

Making cement greener and cleaner

Alternative Fuels (AFs) are being increasingly used in cement kilns to replace fossil fuels and contribute to a more environmentally compliant manufacturing process. However, these AFs need to be conditioned and validated for their suitability in kilns while meeting the regulatory emission norms. They can be liquids, solids, slurries of inorganic or organic nature and can represent complex chemistry to deal with.

X-Ray Fluorescence (XRF) is one of the most suited analytical techniques for the elemental analysis of these diverse materials before they are qualified for incineration in cement kilns. Analysis of toxic or heavy elements, undesirable elements for cement quality control can be achieved easily using XRF with little or no sample preparation.



Top list of alternative fuels

Solid waste fuels

- Petroleum coke (“petcoke”)
- Paper waste
- Rubber residues
- Pulp sludge
- Used tires
- Battery cases
- Plastics residues
- Wood waste
- Domestic refuse
- Rice chaff
- Refuse derived fuel
- Nut shells
- Oil-bearing soils
- Sewage sludge

Liquid waste fuels

- Tar
- Chemical wastes
- Distillation residues
- Waste solvents
- Used oils
- Wax suspensions
- Petrochemical waste
- Asphalt slurry
- Paint waste
- Oil sludge



Thermo Scientific XRF solutions for cleaner, safer and healthier industrial environment and energy efficiency



Thermo Scientific™ ARL™ OPTIM'X Laboratory WDXRF Spectrometer

- Can handle all kinds of AFs (liquids, solids, granules and loose powders) and totally unknown samples with Thermo Scientific™ UniQuant™ Software
- High resolution and sensitivity for light elements
- Lowest cost per analysis (minimal peripheral dependence)
- High productivity with unattended operation (batch-mode or with optional automation)
- Can fully back-up the main XRF instrument for cement oxides

Thermo Scientific™ ARL™ QUANT'X High-Performance EDXRF Spectrometer

- Convenient and transportable for ad-hoc analysis of AFs in the lab or in the field
- Highly flexible and easy sample handling for all types of materials and forms
- Qualitative, quantitative and fingerprinting for rapid screening
- Integrated UniQuant Software for elemental quantification of unknown materials without reference calibrations or standards



Thermo Fisher Scientific offers a wide range of X-ray fluorescence capabilities from convenient hand-held analyzers for field applications or bench-top instruments to high-end laboratory instruments for flexibility and performance depending on the analytical needs.

Find out more at thermofisher.com/xrf

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