

SEAL ASSIST SYSTEM™

Virtually zero packing case emissions

The Seal Assist System (SAS) is a patented secondary containment technology that virtually eliminates fugitive emissions from reciprocating compressor packing cases. SAS provides an extra layer of safety and environmental protection by enabling operators to effectively capture and dispose of the noxious, toxic or explosive gases that leak from all compressors after routine packing wear. In actual operation, the patented SAS has demonstrated the ability to keep fugitive emissions below measurable limits (essentially zero parts per million) over extended use.



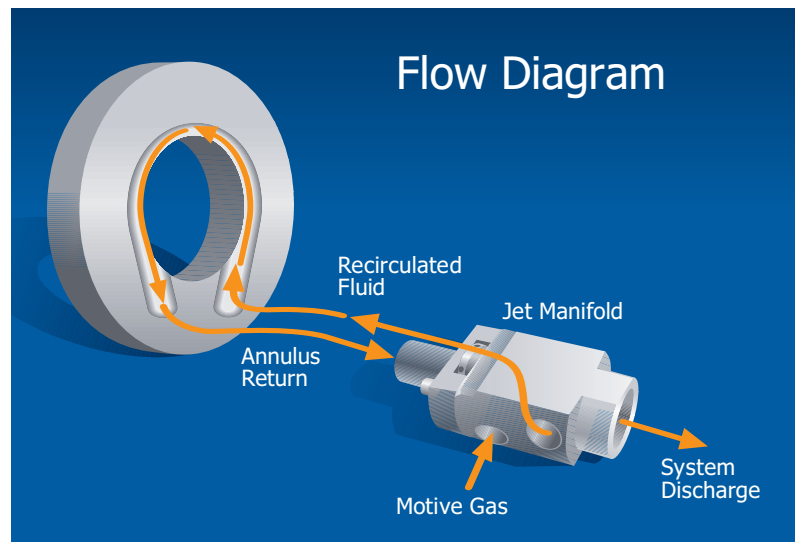
ELIMINATE COSTLY UNSCHEDULED SHUTDOWNS

In response to increasingly rigid restrictions for volatile organic compounds, most facilities have established monitoring programs for their reciprocating compression equipment. When a fugitive emissions source is identified, the equipment must be shut down and repaired within a specific time.

Such unscheduled shutdowns are costly and disrupt operations.

By combining a Seal Assist System with proprietary COOK CLEAN seal ring and packing case designs, operators have the ability to eliminate these unplanned shutdowns and implement proactive maintenance.

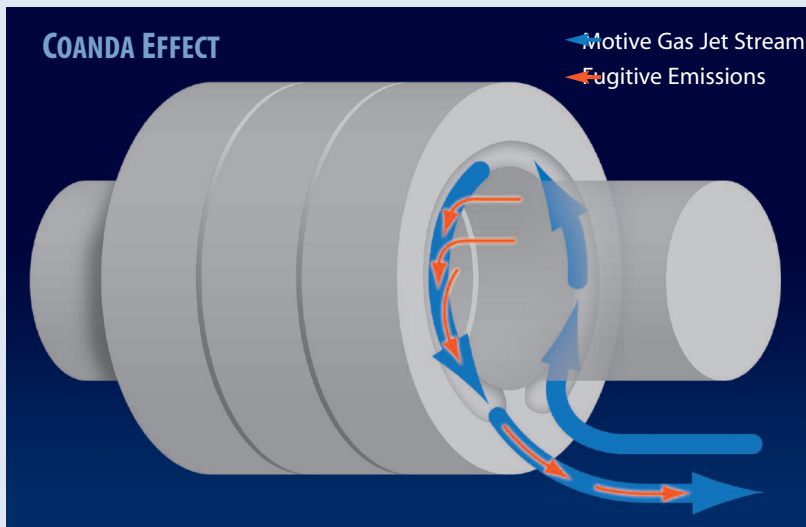
SAS/COOK CLEAN enables operators to easily monitor the performance of the primary seal assembly and assess when its effectiveness begins to decline. SAS captures fugitive emissions, allowing operators to schedule shutdowns and repairs at more opportune times. The absence of fugitive emissions also makes repairs safer and easier to perform.



BENEFITS

- ▶ IMPROVES SAFETY
- ▶ ENHANCES ENVIRONMENTAL COMPLIANCE
- ▶ PERMANENTLY SOLVES CHRONIC EMISSIONS PROBLEMS
- ▶ ELIMINATES UNSCHEDULED SHUTDOWNS
- ▶ ENABLES PROACTIVE MAINTENANCE
- ▶ REDUCES MAINTENANCE AND OPERATING COSTS
- ▶ INCREASES COMPRESSOR AVAILABILITY
- ▶ IMPROVES PRODUCTIVITY
- ▶ SIMPLE TO OPERATE
- ▶ REQUIRES LITTLE TO NO MAINTENANCE

How It Works



The Seal Assist System is a secondary containment system that uses a high-velocity jet stream to capture fugitive emissions directly from primary seals and deliver them to a control point, such as a vapor recovery or disposal system. The key to its effective-

ness is a fluid dynamics principle known as the "Coanda Effect." This principle refers to the tendency of a jet stream to "entrain," or pick up nearby molecules as it flows.

A compact jet manifold creates the stream in an area called the annulus — the

curved surface encircling the rod or shaft being sealed. As the stream flows at high velocity, and under slightly negative pressure, the annulus area is subjected to the Coanda Effect. When leakage from primary seals enters the annulus, it is entrained in the stream instead of escaping from the packing case.

The motive fluid or gas used to drive the jet manifold is typically nitrogen, but may also be process gas, steam or air depending upon the application. The efficiency of the system is dependent on a steady supply of motive gas at a minimum pressure of 125 psi. Higher-pressure motive gas will improve the performance of the system, but lower pressure will degrade performance rapidly. To minimize the consumption of motive gas, SAS utilizes a recirculation loop with a variable orifice to control pressure and flow in the annulus area.

SIMPLE TO OPERATE, EASY TO MAINTAIN

Provided the necessary infrastructure exists to support the Seal Assist System, little (if any) maintenance is required to maintain a virtually zero-emissions environment. Maintenance personnel need minimal training to support the installation and day-to-day operation is simple.

APPLICATIONS

The Seal Assist System is used whenever strict control of emissions is required for environmental or safety reasons. SAS is now utilized on reciprocating compressors, pumps and extruders, but can be adapted to almost any reciprocating or rotating shaft.

To learn how a Seal Assist System can enhance safety and improve environmental compliance in your

operation, contact your Cook Compression representative.

EnviroMetrix TECHNOLOGY Today, we know more about the cost of fugitive emissions to the environment. Cook Compression has always known what they can cost to our customer. This is why Cook has led the development and engineering of sealing products for over 100 years. No one knows more about keeping gases and liquids where they belong. Our offerings that carry the EnviroMetrix logo have been specifically engineered to contain fugitive emissions.



One Name, a World of Solutions

Compressor Valves | Capacity Control | Valve Restraining Systems | Rod Rings | Packing Cases | Piston Rings | Rider Rings
Pistons | Rods | Cylinder Liners | Compressor and Engine Repair Services | Diagnostics and Analysis Services | Online Monitoring
and Response Systems | Lubrication Systems and Services | Control and Automation | Engineering and Technical Support

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