



# ***CEMENT & LIME***

ACCURATE MEASUREMENT SOLUTIONS ACROSS THE MANUFACTURING PROCESS

**AMETEK**<sup>®</sup>  
PROCESS & ANALYTICAL INSTRUMENTS



# CEMENT & LIME

ACCURATE MEASUREMENT SOLUTIONS ACROSS THE MANUFACTURING PROCESS

AMETEK, INC. IS A LEADING GLOBAL MANUFACTURER OF ELECTRONIC INSTRUMENTS AND ELECTROMECHANICAL DEVICES, WITH ANNUAL SALES OF APPROXIMATELY \$4 BILLION.

AMETEK HAS MORE THAN 15,000 COLLEAGUES AT MORE THAN 150 MANUFACTURING LOCATIONS AROUND THE WORLD. THESE OPERATIONS ARE SUPPORTED BY 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 such diverse industries as steel, 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**<sup>®</sup>  
PROCESS INSTRUMENTS

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

Through this focus, we have created some of the most capable technologies in the world. Our primary emphasis in analyser design is reliability. We understand that you must have complete confidence that the analyser will provide the information you need, when you need it.

Cement and lime manufacturing processes both involve mixing inorganic minerals calcined at high temperatures, typically using rotary kilns. The raw materials may be taken through a number of preheating and precalcining stages before being charged in the rotary kiln.

For cement, the clinker produced is cooled and then milled to create a fine powder. For lime, carbon dioxide is removed from the kiln product to produce lime. Both manufacturing processes release emissions which must be monitored.

AMETEK Process & Analytical Instruments offers a comprehensive range of detection options for every stage of these manufacturing processes. Our solutions

provide key temperature and gas analysis measurements to support your process control and product quality.

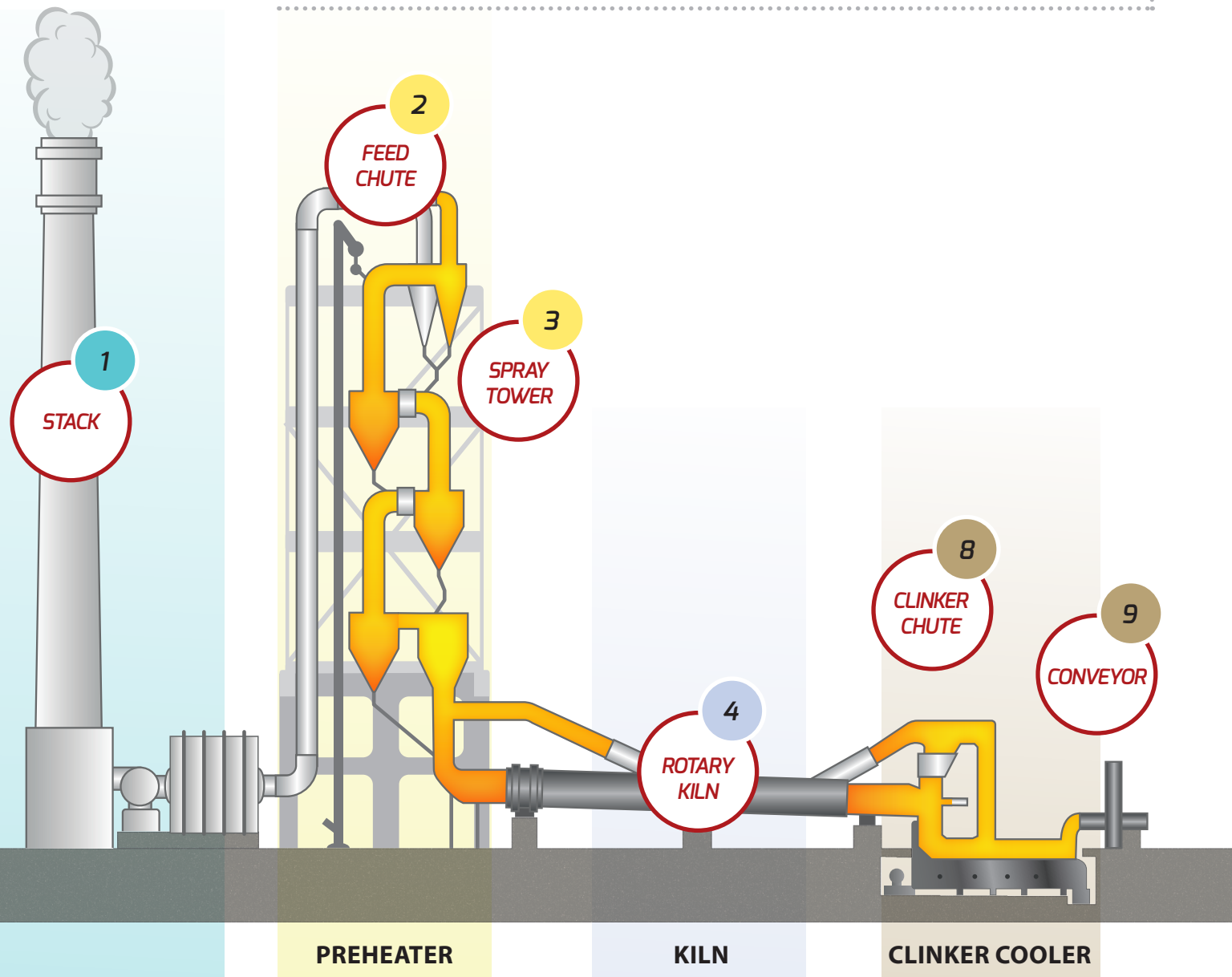
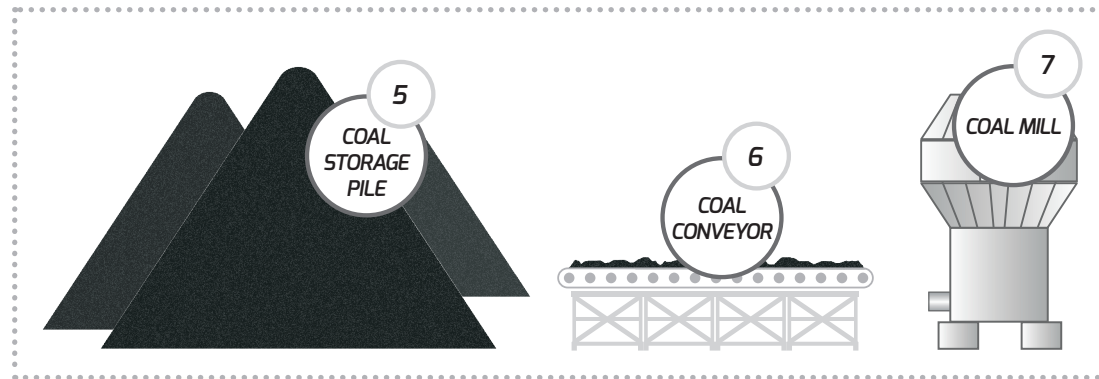
These instrument solutions also monitor flue gases to detect harmful emissions and ensure efficient combustion, and provide safety checks by detecting hotspots in storage and conveyor areas. The best product for each measurement depends on the nature of the application and the location where the measurement is taken.

