Solar® Turbines

A Caterpillar Company

Powering the Future Through Sustainable, Innovative Energy Solutions

METHANE EMISSIONS REDUCTION SOLUTIONS FOR GAS COMPRESSORS

Solar Turbines has developed emissions reduction solutions to help customers achieve near-zero methane targets. These solutions are designed to mitigate the atmospheric release of fugitive methane from the dry gas seal primary vent from Solar's centrifugal gas compressors and to provide an alternate method for handling the methane when station or unit depressurization is required for scheduled maintenance or non-emergency shutdowns. These solutions do not alter compressor operation or decrease the safety, reliability, availability or efficiency of the equipment.

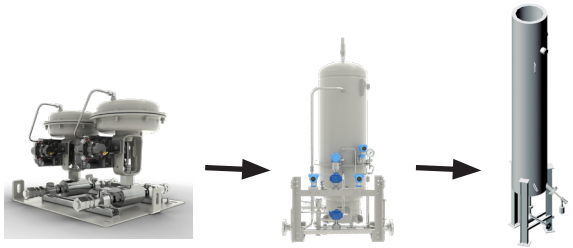
Key Benefits

- Reduction of compressor related CH4 emissions to near-zero levels
- Easy integration and maintenance
- High efficiency (98%) and smokeless operation of enclosed burner system

Features

- Integration with Turbotronic 3 and other control systems can be evaluated upon request
- Single system per compressor body; multi-body and/or multi-unit can be evaluated upon request
- NEC and ATEX Certified, Class 1 Div. 2 and Zone 2 applications

The **enclosed burner system** collects and burns vent gas from the primary seals in a contained system. The three-module system, as depicted in Figure 1, consists of a backpressure system (module 1) for the primary vent which enables the capture of the fugitive gas into an accumulator (module 2). The gas is moved into an enclosed burner (module 3) to effectively and efficiently reduce the hydrocarbon emissions through 98% efficient combustion, converting CH4 into CO2 and H2O.



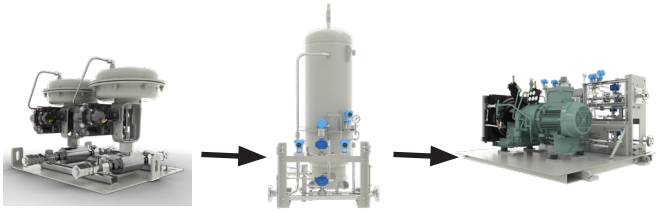
Primary Vent Back Pressure System (On or Off Skid)

Accumulator System (Off Skid)

Enclosed Burner 98% Destruction (Off Skid)

Figure 1: Enclosed Burner System

The **dry seal recompression system** uses a motor-driven reciprocating compressor to boost the gas pressure for reinjection to a location where it is best utilized and managed, typically the station suction or discharge header. Two recompression system sizes are offered based on process compressor size. The three-module system is depicted in Figure 2.



Primary Vent Back Pressure System (On or Off Skid)

Accumulator System (Off Skid)

Motor-Driven Reciprocating Compressor Near Zero (Off Skid)

Figure 2: Dry Seal Recompression System

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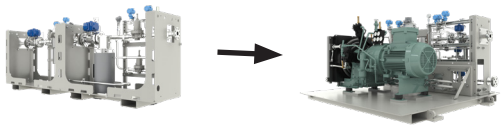
The **process vent recompression system** captures gas between the compressor suction and discharge valves using a recovery and reconditioning system. The gas is fed into a recompression system to boost the pressure for reinjection into a location upstream or downstream of the process pipe. The system is operational when the customer wants to depressurize the process compressor during a non-emergency shutdown. Two recompression system sizes are offered based on depressurization times. The two-module system is depicted in Figure 3.

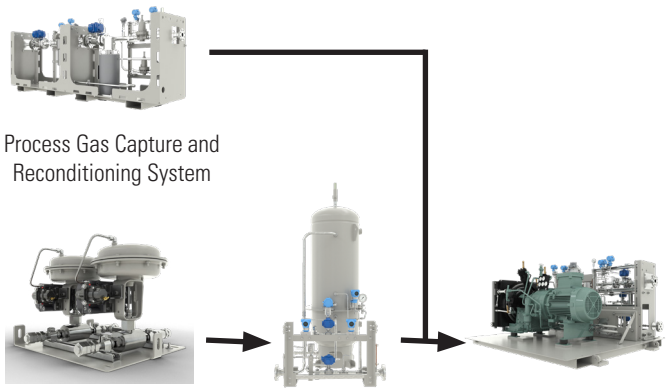


Process Gas Capture and Reconditioning System

Motor-Driven Reciprocating Compressor

Figure 3: Process Vent Recompression System

The **process and dry seal recompression system** is a combination of the two systems using only one reciprocating compressor package. This is a four-module system as depicted in Figure 4. Two recompression system sizes are offered based on process gas compressor size.



Process Gas Capture and Reconditioning System

Primary Vent Back Pressure System (On or Off Skid)

Accumulator System (Off Skid)

Motor-Driven Reciprocating Compressor Near Zero (Off Skid)

Figure 4: Process and Dry Seal Recompression System

The modular design of these systems allows for simple integration into turbine and electric motor drive packages with dry seal equipped centrifugal compressors and Turbotronic™ 4 or newer control systems. Solar designs and installs the standard systems per package configuration, flow and operating conditions, working directly with customers to identify the best location to reinject the captured methane emissions.

Additional Information:
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