

First Aid for Blenders: Seals to Stop the Bleeding

Georgia manufacturer of adhesives for wood flooring solves a costly leakage problem by replacing the seals on its mixer

Editor's Note: Woodex Bearing Co. Inc., MECO Seals Division, will be exhibiting in booth 1731 at the Southeast Powder and Bulk Solids Expo at the Georgia World Congress Center in Atlanta, GA on April 24-26. More information is available at www.southeastpowdershow.com.

By Kay Mann

W.F. Taylor Co. Inc. manufactures state of the art, environmentally friendly adhesives and epoxies for the installation of floor covering products. Taylor distributes its products across the U.S. and exports them to the Pacific Rim area, Canada, the UK, and Australia. Its production facility is in Dalton, GA. The company bought a used 411-cubic-foot mixer through a used equipment dealer to launch its patented Meta-Tec wood flooring adhesive product. The mixer has a 6.5-in. diameter shaft, which turns at 12 rpm. The liquid product is processed at ambient temperature to 90°-176°F and ambient pressure. The mixer had previously been used to mix dry food preparations. The seals that came on the mixer were a standardized MD type of MECO seal. These were apparently working well in the food application, but once Taylor began mixing its adhesive formulae in the machine, the seals began to leak.

Although Taylor replaced the rotating components of the seal, there was still severe leakage. Alan Wagoner, plant manager, estimated the value of product lost at \$600 per week. Adding to the cost of operation was the fact that the MD seals required a nitrogen purge line. Wagoner says the plant used about \$336 worth of nitrogen per week in the seals.

The following year, Wagoner's boss read an article about how MECO's custom shaft seals had solved a problem similar to theirs. As a result, Wagoner contacted a MECO distributor, Jerry Chevalier of Mid South Mechanical Sealing, who measured Taylor's mixing machine for a pair of custom-engineered seals, which arrived several weeks later.

For this application, MECO chose to build an AHS-type seal. The patented AH-seal design is based on the familiar MECO concept of using an internal driving elastomer to co-rotate with the shaft and turn a pair of rotors inside the seal cavity. Seal faces are formed perpendicularly to the shaft between the rotors and the insides of the seal housings. AHS-model seals need no calibration; proper seal face pressure is established just by snugging the assembly bolts. The seals have a basic adjustment mechanism to compensate for seal face wear over time; eventually, the seal is rebuilt by replacing only the rotating components (i.e. drive elastomer and rotors). The seals are purged with various gas media. Taylor's AHS seals use clean, dehydrated compressed air. Purge pressure is maintained at 2-4 psi higher than the

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pressure inside the vessel. This typically results in purge medium consumption of 1/4 cfm or less. Chevalier supervised the installation of the custom seals, a process dramatically simplified by the fact that the seals were manufactured completely split. This enabled the team to install without the costly and cumbersome process of removing the shaft and drive from the machine. Installation took one day.

Since the seals come with detailed installation instructions, it is possible for plant technicians to install the seals without assistance. Assistance or training is helpful but not necessary. The most important conditions to achieve during installation are the seal's flatness and perpendicularity to the shaft; a machinist's square and straight edge are used for this. MECO seal faces are not easily damaged and can be handled without detrimental consequence throughout the installation process. The only orientation "issue" is that there is a flush drain port at the bottom of the seal, which must point downward.

Wagoner says that for more than two years since installing the MECO seals, product leakage has gone to zero, purge gas costs are negligible, and the seals have run maintenance-free. The seals are charged with compressed air instead of nitrogen; operators just monitor the cavity pressure. They have yet to need to adjust the seals. Using the former weekly cost figures of \$600 in lost product and \$366 in nitrogen — and not counting the hidden costs of cleaning and maintenance — Wagoner calculates that his seals paid for themselves in less than three months.

The company's market share has grown to the point where it is in the market for additional new blenders. Wagoner plans to specify that MECO seals be delivered on the new equipment. "These seals are expensive, but they are a great value for the money. They really helped us out."

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