



BIOMASS FUELS

ENHANCING SAFETY, EFFICIENCY AND ENVIRONMENTAL PERFORMANCE

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AMETEK, INC. IS A LEADING GLOBAL MANUFACTURER OF ELECTRONIC INSTRUMENTS AND ELECTROMECHANICAL DEVICES WITH ANNUAL SALES OF APPROXIMATELY \$4.0 BILLION.

AMETEK HAS OVER 15,000 COLLEAGUES AT MORE THAN 150 MANUFACTURING LOCATIONS AROUND THE WORLD. SUPPORTING THOSE OPERATIONS ARE MORE THAN 100 SALES AND SERVICE LOCATIONS ACROSS THE UNITED STATES AND IN 30 OTHER COUNTRIES AROUND THE WORLD.

LAND AMETEK®

AMETEK Land has been manufacturing precision measuring equipment since 1947. We are specialists in non-contact temperature measurement and combustion monitoring with applications across diverse industries such as steel and glass making, power generation and cement manufacture.

Our success rests on award-winning technologies that push the limits demanded by the ever-increasing technical demands of global industry. Aligned with our expert knowledge, we meet the challenges of a wide range of applications, delivering process safety, process control, and product quality our customers depend on.

AMETEK® PROCESS INSTRUMENTS

AMETEK Process Instruments is a worldwide manufacturer of process analyzers and instrumentation. We focus our experience on designing new, innovative analyzers that help our customer achieve the highest levels of productivity and quality.

It is through this focus that we have created some of the most capable technologies in the world. Our primary focus in analyzer design is reliability. We understand that you must have confidence that the analyzer will provide the information that you need when you need it.

Biomass fuels such as wood pellets, bagasse and hog fuel are susceptible to spontaneous heating and spontaneous combustion. These problems can occur at any stage in their storage, production and transportation. If spontaneous combustion can be detected at an early stage, preventative action can be taken before significant loss or damage can occur.

AMETEK Land offers a full range of detection options for every stage of the combustion process. Available technologies include infrared thermal imaging, infrared line-scanning and carbon monoxide gas detection. The best measurement

choice depends on the location and the nature of the risk.

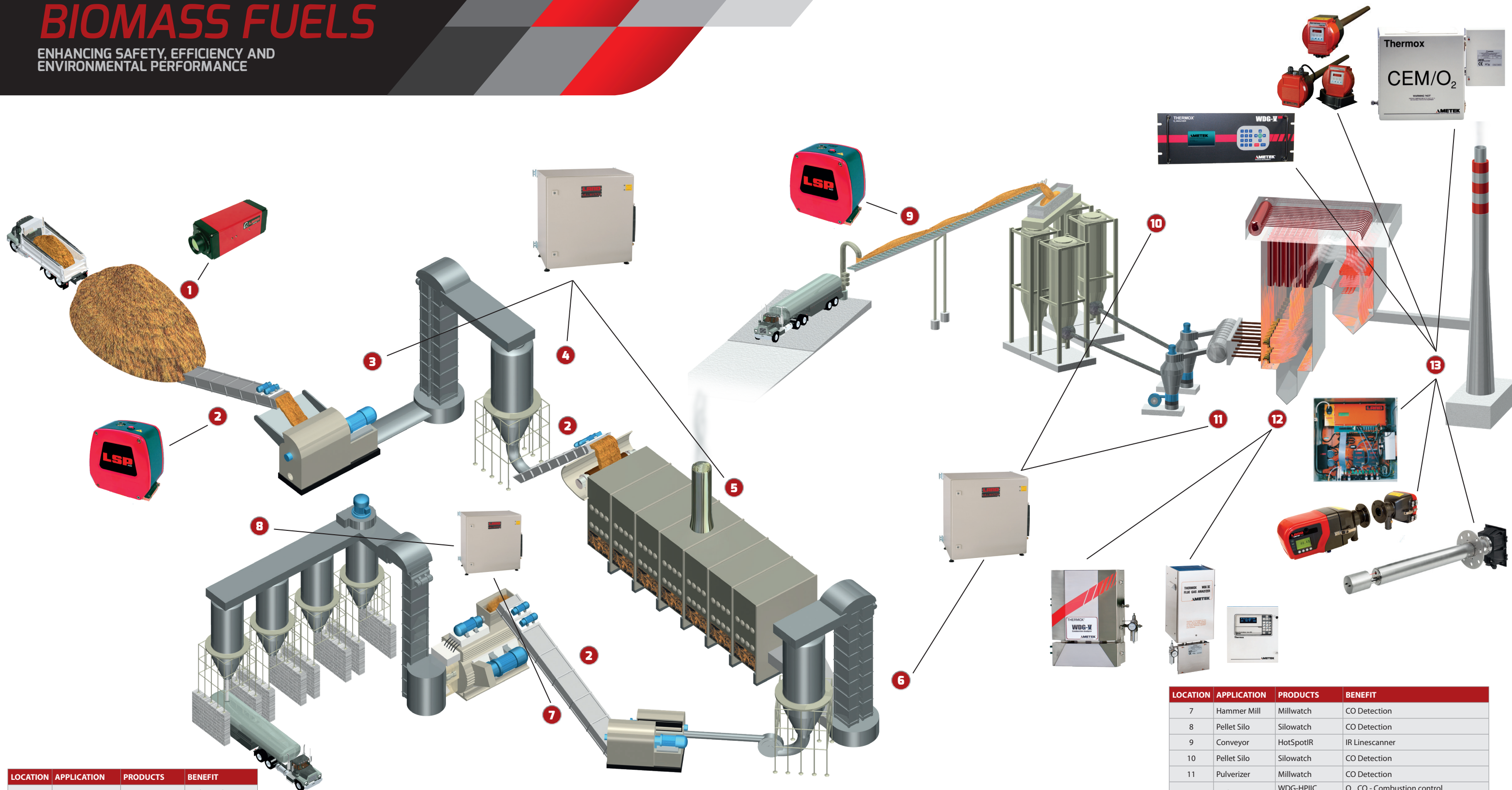
In addition, AMETEK Process Instruments offers a range of instruments which can be used to improve the efficiency of biomass-fueled boilers and to monitor emissions of pollutant gases and particulate matter.



