CASE STUDY

AMETEK LAND GAS AND DUST MONITORS HELP JELD-WEN ACHIEVE EMISSIONS COMPLIANCE

INTRODUCTION

JELD-WEN has implemented AMETEK Land's flue gas analysers and opacity and dust monitors at its door manufacturing facility in Penrith, United Kingdom, to help achieve emissions compliance.

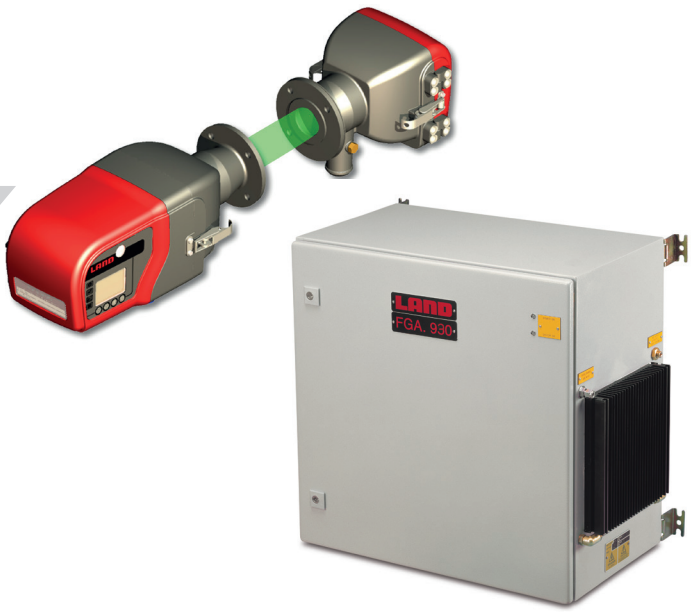
ABOUT JELD-WEN

JELD-WEN is one of the world's largest manufacturers of windows and doors with operations in 20 countries, including five factories in the UK that manufacture timber windows and interior and exterior doors. The company is seen as a world leader in manufacturing energy efficient products and upholds high standards when it comes to sustainability. JELD-WEN's door manufacturing facility in Penrith produces 35,000 timber and veneered doors every week, and as a result produces a large amount of wood waste.

THE CHALLENGE

As a high-volume manufacturer, JELD-WEN was keen to reduce its waste, lower emissions and implement a more sustainable fuel source. Working with a specialist energy contractor, JELD-WEN identified biomass boilers, utilizing waste wood from its manufacturing operations as the most suitable technology. However, as the site is governed by local authority legislation, the company is required to monitor and control the emissions from its boiler. This is where an AMETEK Land emission monitoring solution was required.

The company previously had an old gas fired boiler, which was fitted with an AMETEK Land FGA 930 flue gas emissions analyser and a dust monitor. As part of the upgrade to biomass, the old boiler was decommissioned.



"This was a challenging project which required a robust and highly effective solution. The combination of FGAs and 4400* from AMETEK Land will provide peace of mind that JELD-WEN is complying with legislation and their emissions are being minimised."

Graham Clark,
Focal Point Technology

This installation used AMETEK Land 4200+ opacity monitors, which have recently been re-branded as the 4400. The specifications have not changed.

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AMETEK LAND GAS AND DUST MONITORS HELP JELD-WEN ACHIEVE EMISSIONS COMPLIANCE

4400
Opacity Monitoring

FGA Series
Compact Multigas CEMS

Two industrial biomass boilers were installed that would burn wood waste from JELD-WEN's production process in order to heat its factory and offices, whilst enabling the company to reduce its waste output significantly and lower its carbon footprint. A brand-new steel framed plant room was built to house the new boilers, plus a new two-storey office complex, two new flues and a new fuel delivery system, with fuel stored in an external silo, adjacent to the factory.

The large steam boilers were customised to include a specially designed moving grate combustion chamber, modified to suit dusty fuel. With a continuous self-replenishing fuel source, a large shredder was also installed at the factory to enable the reject wood and timber waste product to be chopped up and transported to the main silos for storage.

