



Armouring Against Fugitive Dust Emissions

Ken Ryan, A.J. Weller Corp., USA, describes the installation of a composite wear solution in the baghouse at the recently modernised Portland cement plant, USA.

Introduction

Commitment to environmental stewardship, safety, and high quality products continues to keep Holcim (US) Inc. and their Portland plant staff in Colorado at the forefront of the United States cement industry. The plant has been in operation since 1898, supplying cement to meet the demand of the explosive development of the Western US.

In 2001, Holcim (US) Inc. completed a US\$220 million dry process cement plant to replace the two older plants. This new, modern facility which opened in 2002, boasts one of the largest kiln lines in the United States and will take capacity to a level of close to 2 million tpa.

The Portland plant's continuous focus on the aforementioned commitments guides the decision making process of the management team and its dedicated maintenance staff. Maintaining proper opacity levels is critical to the environment and a key concern for all involved in the industry. After the expansion, the plant's high production levels demanded the best and most advanced in wear protection solutions for all of the components in the system.

Shortly after start-up of the new plant, high wear levels in the ducts, walls, and ceiling of the baghouse became evident. Expensive and time consuming patching began immediately and the search for a long lasting solution began in earnest.

Solving wear problems

The A.J. Weller Corp. offered a compelling solution with its composite wear technology which merges a diverse number of materials into a specific application. This utilises expensive materials only in critical areas in order to reduce the overall cost and enhance system performance. This approach, coupled with the company's reputation among Holcim's sister plants around the world, proved to be the right combination for providing the plant with a lasting solution.

WearSpray technology

A.J. Weller is the exclusive North, Central, and South American distributor and technology partner for WellerDENSIT™, a product developed by Densit a/s in Denmark. The product is a chemically bonded ceramic



Figure 1. Extensive wear and patching pre-installation.



Figure 2. Installation of anchoring system.

compound specifically designed for fine particle abrasion applications. It is a mixture of ceramic materials and proprietary wear resistance aggregates and binder that create a trowelable, castable, or sprayable liner for system wear protection in critical areas.

For this particular application, Weller Engineers and plant maintenance personnel decided to use WearSpray™ technology, rather than troweling WearFlex™ 2000 in the baghouse entry duct. This was due to the critical time restraints faced by the plant



Figure 3. Application of WellerDENSIT™ WearSpray.

during the shutdown and the large scale of the area to be repaired. Moreover, by making this decision, total man power and hours were reduced, as was the amount of deflected material during installation.

This technology is advantageous for a number of reasons: the wear liner makes use of a mechanical bond in the form of an expanded metal mesh that is then welded onto the steel surface to be protected. The difference in thermal expansion between steel and the ceramic composite material becomes absorbed, so broad cracks and the risk of spalling are avoided.

The product is self-supporting due to its strong mechanical properties. In many cases it can be applied to worn parts and systems, thereby eliminating the need to fabricate a new support structure. This allows the liner system to be applied seamlessly to complex geometrical shapes during field installation.

The product can be exposed to temperatures as high as 750 °F (400 °C). It is able to cope with thermo shock and heavy sporadic impact much better than hi-alumina ceramics and will outwear cast basalt in most applications. As there are a few products on the market that tend to mimic the characteristics of WellerDENSIT™ with lesser results, it is important to focus on installation and engineering expertise when entertaining a wear solution of this scale and

technology level.

Conclusion

The shared commitment to environmental stewardship, safety, and plant performance allowed both Holcim's Portland Plant and the A.J. Weller Corp. to develop a unique and long lasting solution for the baghouse. The technology created a monolithic liner system in the baghouse that was installed rapidly and will greatly increase its optimal service life. By merging the right materials in the right application and providing the optimal level of installation and engineering expertise, the A.J. Weller Corp. has gained the confidence of the staff at the Portland plant and looks forward to tackling more unique and complicated wear issues in the future. ◆

EXTENDING THE LIFE OF HEAVY INDUSTRIAL EQUIPMENT Worldwide.

State-of-the-art materials ensure quality custom fabrications, machine work, re-builds, on-site assistance and complete retrofit or turnkey installation for the cement industry.

INCREASED PRODUCTION, LESS DOWN TIME, LONGER SHUTDOWN CYCLES... ALL DEMAND THE LONGEST LASTING WEAR MATERIALS.

Composite Technology

Composite Technology merges a diversity of materials into a specific application, utilizing costly materials only in critical areas. Compositing can greatly improve a component's resistance to wear, sticking, corrosion, impact, high temperatures, and more. The net result is a superior product with an extended service life.

For over 20 years, innovative engineering and forward-thinking technology have helped THE A.J. WELLER CORPORATION become a leader in Composite Technology for heavy industrial applications. Continual research is being performed at WELLER to better understand and improve WELLER's materials and composites. With this knowledge, WELLER's engineers are able to recommend the right materials for your particular applications.

A.J. WELLER CORPORATION

CORPORATE OFFICES
(318) 925-1010
FAX: (318) 925-8818
WWW.AJWELLER.COM