

*We present eight projects and programs that improved safety at cement plants in the United States and Canada in 2006*

2006



**PCA  
SAFETY  
INNOVATION  
AWARDS**



**P**ortland Cement Association's Occupational Health and Safety Committee looks for examples of how the cement industry is making its plants safer places to work. The goals of the Safety Innovation Awards are:

- 1) To honor innovative practices, programs, and projects throughout the industry.
- 2) To communicate these ideas to members of the North American cement industry.
- 3) To raise the profile and importance of safety programs both inside and outside the industry.



Fifty-six entries were judged by members of the committee along with a representative of MSHA and a member of the PCA Board of Directors. Winners in four categories—Quarry, Milling/Grinding, Pyroprocessing, and General Facility—received a monetary gift towards a “Celebration for Safety.” These awards are co-sponsored by the Portland Cement Association and the Cement Association of Canada. All entries for the contest since 1997 are available online at [www.cement.org](http://www.cement.org)

**PCA**  
Portland Cement Association

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A M E R I C A S

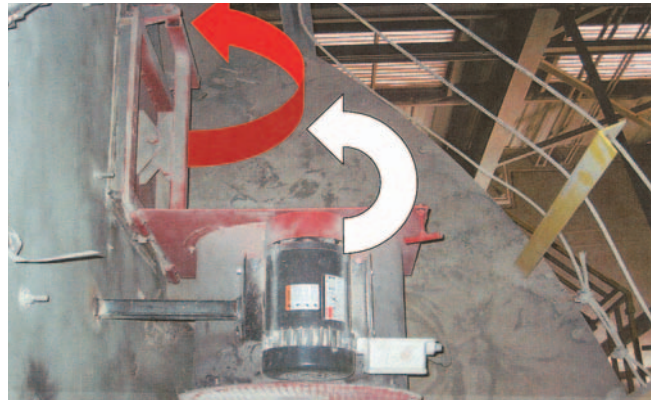


## QUARRY LEHIGH CEMENT COMPANY MITCHELL, INDIANA

This plant adopted a policy requiring all quarry personnel to use a highway fall restraint/protection system on the “face-row” holes of any production shot. The use of self-retracting lifelines allows for movement by employees when stemming and loading shots. A rod is inserted into the second row of holes and used as the anchorage point for personnel working on the first or face-row of holes. This system is used for stem loading and drilling.

## MILLING/GRINDING ASH GROVE CEMENT COMPANY DURKEE, OREGON

The Maintenance Department at this facility designed, fabricated, and installed a fast, simple, and convenient ventilation fan/door mounting arrangement to improve working conditions inside the raw mill during maintenance. The vertical roller mill could become very hot and dusty due to the limited ability to ventilate the confined space. A safety observation was conducted noting these conditions, and a plan was put together to improve ventilation within the space. It became immediately apparent that a powered ventilation fan would be needed. The major obstacle was finding a suitable location to mount the fan so that it would be effective. Further, the fan had to be easy to install and just as easy to remove at the start and end of the maintenance downtime period. The facility purchased an 18-in.-diameter axial fan for approximately \$430. The fan was outfitted with a 1.5-hp motor



and provides approximately 5,300 cfm. Maintenance technicians fabricated a dual-acting hinge doorframe system, which essentially has the inspection door mounted on one side of the doorframe, while the fan is hinged to the frame on the opposite side.

## MILLING/GRINDING BUZZI UNICEM USA INC. PRYOR, OKLAHOMA

This facility uses tires as an alternate fuel source. Factory reject tires often do not feed well and cause the feeder (Singularator) to plug. To alleviate the problem, employees working on the system are required to keep a soap solution on the feeder at all times. This soap solution helps keep the Singularator slick so that new tires feed more easily. Initially, employees had to climb stationary ladders and hang full drip jugs on each side of the unit, and then change out the jugs two to four times per shift. Two employees identified this activity as a potential safety concern and decided to address the issue themselves by fabricating an automatic unit that feeds the soap solution to the Singularator via water pressure. Scrap materials were used to construct the holding tank, along with in-stock hoses and couplings. The employees built the unit as time allowed. The system works well, and the tire attendants are happy with the safety improvement.





