

## EMISSION CONTAINMENT SEAL

### High-Temperature ECS

High-temperature  
outer seal



### Low-Temperature ECS

Low-temperature  
outer seal



## DESIGN BENEFITS

- Eliminates the need for multiple seals and buffer/barrier systems
- Controls VOC and VHAP emissions (volatile organic compounds and volatile hazardous air pollutants)
- Contains nominal leakage from primary seal, providing additional level of safety
- API 682 qualified

## PRODUCT DESCRIPTION

The Emission Containment Seal (ECS) is an advanced dry-running bellows seal used in controlling emissions from low specific gravity fluids and volatile organic compounds. It is available in both low- and high-temperature designs. When used with a standard primary seal in a simple cartridge design, the ECS serves as a reliable back-up to the primary seal and contains fugitive emissions.



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# TYPE ECS®

## EMISSION CONTAINMENT SEAL

### Design Features

- Available in low and high temperature designs.
- The ECS is an easy-to-install self-contained cartridge. The outer ECS is used with either a rotating or stationary John Crane primary seal of bellows or pusher design.
- Optimized tribopair ensures long life with low face wear and heat generation.
- Stationary mounted, uniformly loaded bellows plates produce controlled seal face loads for extended and reliable performance.

### The Problem: System Upsets Result in Momentary High Levels of Emissions.

Single seal designs subject to momentary upsets in process systems may cause the product to flash, open up the faces and allow for momentary release of emissions. The dry-running ECS prevents these emissions from escaping to atmosphere and allows time for the primary seal to recover.

It can also handle primary seal failure for a short period of time, allowing controlled pump shut down without violating emission regulations.

Before the ECS, typical options used in solving this problem were to use dual seals with liquid buffer systems or sealless pumps.

- Dual seals with liquid buffer systems are expensive and lead to high operating and maintenance costs.
- Sealless pumps are expensive, are limited in their use and are subject to the same system upsets.

By using an ECS seal with a 95% efficient closed vent system (vapor recovery system),

you eliminate the cost of wet buffer systems and reduce the time required for associated pump monitoring.

### Low-Temperature ECS

The low-temperature ECS utilizes an edge-welded metal bellows and an O-ring as the secondary seal and is capable of sealing temperatures as high as 400°F (204°C).

### High-Temperature ECS

The high-temperature ECS seal along with a steam quench can be reliably used as a safety/backup seal in high temperature applications such as gasoline, gas oils and heat transfer fluids. The primary advantage of the high-temperature ECS is the additional level of safety/back-up it provides in the event of a primary seal failure. It is capable of sealing temperatures as high as 800°F (425°C).

Depending on the application, the high-temperature ECS is a reliable option to a multiple seal using an API Plan 52 unpressurized buffer system, and in general, for any multiple seal that is being considered for safety concerns.

## PERFORMANCE CAPABILITIES

Temperature	Pressure	Speed	End Play/ Axial Float Allowance	Shaft Runout
Low-Temperature – Up to 400°F/204°C <i>(depending on elastomer material)</i>	Dynamic Containment (wet): Up to 300 psi(g)/20 bar(g) Static Containment (wet and dry): Up to 450 psi(g)/31 bar(g)	Up to 5,000 fpm /25 m/s **	0.08mm/0.003"	0.02mm/0.001" FIM max. per mm/inch of shaft diameter
High-Temperature – Up to 800°F/425°C <i>(using flexible carbon graphite)</i>	Dynamic (dry): Up to 15 psi(g)/1 bar(g)			

\*\*Consult John Crane Engineering for applications outside these limits. Check basic pressure rating and performance capabilities of your appropriate primary seal selection.

Together, we will work to keep your mission-critical operations up and running, with support and guidance from our experienced team.

Consult John Crane Engineering for your specific seal selection.



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