STORAGE PILE AND CONVEYOR MONITORS DETECT HOT SPOTS CAUSED BY SPONTANEOUS HEATING OF STORED BIOMASS

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LOCATION	APPLICATION	PRODUCTS	BENEFIT
1	Open Storage	ARC Imager	IR Thermal Imager
2	Conveyor	HotSpotIR	IR Linescanner
3	Hammer Mill	Millwatch	CO Detection
4	Wet Storage Silo	Silowatch	CO Detection
5	Dryer	Millwatch	CO Detection
6	Dry Storage Silo	Silowatch	CO Detection

LOCATION	APPLICATION	PRODUCTS	BENEFIT
7	Hammer Mill	Millwatch	CO Detection
8	Pellet Silo	Silowatch	CO Detection
9	Conveyor	HotSpotIR	IR Linescanner
10	Pellet Silo	Silowatch	CO Detection
11	Pulverizer	Millwatch	CO Detection
12	Boiler	WDG-HPIIC WDG-VCM	O ₂ , CO - Combustion control O ₂ , CO, CH ₄ - Control & Safety
13	Stack	4650 - PM WDG-1200/1210 WDG-V RM CEM/O2 HUMOX 4500 MkIII FGA 900	CEMS Stack O ₂ for CEMS CEMS O ₂ Stack Moisture Opacity CO, NO, O ₂

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PROCESS INSTRUMENTS ANALYZERS

WDG-VCM

Fast oxygen and combustibles measurement for combustion optimization and control using a zirconia sensor. Optional methane sensor detects explosive mixtures in the boiler before lightoff.



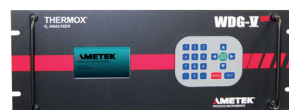
WDG-HPIIC

Oxygen and combustibles measurement for combustion optimization and control using a zirconia sensor. Convective sampling allows operation in boilers with high levels of dust.



WDG-V RM

Rack-mount oxygen analyzer employing the same zirconia sensor as the WDG-V. Ideal for use in CEMS and other extractive sampling applications.



CEM/O₂ HUMOX

Uses two oxygen sensors to measure the water vapor content of stack gases. One unit measures hot, wet gases and the other measures cold, dry gas.



AMETEK LAND COMBUSTION & EMISSIONS

4500 MkIII

Accurate and reliable opacity monitor for compliance emissions measurements in accordance with PS-1, ASTM D6216 and QAL1.



MILLWATCH/SILOWATCH

Advance warning of the onset of biomass combustion through the early detection of the build-up of carbon monoxide in silos, enclosed storage vessels and fuel mills.



