

# USING SPLIT SEALS TO **SAVE ON** MAINTENANCE **COSTS**

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## ABOUT THE AUTHOR



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Marco Hanzon is Vice President of Global Marketing for A.W. Chesterton Company. He has been an active member and past chairman of the Mechanical Seal Committee of the European Sealing Association. Before getting involved in the Marketing of Mechanical Seals, Marco worked as an application engineer for mechanical seals.



## What is this E-Book About?

*Seal maintenance on large rotating equipment such as pumps can be a time-consuming and costly exercise. As a maintenance manager, you want to find out if using split seals can help your team spend less time on maintaining seals and also serve to reduce costs.*

### **This e-book guides you through the benefits of using split seals on large pump applications:**

- 1 What are Split Seals?
- 2 How Split Seal Technology Improves Maintainability of Your Assets
- 3 Applications for Split Seals

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# What are Split Seals?

Split seals are mechanical seals in which all the parts are split into at least two halves. Like standard non-split mechanical seals, they are used on rotating equipment such as pumps, mixers, water turbines, and agitators. And like standard mechanical seals, they seal the rotating shaft of the equipment against its housing.

Split seals were first used on submarine main propeller shafts back in 1954. But only in 1986 were split seals introduced as a standard, off-the-shelf sealing technology.

“Split mechanical seals perform the same duty as standard mechanical seals. The benefit is the fact that the equipment does **not have to be disassembled** for installation of the split seal.”

Since the first generation split seal was introduced, many technological improvements have been introduced. These improvements have greatly expanded the window of operation and application of split seals.



# How Split Seal Technology Improves Maintainability of Your Assets

## No Pump Disassembly Needed.

*That is the single biggest benefit of using split seals*

Split seals eliminate the need for removing anything from the pump except the seal. Split seals can be installed in place and typically by one installer without removing the pump, motor, or coupling. As a result they simplify the repair process and eliminate the costs associated with a typical solid seal replacement.



## What About Leakage? Do Split Seals Leak?

Depending on how carefully they are handled during installation, split seals may drip on startup. This leakage usually stops over a period of 24 hours as the seal 'sets' itself in service.

Because of this potential start up leakage, split seals should not be used to seal dangerous fluids. They should also not be used with fluids that are regulated by emissions limits.

However, in many other applications such as the sealing of water treatment pumps or hydropower turbine main shafts, split seals can provide nearly leak-free performance and reliability that can be a game-changer. They have been known to run leak-free or nearly leak-free for years without the maintenance hassle of packing.



## Are Split Seals Difficult to Install?

When split seals were first introduced in 1986, installation required an experienced installer. Since then, the technology has matured and improved greatly. **Modern split seals** can be installed using the same skill set that is required for installing any other non-split mechanical seal.

# Other Split Seal Benefits

The fact that there is no need for equipment disassembly is the primary benefit of using split seals. This benefit alone often provides immediate and direct maintenance savings.

But there are some important additional costs savings that you can achieve by installing split seals on your rotating equipment, especially if you are currently using packing which always involves some measure of leakage. These savings include:



- Significantly minimize sleeve wear and associated maintenance interventions and costs
- Eliminate frequent packing adjustments
- Less cleanup and fewer disposal issues
- Minimized corrosion of assets
- Reduced flush water usage (that sometimes total millions of dollars over the course of a year)

# The Return on Investment (ROI)



While there may not be a cost-benefit to investing in split seals for small pumps, the savings start to add up quickly with increasing shaft sizes.

For single-stage centrifugal pumps, a positive return-on-investment (ROI) typically starts at shaft sizes great than 65 mm (2.5"). And with specialty equipment and double-ended pumps, the ROI starts at even smaller shaft sizes.

# On What Applications Can I Use Split Seals?



Split seals can be used on large pumps that pump water based fluids. These include the applications found in the industries below:

## **Power Industry**

- Boiler Feed Pumps
- Condensate Pumps
- Raw Water Pumps
- River Water Intake Pumps
- Ash Handling Pumps
- Lime Slurry Pumps
- FGD Absorber Agitators
- Water Turbines

## **Chemical Processing**

- Cooling Water Pumps
- Dryers
- Ribbon Blenders
- Rotary Filters
- Reactors
- Mixers/Agitators

## **Water Processing**

- Influent/Effluent Pumps
- Pumping Stations
- Sewage Pumps

## **Desalination**

- Water Intake Pumps
- Brine Pumps
- Filter Feed Pumps

## **Pulp and Paper**

- White Water Pumps
- Stock Pumps
- Screw Feeders
- Stock Chest Agitators
- Pulpers
- Fanpumps
- River Water Intake Pumps
- Boiler Feed Pumps
- Sewage Pumps

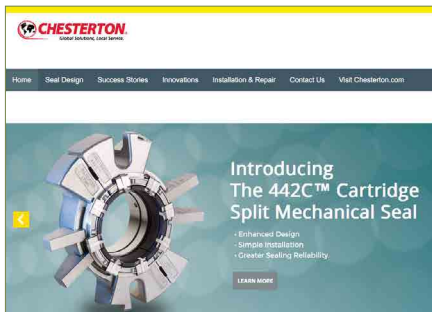
## **Refineries**

- Cooling Water Pumps

## **Manufacturing**

- Utility Water Pumps

# Want to Learn More?



## Microsite:

- Chesterton's flagship split seal: [chesterton442c.com](http://chesterton442c.com)



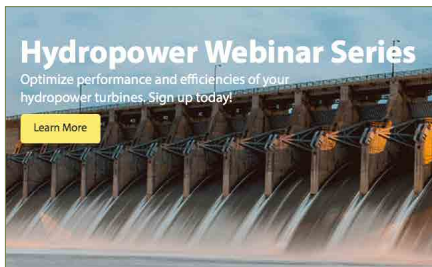
## Videos:

- [See how easy it is to install a split seal](#)
- [360 mm split seal installed on Isamill](#)
- [Large split installed on a slurry pump](#)
- [Split seals operating under high pressure](#)



## Blog:

- [Mechanical Seals vs Packing](#)



## Webinars:

- Identifying Environmentally-Induced Degradation in Hydroelectric Facilities
- Improving Water Turbine Reliability Using Split Mechanical Seals
- Sealing Kaplan Turbines

[Watch on our YouTube Channel and subscribe for updates](#)

