



BRICKING SOLUTIONS

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Increase Safety and Reducing Costs While Doing Kiln Refractory Maintenance

With Basic Brick lasting longer, plants are looking for ways to access the upper transition zones for inspection or repair without removing coating. Removal of coating not only extends outages and slows start up, it damages good brick causing increased refractory usage. In addition the burning of alternative fuels has caused coating to be more unstable or at least more unpredictable. Therefore the option of personnel moving under coating unprotected is not longer acceptable.

Bricking Solutions a division of Brokk AB Sweden, has developed a "Portable Protection Tunnel" (PPT) along with independent inspection cages to allow for the safe passage under coating to areas needing inspection and or repair. The Protection Tunnels and Safety cages cover a wide range of kiln sizes and individual plant



Typical coating in a kiln

circumstances. These tunnels and cages have not only passed manufacturers strict R&D tests and industry standards; they have worked in practical applications.

Bricking Solutions (Pneumat O Ring International) has been making "safety cages" since the early 1970's. Recently they decided to redesign and upgrade the cages to improve the strength while at the same time reduce the weight. Though



Older style safety cage



New stronger and lighter cage



Round style cage for smaller kilns

the old style cages had been know to be used to form a tunnel by placing them end to end Bricking Solutions had never or intended for the cages to be used in this way.

When Bruce Springer (Safety Manager for Essroc) approached Bricking Solutions for safety specifications on their safety cages he further indicated an interest in a safety tunnel. This tunnel would allow the safe passage of men and material under coating to effect repair or inspection in the upper transition zones of their kilns. Essroc's Picton plant agreed to a joint effort to design and build a safety tunnel that could be erected in a manner that would provide protection for personnel erecting the tunnel in the kiln. Tom Van Cott from the plant was put in charge of the project.



Collapsible cage carrier



The PPT (Portable Protection Tunnel) was designed and tested in Bricking Solutions Monroe facility. Tom visited the plant and made suggestions for changes on the proto type (test unit). The unit was built and sent to Picton. The PPT was designed to be adjustable to fit both of Picton's Kilns (4.15m and 5.5m shell diameter). It consisted of a 10' set up cage and 6 of 5' tunnel cages for a total length of 40' (12m). Another criterion was that the tunnel had to be disassembled to individual parts that could fit through an access door of 406mm by 559mm (16" by 22"). In addition one section of the cage could be separated from the rest of the tunnel and used as an independent "Safety/ Inspection Cage" if necessary. The machine has been successfully used since being shipped in October of 2003.

Bricking Solutions next PPT challenge was to build a Safety tunnel for a 6.25 meter shell diameter Holcim Kiln in Obourg Belgium. The



tunnel had to be tall enough to set up close to the coating to reduce the momentum force generated by distance from the coating to the cage. In addition the tunnel had to be wide enough and tall enough for mobile equipment like the Brokk tear out machine pass through. This presented a problem in that tunnel for

this size of kiln would be too difficult to handle manually. This resulted in another joint effort between Bricking Solutions and a plant. Holcim Obourg would supply a protected fork truck with safety hut carried on the end of its forks.

Bricking Solutions would design a cage that would collapse to fit through some restricted access points and that would be able to be expanded from the protection of the hut by a manually operated fixture that would attach to the hut and would allow for the maximum protection from falling debris during installation.

The cage and loading fixture where designed and tested in Bricking Solutions Monroe Facility and shipped to Holcim for use during an outage slated for the end of October.



Summary

Though some minor modifications and suggestions for future cages were made, the installations described above are deemed a success and Holcim and Essroc now have a tool that should not only provide safety for their workers, but a way to reduce refractory usage and outage time, thus adding profits.

In addition Bricking Solutions has designed a line of independent Inspection cages that can be manually carried into kilns from 3m to 5.5m by two men for inspection and or minor repair purposes or alternatively used as operator safety cages for the operators of Brokk AB remotely controlled tear out robots.



Spain cage over ramp



These cages have been designed by a Licensed Certified Professional Engineer and in addition to patent pending all of these cages meet several US and International Standards including EC Certification, OSHA, MSHA, ISO, AWS, ASME design and safety specific standards.

