

Using Polymeric Rotary Shaft Seals? How to Plan for a Successful Project

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There are often misconceptions surrounding the availability of contacting, polymeric rotary shaft seals. Much of this misunderstanding comes from assumptions made by comparing contacting, polymeric rotary shaft seals to hard-faced mechanical pump seals. Pump seals are readily available as “off the shelf” items for purchase due to the progression of historic ANSI & API manufacturing standards for sizing and operational settings encompassing a wide range of pressures, speeds and liquids. Typically, pump seals are available within a 1-4 week timeframe.

In contrast, contacting, polymeric rotary shaft seals have a shorter historic basis, are sized according to OEM specifications, designed for specific applications, and are sensitive to over loading. On new applications, often a design review is needed to match the correct seal to the application parameters. The Conveying Equipment Manufacturer’s Association (C.E.M.A), provides a loose standard for 6 common screw conveyor sizes used for material handling, however standard sizes don’t exist for other types of equipment, such as mixers, blenders, crystallizers, extruders, agitators, dryers and rotary feeders to name a few.

Due to the vast process variations from one industry to another, as well as the proprietary nature of OEM designs, contacting polymeric rotary shaft seals may take anywhere from 2-12 weeks to design and manufacture. By working closely with end-users, OEMs and/or consulting engineers, the proper contacting face seal is recommended for a customer’s design specifications. This may come as a shock to some, and our goal is to educate those making purchasing decisions so their projects can run efficiently and on time.

Critical considerations are necessary when planning projects requiring contacting, polymeric rotary shaft seals. Here we have highlighted some best practices to put in perspective why planning ahead is so important.

1. What is Your Project Timeline?

Whether you are planning a new equipment build, or looking to replace a seal on existing equipment, it is important to evaluate your timeline for delivery or maintenance shut-down schedule, to maximize efficiency. This being said, order early! It is easier to request a “do not ship before” date, as opposed to waiting until the dates align with the approximate lead time on a proposal. By waiting to get into a manufacturer’s production queue, you run the risk of not meeting your scheduled deadlines. Be aware that the clock doesn’t start ticking on your purchase order until the formal approval drawing is signed. Manufacturers of custom seals typically do not place orders for raw materials until after this time. Additionally, quality control is not passed until the seal is entirely manufactured and assembled.

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Figure 1. 3.5” OFS Type-1 installed on a top-entry agitator containing volatile organic compounds (VOCs). Source: MECO Seals

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2. What Data is Required for Feasibility Analysis?

Thoroughly and accurately complete an application data sheet. This is critical to avoid mistakes in the design process, and will assist the design engineers in recommending the proper model type and configuration specific to your process. Instead of providing data for your application in bits and pieces, provide the details up front. It is also ideal to provide pictures if available.

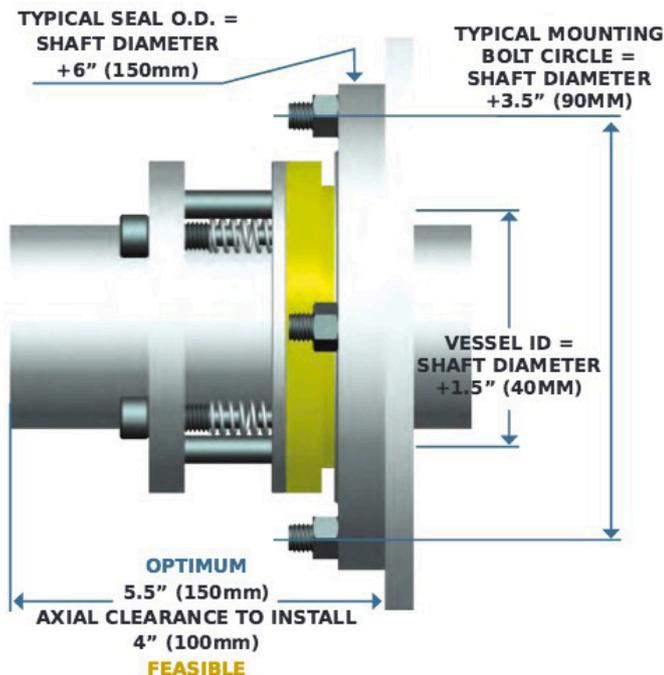


Figure 2. A built-to-order OFS Type 2 custom designed seal. Source: MECO Seals

3. Are There any Special Considerations?

Is ATEX certification required? This will add additional time in production, as formal risk assessment and testing are required due to explosive risks. Is your seal application for a dairy application? USDA stipulates certain design specifications, due to strict maintenance and cleaning requirements.

Don't forget about the importance of location. Where in the world is your seal's destination? Oftentimes, there are challenges out of the manufacturer's control when exporting to various parts of the world. Be aware of this, and incorporate contingencies accordingly.

4. What Could Possibly Go Wrong?

As Murphy's law states, "anything that can go wrong, will go wrong". When placing your order, it is advisable to order repair kits at the same time, to have spare parts readily available and on hand. Be advised that, just as the complete seal is custom made, so are the spare parts. By having them on hand, you will save time and money with maintenance and production cycles.

Summing it Up

In short, contacting polymeric rotary shaft seals differ from pump seals, in that they take time with precision machining, and many material options to choose from based upon specific application data. Don't assume delivery timeframes are the same as those of pump seals. With variations from one industry to another, and one process to another, the best practice is to plan ahead for successful results.

Important for Ordering?	Hard-face Mechanical Pump Seal	Polymeric Soft-face Rotary Shaft Seal
Standards Involved	ANSI, API	CEMA or none
Shaft size	Yes	Yes
Materials	Yes	No
Mounting Information	No	Yes
Speed	Standard Available	Yes
Pressures	Standard Available	Yes
Chemistries	Standard Available	Yes
Temperature	Standard Available	Yes
Delivery Time	Approx. 1-6 weeks if not "on the shelf"	Custom Seals, 1-12 weeks
Risk Assessment?	No	Yes
Delivery Constraints?	Typically No	Possible

Table 1. Comparison between standard mechanical pump seals and contacting polymeric rotary shaft seals. Source: IHS360 Electronics.

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ABOUT MECO SEAL

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.