI)

White Paper Spectrometric Analysis for Positive Material Identification (PMI) In industries where infrastructure integrity is critical—such as petrochemical, power generation, and pharmaceutical

Positive Material Identification | PMI Testing | Hitachi

The PMI-MASTER Smart portable optical emission spectrometer The PMI-MASTER Smart is the only truly portable high performance OES analyzer on the market,

Mobile Spark OE Spectrometer | PMI-MASTER Pro2

If you''re trying to prevent grade mix-ups of incoming and outgoing materials, conduct material verification and quality control, or maximise profits in a scrapyard then

Mobile Optical Spectrometer | Spark OES | Hitachi High

Mobile Optical Emission Spectrometers Spark mobile optical emission spectrometers (OES) excel at providing full chemistry of critical alloy elements at

What is Positive Material Identification | PMI Definition & Equipment

POSITIVE MATERIAL IDENTIFICATION METHODS PMI equipment can be classified into types: portable (handheld), mobile, and non-portable equipment. Common examples of handheld and

PMI-MASTER Smart

This article details the capabilities of the PMI-MASTER Smart, a portable optical emission spectrometer for metal analysis.

Instruments for optical emission spectrometry (OES)

Spark optical emission spectrometry (OES) is the most reliable and established analytical technique to determine the mass fraction or identification (Positive Material Identification, PMI) of metals and their

SPECTRO_ xSORT_PMIBrochure_eng dd

SPECTRO xSORT For refineries, power plants, and petrochemical complexes, positive material identification (PMI) plays a critical role in ensuring process integrity — as well as facility and

PMI-Master Smart

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PMI-MASTER Smart meets the latest technical standards and is the first truly portable optical emission spectrometer for metal analysis. Thanks to its light weight and small size, the PMI-MASTER Smart

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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