

OSWAL

kiln seals



**Kiln Sealing Systems-
Global Benchmark in
False Air Control**

Global Leader in Cement Process Technology Since 1985

Since 1985, Oswal kiln seal has specialized in precision-engineered systems for the cement industry, focusing on process stability, material handling, and quality control. With deep domain expertise and a process-driven approach, the company delivers reliable solutions that enhance efficiency, reduce variability, and ensure consistent plant performance aligned with global standards.

Key Benefits

■
Industry
Leadership

■
Pioneering
Innovation

■
Maximise energy
efficiency

■
Optimise
performance

■
Safety and
Reliability

Kiln Sealing Systems- Global Benchmark in False Air Control

Controlled Air. Stable Combustion. Measurable Efficiency.

False air ingress is one of the most significant hidden losses in pyroprocessing.

Uncontrolled air entry at kiln interfaces leads to:

- Increased fuel consumption
- Combustion instability
- Draft imbalance
- Elevated ID fan load
- Reduced thermal efficiency
- Higher emissions variability

Kiln sealing is therefore not a secondary component — it is a core energy-control system.

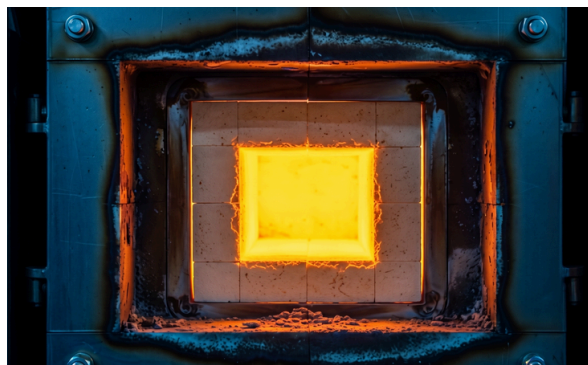
Rotary kilns operate under continuous thermal expansion, axial displacement, shell ovality, and pressure fluctuation. Conventional sealing solutions, designed for static conditions, fail to maintain sealing integrity under such dynamic behavior.

Oswal Kiln Seal develops kiln sealing systems engineered for real operating conditions:

- Continuous sealing under movement
- Controlled pressure distribution
- High-temperature material stability
- Long-term operational reliability

Engineering Philosophy

- Designed for dynamic kiln behavior, not fixed geometry
- Balance between flexibility and controlled sealing pressure
- Integration of material science with mechanical design
- Focus on lifecycle performance and energy efficiency



System Portfolio

Duplex Kiln Sealing System

Hybrid Lamella + Graphite Technology

- Dual-layer adaptive sealing architecture
- Combines flexibility and thermal durability
- Continuous sealing under axial and radial movement
- High efficiency false air control

Kiln Inlet Sealing Systems

Combustion Stability at the Feed End

- Controls air ingress at calcination interface
- Stabilizes flame and draft conditions
- Improves thermal efficiency and process consistency

Kiln Outlet Sealing Systems

Extreme Temperature Performance

- Designed for clinker discharge zone
- Resistant to abrasion, dust, and thermal shock
- Maintains hood draft stability

High-Temperature Radial Seals

Circumferential Sealing Under Expansion

- Uniform contact across kiln circumference
- Adapts to shell expansion and ovality
- Controlled friction and wear behavior

Axial Compensation Seals

Sealing Under Longitudinal Movement

- Accommodates axial kiln displacement
- Maintains alignment and sealing integrity
- Prevents edge loading and mechanical stress

Seven precision-engineered systems forming a complete sealing architecture

Graphite-Based Sealing Elements

Thermal Durability

- High-temperature resistance
- Stable friction characteristics
- Long wear life under abrasive conditions

Lamella-Based Sealing Elements

Dynamic Flexibility

- Adaptive deflection under shell deformation
- Continuous sealing contact under movement
- Fatigue-resistant structural behavior

System Integration

Oswal sealing systems are engineered as an integrated platform:

- Hybrid lamella + graphite architecture
- Compatibility across inlet, outlet, radial, and axial systems
- Unified design philosophy
- Optimized interaction between material and mechanical behavior

Process Impact

- Reduced false air ingress
- Stable combustion conditions
- Improved draft control
- Lower fuel consumption
- Reduced ID fan load
- Consistent process performance

Lifecycle Performance

- Reduced maintenance frequency
- Extended component lifespan
- Increased kiln availability
- Lower total cost of ownership
- Long-term energy savings

Applications

- Cement rotary kilns
- Lime kilns
- Mineral processing kilns
- High-temperature pyroprocessing systems

Proven Performance

- Installed across global kiln systems
- Validated under real operating conditions
- Consistent improvement in energy efficiency
- Recognized benchmark in sealing performance



Engineering Outcome

**Controlled false air. Stable combustion.
Optimized thermal efficiency.**

Oswal Kiln Sealing Systems deliver precision-engineered sealing performance under dynamic kiln conditions — enabling reliable operation, improved energy efficiency, and long-term process stability.



SUSTAINABILITY IMPACT

Reducing Energy Loss at the Source

Inaccurate pressure and draft tracking due to uncontrolled leakage leads to massive fuel waste and energy instability in kiln processing. The Oswal Duplex Kiln Sealing System guarantees absolute precision in false air control at critical thermal zones, preventing massive thermal.

Result:

- Zero fuel wastage caused by cold ambient air ingress.
- Enhanced fuel-to-clinker efficiency by securing uniform, stable pyroprocessing temperatures.

Energy Efficiency & Power Optimization

Equipped with an advanced hybrid mechanical architecture, the sealing system is engineered to deliver high-precision performance with a significantly optimized plant electrical footprint.

- Reduced ID Fan Power Demand (by eliminating false air volume)
- Smart Thermal Automation Alignment

Aligned with Global Sustainability Goals

Oswal kiln sealing systems support global, industry-wide initiatives focused on sustainable resource management, massive carbon footprint/emission reduction, and automated operational excellence in pyroprocessing.

Emission Control & Environmental Performance

Maintaining a completely sealed process environment is critical for industrial workplace safety, combustion stability, and strict emission targets. The Duplex Kiln Sealing System's robust, multi-layered construction ensures that fine clinker dust.

- Zero Dust Leakage at Inlet/Outlet Interfaces
- Fugitive Emission Elimination
- Safe, Pressurized Gas and Material Containment

Process Stability & Resource Efficiency

Unbiased, automated mechanical compensation for kiln movement (axial displacement, radial expansion, and shell ovality) directly translates into optimized plant resource management.

- Consistent Material & Thermal Profile
- Reduced Process & Combustion Fluctuations
- Minimized Refractory and Hood Wear



Zero material wastage. Absolute particulate containment. Optimized power consumption. Oswal Kiln Sealing Systems enable cleaner, more efficient, and resource-responsible plant operations.



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