THE SOLUTION

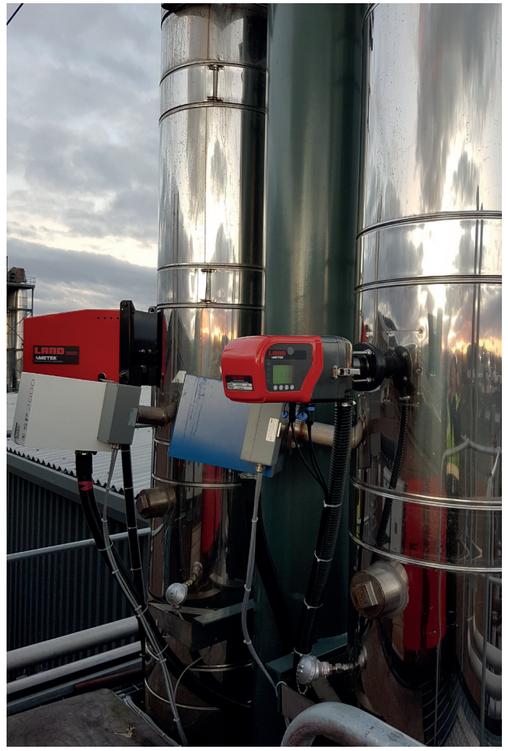
Focal-Point Technology, an AMETEK Land distributor, supplied and installed an FGA 930 flue gas analyser and a 4400 opacity and dust monitor on each of the two new stacks. The data acquisition system was provided by EMACCS.

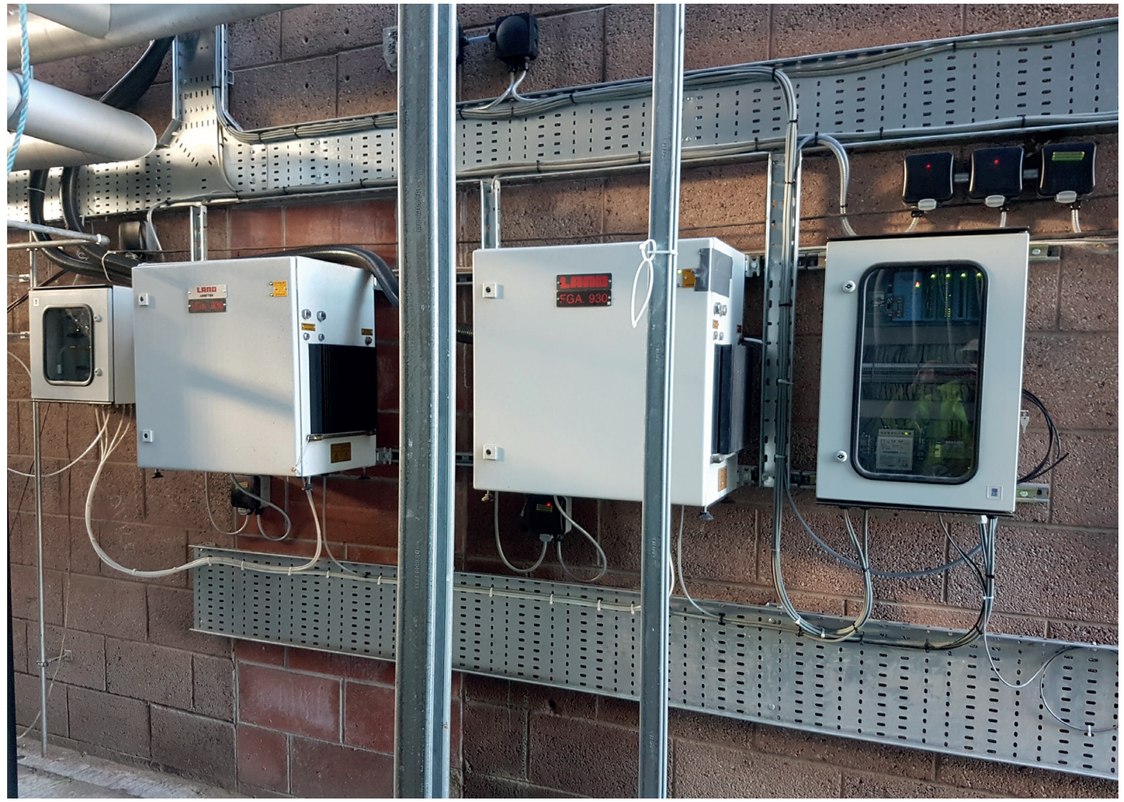
The FGA provides accurate, reliable measurement of carbon monoxide, nitric oxide and oxygen in flue gases. It is an integrated solution for Continuous Emissions Monitoring Systems (CEMS) applications in smaller combustion processes and is ideally suited to JELD-WEN's biomass application. It allows them to benefit from better process control, which lowers fuel costs and keeps emissions within compliance levels.