Available technologies include infrared thermal imaging, infrared linescanning, opacity / PM monitoring and gas detection. AMETEK's monitoring equipment can be supplied with hazardous area approvals to ensure it does not pose an explosion risk in hazardous locations.

**SPOT PYROMETER RANGE**  
MAKE ACCURATE TEMPERATURE MEASUREMENTS OF THE PRODUCT AND BURNING ZONE IN THE ROTARY KILN, OVERCOMING UP TO 95% DUST OBSCURATION.

# CEMENT & LIME

ACCURATE MEASUREMENT SOLUTIONS ACROSS THE MANUFACTURING PROCESS



LOCATION	APPLICATION	MEASUREMENT	SOLUTION			
			Cement	Lime		
1	Stack	Emissions monitoring	4500 MkIII	4500 MkIII		
			4650-PM	4650-PM		
			Lancom 4	Lancom 4		
				Flue gas oxygen	WDG-1200/1210	
				CO monitoring	Model 9100	
				Oxygen (CEM)	WDG-V RM	
				Flue gas moisture	CEM/O2 HUMOX	
2	Raw material feed chute	Material build-up	FTI-E Cyclops L			
3	Spray tower	Material build-up	ARC			
4	Rotary kiln	Shell temperature	LSP-HD 62	LSP-HD 62		
		Product temperature	SPOT R100			
		Burning zone temperature	SPOT R100 NIR-B	SPOT R100 NIR-B		
		Flue gas oxygen, combustibles and hydrocarbon	WDG-HPIIC			
			WDG-VC w/ blowback			
		WDG-VCM w/ blowback				
5	Coal storage pile	Hot spot detection	ARC			
6	Coal conveyor	Hot spot detection	HotSpotIR			
7	Coal mill	CO detection	Millwatch			
8	Clinker chute	Product temperature	SPOT			
9	Clinker cooler/conveyor	Hot spot detection	HotSpotIR			
10	Plant wide	Flue gas analysis	Lancom 4	Lancom 4		
		Spot temperature	Cyclops L			

# CEMENT & LIME

ACCURATE MEASUREMENT SOLUTIONS ACROSS THE MANUFACTURING PROCESS

## AMETEK LAND NON-CONTACT TEMPERATURE MEASUREMENT

### FTI-E

A high-resolution, fast thermal imager designed to provide detailed temperature information in harsh industrial environments.



