

Shaft Seals Solve Batch Mixer Wear Problem

Bonsal American Inc. manufactures cementitious building and repair products such as Sakrete dry-mixed concrete, masonry mixes, grouts, and thin-sets. Its production requirements present unique challenges for the equipment used in the manufacture of these varied products because of the abrasive nature of materials such as cement and larger aggregate.

Through the years, Bonsal American acquired a number of horizontal single- and twin-shaft batch mixers from Hayes & Stolz in Fort Worth, TX. One of the constant maintenance issues was the shaft wear and subsequent replacement cost of shaft assemblies due to the scoring over time. The mixers were utilizing common packing gland-style seals that require maintenance personnel to adjust and replace the packing material on a regular basis. Even if the adjustments and maintenance are performed faithfully, product inside the mixer can get into the packing ropes and act like a piece of coarse sand paper grinding away at the shaft. Over time, the scoring becomes deep enough into the shaft that the rope can no longer seal and the leaking of product escalates through the seals. Besides being a housekeeping issue, over time a leaking seal will lead to destruction of the outboard bearings, causing downtime and costly repairs. Eventually shaft wear becomes severe enough to warrant an expensive replacement of the shaft and assembly (paddle or ribbon).

Mark Lowry, senior project engineer with Bonsal American, called Hayes & Stolz to discuss possible solutions to the problem. After an extensive investigation of potential solutions, the two companies agreed upon a course of action. Hayes & Stolz presented a solution to this habitual wear-maintenance-replacement cycle—the Inpro/Seal.

Lowry had a pending project for the White Marsh, MD plant involving two new twin-shaft mixers. Bonsal American agreed to try the new Inpro/Seal shaft seals on the new installation. Hayes & Stolz got together with the local Inpro/Seal representative, Sid Hensley, and designed a “kit” to incorporate the seals to aid in installation and operation. The “kit” consisted of regulators and gauges for troubleshooting purposes in the field.

When the time arrived for the mixers to be installed, Hensley was asked to check out the installation to ensure a proper connection was achieved. Once everything was determined to be done properly on the mixers, they were put into operation in



Food-grade mixer with Inpro/Seal air kit, including air flow detector

When the time arrived for the mixers to be installed, Hensley was asked to check out the installation to ensure a proper connection was achieved. Once everything was determined to be done properly on the mixers, they were put into operation in



Dry concrete mixer with Inpro/Seal air kit mounted for connection



Inpro/Seal shaft mounting with air kit; commercial SS mixer



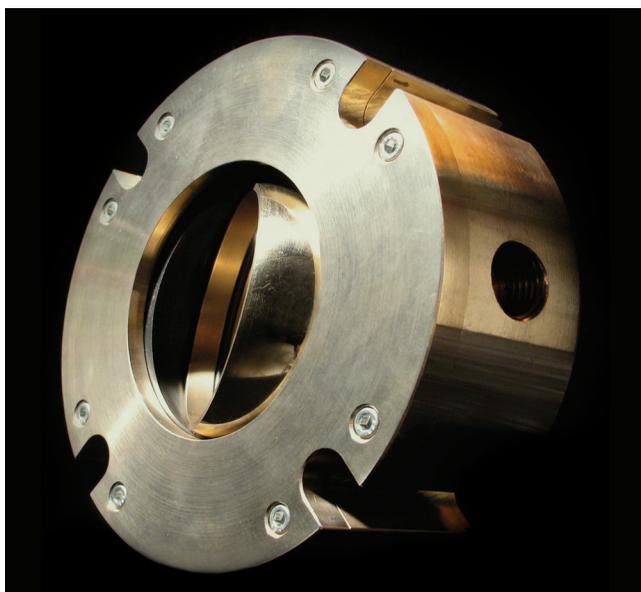
Commercial SS mixer with Inpro/Seal air kit mounted

Air Mizer PS Seal

Unlike conventional product seals, the Inpro/Seal Air Mizer PS seal does not rely on rubbing surfaces or frictional contact to form a seal. It instead uses airflow through a tight gap or throttle to create a pressure differential. It is this pressure that performs the sealing function. The Inpro/Seal is unique in that the throttle is allowed to fully articulate to accommodate shaft run-out,

deflection, angular misalignment, and axial movement. An air source regulated to a pressure slightly higher than the pressure inside the vessel is required. Some customers will integrate a flow detector into their control system to ensure that purge air is flowing anytime product is present. With no reliance on contact surfaces, shaft seal life expectancy is greatly enhanced.

the summer of 2002. Since the initial installation, Bonsal American reports that there have been no problems or issues with the mixer seals or the scoring of shafts. Lowry and his company's leap of faith were rewarded with five years—and counting—of maintenance-free service for their efforts. There appear to be no problems on the horizon for what was once a recurring issue.



Articulating Air Mizer PS Inpro/Sea

Since the initial efforts and success, Hayes & Stolz has formed a unique relationship with Inpro/Seal and utilizes the company's products on "tough" applications. Usually these tend to be in abrasive or corrosive applications like Bonsal American's. However, once the merits of the product are presented, more and more customers purchase these seals even in less abrasive instances because of their "maintenance-free" qualities.

Additionally, the healthy bond between the supplier and the OEM has allowed Hayes & Stolz to refer long-time customers to Inpro/Seal when service and parts calls are received and the "right" application appears. As a result of looking out for the customers' best interests, habitual problems have turned into happy endings for dozens of old customers.

Hayes & Stolz Industrial Mfg. Company Ltd., Fort Worth, TX, manufactures material handling equipment for a wide range of industries. For more information call 800-725-7272 or visit www.hayes-stolz.com.

Inpro/Seal Co., Rock Island, IL, manufactures a bearing isolator that will provide a high level of permanent bearing protection. Inpro/Seal products are used in a wide variety of rotating equipment applications. For more information call 800-447-0524 or visit www.inpro-seal.com.