

# Fuel Firing Explosions in Cement Operations

## 36 fuel firing explosions have been reported in the cement industry since 2001:

- 7 persons were seriously burned or inhaled flames or superheated gases. Numerous others were less seriously injured or narrowly escaped injury.
- The explosions caused extensive equipment damage and significant system downtime.

## 80% of all Metal and Nonmetal mining industry fuel explosions occur in the cement industry's coal handling, preparation and firing process.

- Equipment susceptible to explosions includes coal pulverizers, storage bins, dust collectors, cyclones, kilns, conveying piping and ductwork.

## Well-designed coal systems include:

- Bins designed for mass-flow.
- Ducts & piping sloped to prevent coal accumulations.
- Temperature and carbon monoxide sensors to detect smoldering coal.
- Properly sized and positioned explosion vents.
- Fire suppression systems, *e.g.* CO<sub>2</sub> inerting for bins and vessels.
- Explosion isolation or suppression equipment.
- Baghouses and piping grounded to prevent electrostatic buildup.

## Best operating practices include:

- Keep mill outlet temperatures low.
- Avoid hot system restarts.
- Cool system to ambient prior to opening for inspection/maintenance.
- Minimize storage of pulverized coal.
- Train all operations, maintenance and support personnel on coal firing hazards and best practices.
- Repair leaks.
- Clean up spillage.
- Wear appropriate PPE when troubleshooting.