PROCESS IMAGING

### ARC IMAGER

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



PROCESS IMAGING

### SPOT

Single-spot, non-contact infrared pyrometers, optimised for a wide span of temperature ranges and process requirements.



FIXED SPOT THERMOMETERS

### 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 or downstream fires.



LINESCANNING

### CYCLOPS L

Portable, handheld, non-contact spot pyrometers enabling easy and accurate point-and-measure temperature readings.



PORTABLES

### LSP-HD

Ethernet-controlled compact infrared linescanner, designed to produce advanced thermal imaging in moving processes.



LINESCANNING

### NIR-B

Short wavelength borescope thermal imager providing high-resolution images with a wide, 90-degree view, in a through-the-wall design.



PROCESS IMAGING

## SERVICES

Our in-house service centres provide after-sales services to ensure you get the best performance from your system. This includes technical support, certification, calibration, commissioning, repairs, servicing, preventative maintenance and training. Our highly trained technicians can also attend your site to cover planned maintenance schedules and repair emergency breakdowns.

## AMETEK LAND COMBUSTION & EMISSIONS MONITORING

### MILLWATCH/SILOWATCH

Advance warning of the onset of combustion through the early detection of carbon monoxide in silos, enclosed storage vessels and coal grinding mills.



COMBUSTION & EMISSION MONITORING

### 4650-PM

Continuous measurement of the concentration of low-range particulate matter in stacks and ducts. Can be used as a PM-CEMS or PM-CPMS.



COMBUSTION & EMISSION MONITORING

### LANCOM 4

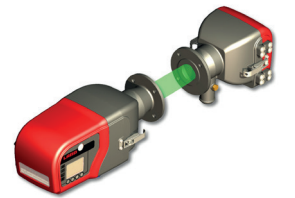
A portable flue gas analyser featuring up to nine sensors for emissions measurement and combustion optimisation, used for stack emission monitoring.



COMBUSTION & EMISSION MONITORING

### 4500 MKIII

Industry-leading opacity monitor for PS-1 and ASTM D6216 compliance measurements. Installed on the stack or ducts leading to the stack.



COMBUSTION & EMISSION MONITORING

### MODEL 9100

Cross-stack, in-situ carbon monoxide monitor for direct continuous measurement, to provide efficient combustion control of any boiler system.



COMBUSTION & EMISSION MONITORING

### WDG-1200/1210

Stack-mounted, in-situ oxygen probe for combustion optimisation, featuring integrated control and display electronics.



COMBUSTION & EMISSION MONITORING

**AMETEK LAND HAS BEEN MANUFACTURING PRECISION MEASUREMENT INSTRUMENTATION SINCE 1947.**

We are specialists in non-contact temperature measurement and combustion monitoring with applications across diverse industries such as steel and glassmaking, electricity generation and cement manufacture.

As part of AMETEK Process & Analytical Instruments Division since 2006, our customers benefit from the worldwide AMETEK sales and service team.

# CEMENT & LIME

ACCURATE MEASUREMENT SOLUTIONS ACROSS THE MANUFACTURING PROCESS

## AMETEK PROCESS INSTRUMENTS ANALYSERS

### WDG-HPIIC

A direct-mounted convection driven combustion analyser providing a continuous measurement of oxygen and combustibles in applications with high particulate levels in the gas stream.



COMBUSTION & EMISSION MONITORING

### WDG-VC w/blowback

Fully field-serviceable oxygen and combustibles analyser with a close-coupled extractive design for a fast response in a wide range of flue gas applications



COMBUSTION & EMISSION MONITORING

### WDG-VCM w/blowback

Flue gas analyser using zirconium oxide and dual hot-wire catalytic detectors to measure oxygen, combustibles and hydrocarbons in applications up to 1648°C (3000°F).



COMBUSTION & EMISSION MONITORING

### WDG-VRM

Rack-mounted oxygen analyser that can be used alone or an integrated part of a continuous emissions monitoring system.



COMBUSTION & EMISSION MONITORING

### CEM/O<sub>2</sub> HUMOX

Designed to measure net oxygen and moisture content in flue gas and process applications, to correct emissions, ensure product quality or minimise stack corrosion.



COMBUSTION & EMISSION MONITORING

SEE OUR OTHER RELATED LITERATURE:



MILLWATCH/  
SILOWATCH  
PRODUCT  
BROCHURE



ARC IMAGER  
PRODUCT  
BROCHURE



WDG VCM  
PRODUCT  
BROCHURE



CEM O<sub>2</sub> / HUMOX  
PRODUCT  
BROCHURE

**LAND**  
AMETEK®

**AMETEK**®  
PROCESS INSTRUMENTS

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

150 Freeport Road, Pittsburgh, Pennsylvania 15238 USA

WWW.AMETEK-LAND.COM | WWW.AMETEKPI.COM