



Seals designed for the demands of food and beverage manufacturing

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Rotating shaft sealing specifications for batch blenders and cookers in the food and beverage industry are some of the most demanding. This is due to the shaft seal's contact with food ingredients, often with allergens in the recipes and with various cleaning solutions. Hygienic manufacturing requires thorough cleaning of contaminants between each batch of material.

Selecting the wrong shaft seal could have various ramifications. It could affect cross contamination between recipes. Or it could introduce dangerous contaminants into the batches, either by breaking apart or by leeching contaminants trapped within the seal. Cleaning is another challenge: dry blending and water washing are especially difficult on a seal. Ease of cleaning and subsequent inspection of the shaft seals are essential parts of smooth-running production. Finally, seals that create unwanted debris or trap contaminants require frequent attention, resulting in unplanned downtime, lost batches, upset customers and unplanned downstream delays at packaging lines.



Figure 1. An OFS Type-2 seal. Source: MECO Seal

Shaft seals for food and beverage equipment need to be readily cleanable, dryable, sanitary, resistant to product entrapment to avoid cross contamination, and must withstand repeated cleanings, various cleaning solutions and large temperature variations.

Yet, most traditional shaft seals are asked to withstand various recipes of dry ingredient blends, along with high temperature water and chemical cleaning solutions, potentially multiple times per day or once every 7 to 12 days. Traditional seals typically cannot handle repeated blending and washing cycles, while further challenged by the stop and start demands posed by batch loading and emptying. Often, traditional seals contaminate the blended recipes and fail swab tests, and repeated cleanings can — either rapidly or gradually — break down the seal's integrity. Traditional seals are also vulnerable to allergen cross contamination, potentially leaving unwanted ingredients in ensuing batches.

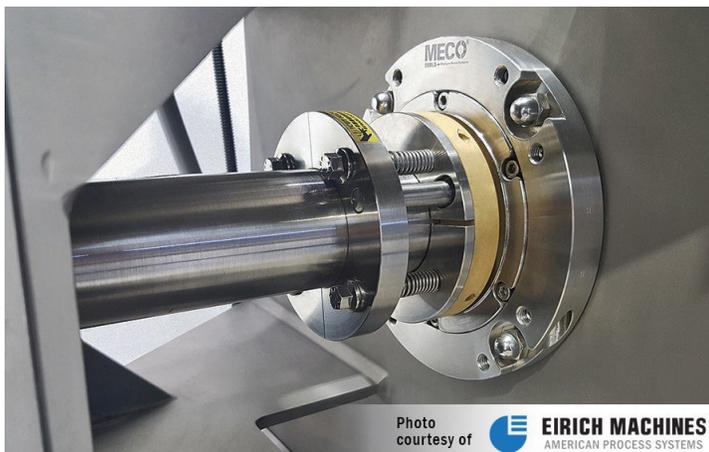


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Figure 2. The OFS Type-2 seal model installed on a dry powder blender. Source: MECO Seal

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OFS Type-2 seals from MECO Seal

In response to the various demands put upon process equipment seals in the food and beverage industry, MECO Seal, a manufacturer of shaft seals for industrial processing machines, developed the OFS Type-2 seal. According to its developers, the OFS Type-2 seal is designed for horizontal, inclined and top-entering shafts, typically for a fully split seal installation. The seals are designed for the intense blending and cleaning or cooking and cleaning demands which are the norm in the complex food and beverage industry.

Often used for sealing horizontal shafts turning at low to moderate speeds on either older, nonconforming equipment or on a new original equipment manufacturer (OEM) machine. The OFS Type-2 seal relies on full contact, closed face mechanical shaft sealing technology and is engineered for blenders, mixers, cookers, conveyors, feeder screws and other rotating machinery in the food and beverage, pharmaceutical, nutraceutical and personal care products industries.

A replacement for braided packing, lip seals, elastomer seals and other shaft sealing types, the OFS Type-2 seals are often used both for dry powder blending, such as sugar drink mixes, spice flavorings and nutrients and for wet mixes like soups, pet food, tomato and cheese sauces and caramel candies. As such, the seals are designed to be easily sanitized and maintained by end-users following Good Manufacturing Practice (GMP) standards.

The OFS Type 2 seals are easy to clean while attached, using a hand held pressure washer or fixed spray balls, or when disassembled along the shaft for hand cleaning. The seals feature FDA approved materials. No braided packing is used, which tend to pollute finished recipes – a common problem with traditional seals. Likewise, the seals can contain slurries such as soups, sauces and pet foods either during mixing or cooking. The cleanability means that the OFS Type-2 does not encounter any of the build-up common among traditional seals or other intricate, high volume, air seals. Additionally, the ease with which the seals and corresponding equipment can be cleaned and inspected— often in just 10 minutes while assembled on a blender or disassembled along a shaft —offers users improved maintenance efficiency, inspection capability and decreased down time. The accessibility of the seal improves worker safety and ergonomics, which can be a challenge while maintaining tradition seals and equipment.

According to the seal's developers, the OFS Type-2 can withstand water washing temperatures in the neighborhood of 165° F to 205° F, hard water, most chemicals and large pH swings. Likewise, the OFS Type-2 seal features rugged components. Its hardened stainless steel stationary seal face and durable polymeric seal face are both designed for long service life — one to two years or longer for most — and offer diagnostic metrics with which to extend seal life and improve equipment performance.

MECO Seal

MECO Seal is an industry leader offering assorted sealing solutions for a variety of uses. With shaft sealing options available built to customer specifications, the OFS Type-2 seals fit most mounting arrangements. Built to either SAE or metric dimensions, each OFS Type-2 seal sold comes with the knowledge and expertise of two generations of MECO Seal engineers.

A MECO Seal engineer works with customers every step of the way, reviewing the design parameters and planning for the optimum fit and specifications prior to purchase. Additionally, MECO Seal's engineers are available for 24 hour remote installation support, follow-up discussions on seal performance, cleaning tips and everything in between.

Under normal, pre-COVID-19 circumstances, MECO Seal's engineers offer onsite support, but most often the client is able to understand the installation instructions and service guidelines. Although field support is restricted right now, MECO Seal intends to resume this unique service offering following the pandemic. In the meantime, MECO Seal will continue to assist customers, albeit virtually, at every step from initial planning stages, installation support, best cleaning practices and long-term performance review. MECO's role does not end once the seals have shipped.

Conclusion

MECO Seal can help with assorted sealing applications with their many seal models suitable for countless end-user cases. Contact MECO Seal today and their skilled team of engineers will help design the right seal for virtually any application within their scope.

MECO SHAFT SEALS

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ABOUT MECO SHAFT SEALS

MECO is a manufacturer of full-contact, soft-face mechanical shaft seals. We engineer, manufacture and distribute superior-quality products, and also provide dedicated installation service and support, through personal and case-specific customer service.

Our skilled, in-house team engineers and manufactures split rotating shaft seals for the process industries. MECO Seal designs and manufactures split and unsplit shaft seals for rotating process machinery including, mixer seals, dryer seals, conveyor seals, extruder seals, blender seals, paper pulper seals as well as seals for explosive environments following european ATEX standards.