FireSight

by Lenox Instrument Company

COST COMPARISON OF TWO DIFFERENT FURNACE CAMERA VENDORS:

Lenox Instrument Company and a Well-known Competitor

Conserve compressed air, decrease furnace fuel consumption, and reduce NOx emissions in the steel industry with Lenox Instrument Company FireSight Furnace Cameras. These cameras are ideal for high quality video monitoring of all types of industrial furnaces, heaters, and boilers to ensure safe and efficient operation in your plant and in the environment. Lenox high-temperature furnace camera systems allow control room personnel to observe material flow processes.

The following calculations of associated costs of plant air and Lenox and competitor products are based on the premise that plant air costs about $.25 per 1000 standard cubic feet (SCF)*.

(X)SCFM x 60min./Hr. x 8 Hrs./shift x 3 shifts/day x 365 days/year
= Volume in SCF/year.
Volume x $.25/1000 SCF = Cost of plant air/year.

So using 2 SCFM purge air consumption for the Lenox camera versus 42 SCFM† for a well-known competitor:
2 SCFM x 525,600 min./year = 1,051,200 SCF/year and
42 SCFM x 525,600 min./year = 22,075,200 SCF/year.

Then:
22,075,200 SCF/year – 1,051,200 SCF/year =
21,024,000 SCF/year in excess air consumption using the competitor's system.

Converting to cost:
21,024,000 SCF/year x $.25/1000 SCF = $5256.00/year in plant air savings by using the Lenox Camera System.

Based on the calculations of compressed air savings for Lenox camera systems and those of a leading competitor, Lenox cameras use 120 Standard Cubic Feet per Hour (SCFH) compared to the competitors' 2520 SCFH, resulting in 21 times the amount of air consumption than the Lenox system. The total savings equates to 21 million SCFM per year and $5,000. per FireSight system, and for facilities with multiple units, the savings increase exponentially.

Why FireSight is the One and Only of its Kind

While other companies make claims of improved efficiency and superior optics for their furnace and boiler cameras, Lenox Instrument Company is the only one to deliver and back such claims by factual data. Lenox FireSight cameras offer 540 lines of resolution and sophisticated light volume control for the best image possible under any conditions. Most of our competitors' products are totally air cooled; Lenox offers both air cooled and water cooled models in various lengths up to 12 feet.

The FireSight remote viewing system is designed to be rugged and durable for the brutal atmosphere of the steel industry. The Lenox camera offers a dual-stage coolant system for enhanced reliability and continual performance. Competing products may cause production to come to a halt if the camera system shuts down due to overheating. The Lenox system features additional options, including but not limited to: Direct, Right Angle, and Forward Oblique Viewing; 15° to 90° field of view; and Zoom capabilities up to 5x.

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Potential Savings for Bottom-line Energy Efficiency

The following tables show fuel costs involved when heating from 100°F air to furnace temperatures. Any excess cold purge air introduced into the furnace will need to be heated thus requiring more energy to bring the furnace up to working temperature. For example, older cold air furnaces result in 50% combustion efficiency and twice the required fuel.

Cost of Excess Air†				
Temperature (°F)	1200	1500	1800	2000
Heat Content (Btu/ft^3)*	21.9	28.2	34.7	39.0
Air Volume (ft^3)	21,000,000	21,000,000	21,000,000	21,000,000
Heat To Air (BTU)	444,875,001	577,048,526	712,481,678	804,200,040
Combustion Efficiency	100%	100%	100%	100%
Net Heat Required (BTU)	444,875,001	577,048,526	712,481,678	804,200,040
Gas Price ($/MMBTU)‡	10	10	10	10
Net Cost ($)	$4,448.75	$5,770.49	$7,124.82	$8,042.00

Cost of Excess Air†				
Temperature (°F)	1200	1500	1800	2000
Heat Content (Btu/ft^3)*	21.9	28.2	34.7	39.0
Air Volume (ft^3)	21,000,000	21,000,000	21,000,000	21,000,000
Heat To Air (BTU)	444,875,001	577,048,526	712,481,678	804,200,040
Combustion Efficiency	80%	80%	80%	80%
Net Heat Required (BTU)	444,875,001	577,048,526	712,481,678	804,200,040
Gas Price ($/MMBTU)‡	10	10	10	10
Net Cost ($)	$5,560.94	$7,213.11	$8,906.02	$10,052.50

Cost of Excess Air†				
Temperature (°F)	1200	1500	1800	2000
Heat Content (Btu/ft^3)*	21.9	28.2	34.7	39.0
Air Volume (ft^3)	21,000,000	21,000,000	21,000,000	21,000,000
Heat To Air (BTU)	444,875,001	577,048,526	712,481,678	804,200,040
Combustion Efficiency	50%	50%	50%	50%
Net Heat Required (BTU)	444,875,001	577,048,526	712,481,678	804,200,040
Gas Price ($/MMBTU)‡	10	10	10	10
Net Cost ($)	$8,897.50	$11,540.97	$14,249.63	$16,084.00

† Calculations courtesy of FCE, LLC, Huntingdon Valley, PA
* Data derives from the North American Combustion Handbook
‡ Prices for industrial natural gas are estimated and vary by location

Using the above tables, it is easy to see that the net cost is substantially greater at 50% efficiency compared to 100% efficiency. Consequently, it becomes essential to perform accurate monitoring of steel operations and processes to ensure proper functionality and optimal energy output. There is another cost savings to using the Lenox furnace camera systems in that fuel savings can range from about $5,000. to as much as $16,000. per year per system dependent upon air temperature, combustion efficiency, and cost of fuel. Bottom-line savings and top-of-the-line service mean Lenox FireSight is the only choice for precise video monitoring in the steel industry.

Why You Can't Go Wrong with Lenox Instrument Company

Every Lenox FireSight Camera System is backed by our industry leading two-year warranty. In addition, installation and field service are available. Contact us today for a free on-site live demonstration and reduce your facility's carbon footprint and increase your ROI tomorrow.

* Cost used is from Exair & Kaeser websites
† Published information taken from the Competitor's website

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