

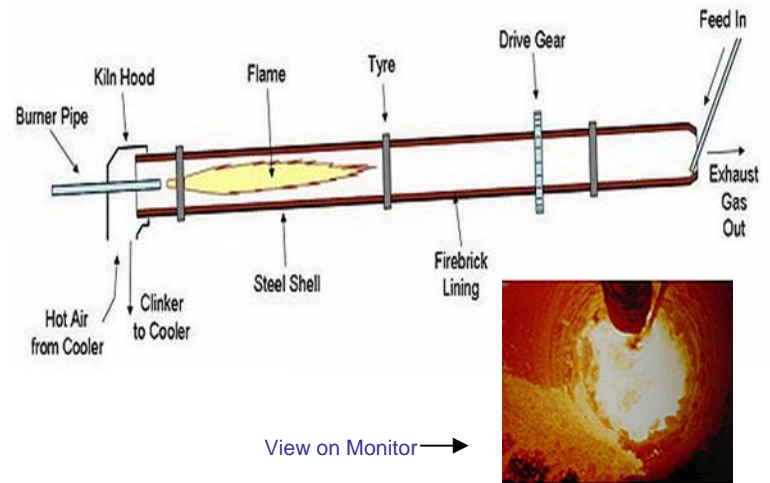
## HIGH-TEMPERATURE KILN CAMERA SYSTEMS

### CEMENT ROTARY KILN

#### Application Highlights

The Cement Rotary Kiln consists of a tube made from steel plate, and lined with firebrick. The tube slopes slightly and slowly rotates on its axis. Raw mix is fed in at the upper end, and the rotation of the kiln causes it to gradually move downhill to the other end of the kiln. At the other end fuel, in the form of gas, oil, coal, solvents, waste tires, and hazardous wastes is blown in through the "burner pipe", producing a large concentric flame in the lower part of the kiln tube. As material moves under the flame, it reaches its peak temperature (2600°F, 1426°C), before dropping out of the kiln tube into the cooler.

The **Lenox** High-Temperature Kiln Camera System is normally installed at the upper-left side of the kiln's firing hood and views in the same direction as the flame being blown from the burner pipe. Its 90° FOV covers the complete flame on the end of the feed pipe; the sidewalls, top and bottom of the kiln; and the clinker being formed. From a monitor in the control room, an operator can view in color into the kiln and gauge the efficiency of the combustion by monitoring the ignition from the pipe and the length, shape, color, and direction of the flame. Product material movement down the kiln can also be observed. Operators can adjust fuel feed, clinker cooling rates, and other important variables.



Additional Kiln Camera Systems can be installed to monitor the clinker cooling process and to monitor the texture of the clinker and excess dust levels which can cause kiln upsets.

A Kiln Camera with a wide angle lens can be mounted midway in the cooler section which provides a view of the material flow and the monitoring of cooling patterns in the kiln.

Clinker texture can be monitored by installing a Kiln Camera with a narrow FOV on the top of the cooler chute or at mid-height of the discharge. At this location material pile-ups (bridging) and excess dust levels can be monitored.

#### Why Use **Lenox** Furnace Camera Systems?

- Designed to be rugged and durable for the brutal atmosphere of the Cement industry.
- Proven reliable dual cooling system and the highest camera resolution with superior optics.
- Minimal maintenance and operating cost once correctly installed.
- Backed by an industry leading **two year warranty**.
- Flexibility in choice of penetration lengths, viewing angles, water or low consumption air-cooling and a selection of portable water-cooled or air-cooled models.
- Lenox know how, expertise and installation/field service.

*Serving the Cement & Minerals Industry Since 1950!*



**LENOX FURNACE CAMERA SYSTEM SELECTION GUIDE**

**The 1 and only**  
**KILN CAMERA SYSTEM**  
**DESIGNED FOR THE CEMENT INDUSTRY**

with extreme durability, higher resolution, a time-tested cooling system, a longer warranty, and a much lower average cost to operate.

Lenox FireSight Kiln Camera Systems consist of a high-resolution (540 line), color CCD camera and sophisticated light volume control, a Lenox exclusive that allows an operator to remotely adjust the amount of light transmitted to the camera eliminating the flaring / blooming common with other systems. Quartz optics, another Lenox exclusive, are used and can withstand temperatures up to 1200°F (649°C) higher than the glass lens used in other systems. In addition, an air-cooled lens jacket and CCTV camera housing provides cooling and protection for the Kiln Camera and air-purging of the lens system to prevent fouling by deposition. Designed to be mounted directly through the kiln's firing hood these cameras can be used in applications up to 3000°F (1649°C). Available with either a 24" (610mm) or 36" (914mm) lens in either direct (60° or 90°) or right-angle (55°) view configurations. Special lengths up to 96 inches (243cm) are available.

Optional system accessories include an automatic retract system that automatically pulls the Lenox Kiln Camera back from inside the kiln should a loss of cooling occur, preventing possible over - temperature damage to the camera lens assembly; a high efficiency compressed air filter system for removing oil, water and particulates providing clean air to the FireSight system insuring trouble-free performance and a clear view of the combustion. Flat CRT or Flat LCD monitors and a digital video recorder are also available.



Model 6515FC Series Mounted on Automatic Retract



Model 6515FDC Series Portable Kiln Camera Diagnostic System

Please contact us for more information about our products and capabilities and to discuss your specific application.