A pair of sensors is used to analyse each of the species in the sampled flue gas, alternating every 30 minutes, which extends sensor lifetime and ensures a stable baseline, delivering high sensitivity and low drift.

The two new 4400 dust and opacity monitors are a cost-effective solution for the continuous monitoring of dust, smoke and particulates in industrial applications. The lightweight design of the 4400 made installation and positioning simple at the JELD-WEN plant. It offers them low-maintenance as it has no moving parts, which ensures it operates reliably and continuously for immediate cost and performance benefits.

The 4400 is a cross-duct design with a transceiver mounted on one side and a passive retro-reflector mounted on the other side of the stack. It uses AMETEK Land's patented three-LED light source to effectively monitor the dust emissions. An air purge protects the delicate optical components from the hot, dirty process conditions.





All the signals from the analysers are fed into an EMACCS Continuous Emission Monitoring Data Acquisition System (EmiDAS) to allow consistent and accurate monitoring.

JELD-WEN's site is in Penrith and regulated by the local authority. The AMETEK Land instruments monitor compliance to Process Guidance Note 1/12(13) for combustion of waste wood. This gives guidance on the conditions appropriate for the control of emissions into the air from the combustion of fuel manufactured from, or comprised of, waste wood in appliances.

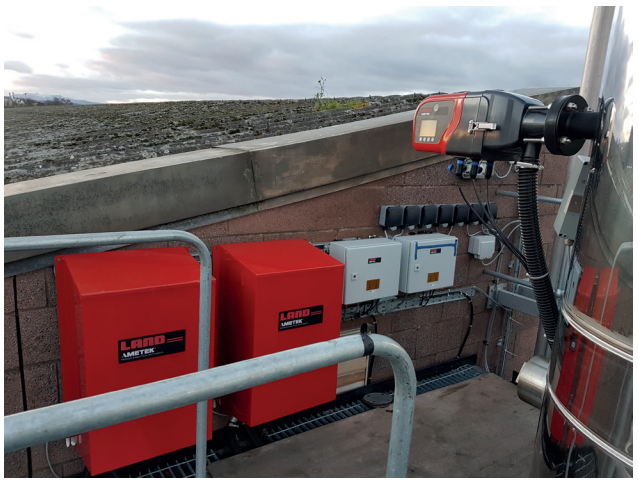
Graham Clark, Focal Point Technology comments "This was a challenging project which required a robust and highly effective solution. The combination of FGAs and 4400 from AMETEK Land will provide peace of mind that JELD-WEN is complying with legislation and their emissions are being minimised. This equipment is suitable for use in many different industrial processes and is rapidly growing for use in biomass, waste wood combustion, and Small Waste Incineration Plant (SWIP) applications."

Hamish White, Plant Manager from JELD-WEN in Penrith comments "The installation of the new biomass system was an important investment for us, and we are pleased to receive support from the Government's Renewable Heat Incentive (RHI) scheme, which provides financial payback for the use of renewable fuels such as biomass boilers, air and ground source heat pump and solar thermal. The AMETEK Land flue gas and dust analysers and monitors complete the system by ensuring continuous emissions monitoring."

Derek Stuart, Global Product Manager – Power, Combustion and Environmental, AMETEK Land said: "The simplicity and reliability of the FGA and 4400 make them an excellent choice for emissions

measurements on small boilers such as these. The 4400 shares the same optical and electronic design as our industry-leading 4500 MkIII opacity monitor but omitting the automatic calibration check allows us to offer it at a more attractive price."

This new system will help JELD-WEN to improve its sustainability credentials, reducing both its particulate emissions, wood waste levels and carbon footprint. In addition, the company will benefit from lower energy and waste disposal costs as well as additional income from the Renewable Heat Incentive scheme. Emissions levels at JELD-WEN's Penrith facility will be carefully and consistently monitored by the robust FGA 930 and 4400 to ensure compliance with legislation.



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4400
OPACITY AND
DUST MONITORING

FGA SERIES
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