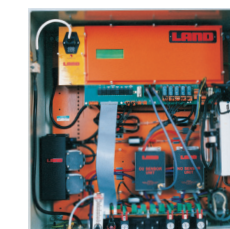
LANCOM 4

Portable flue gas analyzer with up to 9 gas sensors for combustion optimization and emissions measurement. Integrated sample conditioning and data logging make measurements fast and easy.



FGA 900

Compact CEMS for measurements of CO, NO and O₂ in biomass boilers. The all-in-one design simplifies installation and servicing.



4650-PM

PM-CEMS • PM-CPMS

Continuous measurement of the concentration of low range particulate matter in stacks and ducts where condensed water is not present.



AMETEK PRODUCTS HELP PLANT OPERATORS IMPROVE SAFETY, EFFICIENCY AND ENVIRONMENTAL PERFORMANCE.

NON-CONTACT TEMPERATURE MEASUREMENT

WDG 1200

Insitu zirconia oxygen analyzer for combustion optimization and control. Integrated control electronics allows for simple installation.



WDG 1210

Insitu zirconia oxygen analyzer for combustion optimization and control. Separate wall-mounted control electronics allow the user interface to be located in a convenient location.



ARC IMAGER

24-hour infrared thermal monitoring of biomass storage piles in open or semi-closed spaces with alarms triggering when a hotspot is detected.



HOTSPOTIR

Continuous infrared thermal line scanning detects small hot inclusions on the conveyor with alarms set to operate an inerting or diverting system to prevent expensive belt damage.

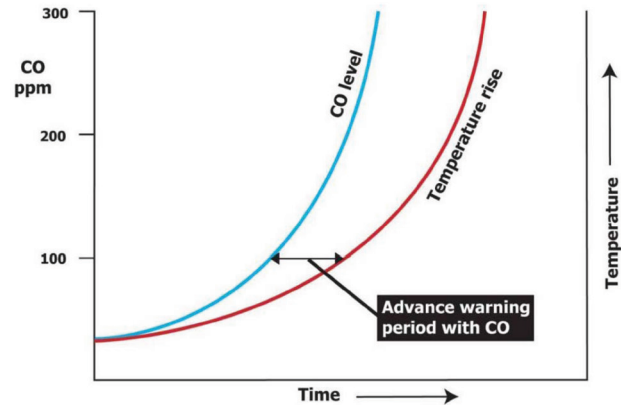


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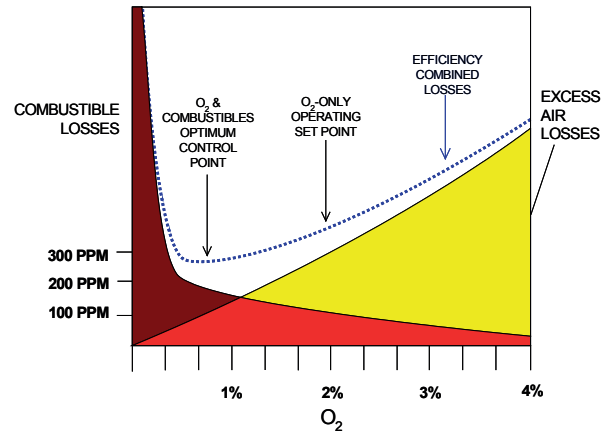
EARLY DETECTION OF SPONTANEOUS HEATING AND SPONTANEOUS COMBUSTION

Both carbon monoxide measurements (CO) and non-contact temperature measurements can be effective in detecting the early stages of spontaneous combustion. CO is fast and very sensitive, but only works in enclosed spaces such as silos and pulverizers. Temperature measurements are somewhat less sensitive, but are effective in open storage areas and conveyors.



Fire Advanced Warning - CO vs Temperature

Optimising the efficiency of a combustion process reduces fuel costs, reduces NO_x emissions and increases the operational safety of a boiler. Measurements of both oxygen and combustibles are necessary to prevent the boiler from inadvertently being placed into an unstable, fuel rich condition.



SEE OUR OTHER RELATED LITERATURE:



MODEL 4500mkIII
COMPLIANCE DUST AND OPACITY MONITOR



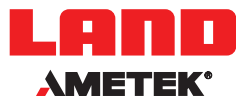
WDG VCM
COMBUSTIBLE MEASUREMENT



MILLWATCH/
SILOWATCH



CEM O₂ /
HUMOX



DISCOVER HOW OUR BROAD RANGE OF PRODUCTS AND SERVICES WE OFFER FOR A SOLUTION FOR YOUR PROCESS

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