**MILLING/GRINDING  
THE MONARCH CEMENT COMPANY  
HUMBOLDT, KANSAS**

Fall protection was an immediate concern on the new mill installed at this facility. All other mills were built with a mid-level floor, allowing use of portable stairs with handrails to access the manhole covers, but the new mill does not have a mid-level, and the top of the mill is approximately 29 ft from the floor. This was a potential safety concern for employees working from ladders or stairs. A safety cable was installed above the mill, but having to wear a safety harness at all times

caused problems for the workers trying to enter the manholes which have limited entry space. Also, having the cable installed over the middle of the mill created access problems for the workers. To address the situation, three lightweight, counter-balanced, hand-railed cages were made from aluminum tubing and installed so they could be lowered from the side platform built at the top of the mill. The 8- x 7-ft cages extend past the middle of the mill, giving the workers adequate room to remove the manhole covers and work on the top of the mill shell while inside the caged area. Workers are in a fully protected area at all times while doing their job.



**PYROPROCESSING  
LEHIGH CEMENT COMPANY  
MITCHELL, INDIANA**

This plant's alternative fuels system requires semi-trailers to be backed into two unloading bays. The material is then dumped via "walking bed trailers" into a hopper and conveyor system. The challenge was to design a safety rail that could prevent someone from falling into the hopper with a moving conveyor, yet still allow a trailer enough clearance to be backed up to the dump hopper. To address this concern, a retractable guardrail was installed in both dump lanes. The guardrail is spring-loaded and will retract as the trailer backs up, allowing the truck trailer to dump its load into the hopper. When the trailer is pulled out of the dump bay, the guardrail springs back via the spring assemblies to its neutral position, preventing possible falls into the hoppers.

## SAFETY INNOVATION



### **PYROPROCESSING** **GCC OF AMERICA, INC.** **RAPID CITY, SOUTH DAKOTA**

This operation has a conveyor belt that transports coal from an unloading station to a transfer storage bin through an 80-ft inclined tunnel. This area was identified as a safety issue due to the potential hazards of a coal dust fire, poor visibility, trip hazards, and the personal protective equipment required while inspecting and washing down the tunnel. Previously, to clean the tunnel of all coal particle dust, the operator had to suit up in coveralls, rain gear, and full face air-breathing mask, then drag a 1-in. water hose through the tunnel. It took three hours to wash down the walls, equipment, and floors to conform to MSHA combustible waste standards.



The equipment operators began a search for a better and safer method for cleaning the tunnel system. The operating team devised a water spray system that was placed over and under the belt system via an overhead water line. This water system was set up to also clean the walls and floor, as well as the beltway. The water system's nozzles are fire suppression units, linked up with pipe, clamps, anchor bolts, and valves. The system is simply activated by opening a set of 2-in. ball valves and starting a single water pump. The operator now starts the water spray system, goes off to do other work, and returns in 15 minutes to shut the system off. This innovation has resulted in a safer way to keep the tunnel and beltway in MSHA conformance. Achieved for less than \$1,000, the water spray system provides a shorter cleaning cycle, allows for more efficient use of the operator's time, keeps the tunnel safe from fires, and no longer exposes personnel to this environment.

### **GENERAL FACILITY** **BUZZI UNICEM USA INC.** **GREENCASTLE, INDIANA**

This facility's maintenance department adapted an automotive wench that allows repair crews to safely and effectively make repairs and perform maintenance in the crusher rotor area. The reduction in maintenance time has been significant, and the task is now safer for the repair crew. This wench device has enabled maintenance personnel to safely turn the rotors without tying themselves off or having to modify the guards in order to stop and spot the huge rotors for repair and maintenance. Repair per-



sonnel are now able to safely stand beside the crusher and move the rotors using a remote. This device allows a repair crew full view of the rotors with the lockout remaining intact, and has safely reduced the time to perform the required maintenance from more than two hours to just 30 minutes, while reducing the number of required personnel from three to one.

### **GENERAL FACILITY** **ASH GROVE CEMENT COMPANY** **INKOM, IDAHO**

This facility struggled for many years when installing raw mill dams inside of a ball mill. The difficulty the workers faced was lifting the 400-lb dams inside of the mill with no means of hoisting from the inside of the mill. To improve the process, workers devised a lifting attachment that allows the use of a hoist located outside of the mill. The lifting attachment consists of a 5/16-in. wire rope that is connected to a threaded rod. The bolts used to fasten the dams to the mill shell are modified to accept the threaded rod by drilling and tapping a hole on the threaded end. From outside the ball mill, the lifting attachment is threaded through a hex nut and then inserted through the hole in the mill shell used to fasten the dam to the shell. A modified bolt is put through a dam and connected to the lifting attachment, and then the dam is lifted into place. For just a couple hundred dollars of materials and labor, the lifting attachment has enabled the installation work to be performed more safely and more efficiently.

