

FOUNDRY-MASTER Pro2



FOUNDRY-MASTER Pro2: the first choice for recycling companies

FOUNDRY-MASTER Pro2's fast and precise metal analysis allows Jansen Recycling to separate their recycled nonferrous material while ensuring the highest product quality, as a cost-effective alternative to a high-end spectrometer.

Jansen Recycling was founded in 1930 and over three generations has built up over 80 years of experience in the scrap and metal industry. The company is today the fastest growing metal recycling business in the Netherlands.

The company processes around 1.500 tonnes of nonferrous and 12.000 tonnes of ferrous and steel within an average week. Guaranteeing the quality of the various materials used during these operations is a hugely important part of this process.

OBJECTIVES

Customer: Jansen Recycling group

- | Trace analysis of copper and aluminium alloys
- | Further potential for steel and other materials analysis
- | Increase the speed of metals analysis
- | Guarantee product quality

RESULTS

- | Shorter measurement time
- | High precision, good limit of detections and stability
- | Easy to use
- | Low acquisition and operating costs



The need for fast and precise metal analysis stretches beyond product quality control. As a member of ISRI, a BIR Gold member, licensed for AQSIIQ, MRAI, BMRA, VDM and MRF, as well as being certified for ISO 9001:2008; ISO 14001:2004 and the CO2 performance ladder, Jansen prides itself on complying with a range of national and international environmental, labour, safety, radioactivity and transportation regulations.

With metal analysis so critical to its ongoing success, Jansen Recycling needs analysers that can consistently provide the best results, even in fast-paced, high volume environments.

This is where the Hitachi High-Tech OES FOUNDRY-MASTER Pro2 comes in.

For high volume recycling environments

While HHXRF analysers are a standard analytical tool for recyclers to separate and sort metals, OES is increasingly important for companies in the melting sector and global aluminium and copper producers that require high quality grade specific separated recycled materials.

For a company like Jansen, OES offers reliable, accurate and precise analytical elemental analysis at the lowest detection limits. It can assure the presence and composition of alloying elements on one hand and even more important it verifies the absence of unwanted tramp elements on the other hand.

Working alongside two Hitachi High-Tech handheld XMET 8000 analysers, the company's FOUNDRY-MASTER Pro2 is a crucial part of maintaining a high-volume throughput while ensuring quality never has to be sacrificed for speed. The chemical composition of all incoming and outgoing materials is sampled as part of Jansen Recycling's process. Depending on the material, they either use and XRF handheld or their stationary spark OES.

This means the company can assure a high level of quality while also guaranteeing proper planning for melting campaigns.

Hitachi's OES meets all requirements

Jansen Recycling has used stationary OES equipment for decades. The instrument they most recently had in use was a huge Photomultiplier Tubes (PMT) detector-based system that was outdated after 20 years of usage as it was not possible to update the system for the analysis of other matrices like steel and iron.

The instrument was only set up and calibrated for copper and aluminium alloys. This is typical of PMT based systems as their optical design is limited to specified and limited element selections for geometrical reasons (due to the size of the tubes). Once setup, an extension to cover other elements is very expensive or even impossible.

Semiconductor detector-based systems, such as FOUNDRY-MASTER Pro2, have a number of important advantages over their larger PMT counterparts. They're compact size in while still fully covering the total wavelength range important for the determination of elements within OES from 120 nm up to 800 nm.

While exploring their options to upgrade or replace their old PMT system, Jansen Recycling group visited Hitachi High-Tech Analytical Science OES manufacturing site near Düsseldorf, Germany. While there, they tested Hitachi High-Tech's most advanced stationary OES, the FOUNDRY-MASTER Pro2 equipped with the latest CMOS sensor technology.

The team saw that Hitachi's semiconductor-based system met all their requirements for analytical performance across all parameters such as accuracy, precision and detection limits. Additional benefits, including full calibration for 10 matrices (Fe, Al, Cu, Ni, Co, Zn, Sn, Pb, Ti, and Mg) and the possibility to extend ranges and calibrations in the future, made their decision to upgrade to the FOUNDRY-MASTER Pro2 easy.

As well as the allowing the Jansen Recycling team to do everything that they did with their old PMT, a number of Hitachi High-Tech's distinct features offered the possibility of working more effectively and efficiently.



A cost-efficient alternative to high-end

In comparison to high-end OES, based on PMT technology, Hitachi's semiconductor-based system is not only significantly lower in acquisition but also in operating costs. High-end OES cost 15 to 50% more than the FOUNDRY-MASTER Pro2, low argon consumption and little maintenance requirements are going easy on resources. Getting a big device back up and running will usually take one or two days, as the maintenance of these machines can be complex.

Intuitive interface

SpArcfire, the intuitive user interface for Hitachi High-Tech stationary OES, delivers all functionalities for routine analysis of metals at a glance.

In addition to being incredibly easy to use, it comes with automatic storage and report functions and databases, making the operator's life as easy as possible.

The Hitachi GRADE Database

Excellent analytical performance is essential, but what is really crucial for a proper identification of the material is a comprehensive and up to date grade database.

The integrated GRADE Database includes global and local standards. There are more than 1,500 copper alloys and more than 30,000 aluminium grades from all over the world. Chemical compositions, mechanical and physical properties, cross-references and more can be readily viewed. So international requests for components with European, American or Asian standards can be easily met with the GRADE Database.

FOUNDRY-MASTER Pro2: ideal for recycling companies

The FOUNDRY-MASTER Pro2 uses high resolution optics to deliver optimum performance for the analysis of metal samples of all kinds of scrap. Even turnings and cable rests can be analysed after a quick re-melting process with a small induction furnace.

Giving you precise analyses with low detection limits within seconds, the FOUNDRY-MASTER Pro2 ensures a high quality of incoming and outgoing materials and the absence of tramp or hazardous elements.

It is meeting all requirements of metals recycling business despite lower acquisition and operating costs than high-end PMT based spectrometers.



BENEFITS OF HITACHI DEVICES

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The spark spectrometers from Hitachi set themselves apart with their unique Jet-Stream technology. Normally OES that works with argon and where the sample does not fully cover the spark opening returns falsified measurement results. With the Jet-Stream technology, the electrode is protected by a flow of argon so that even samples with complex and irregular shapes can be analysed easily.

All models are straightforward and intuitive to use and the maintenance effort is minimal.

