

Sealing solution in the petrochemical industry for  
a dust collection system with solids containing medium

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## Espey WD200 for sealing blowers

In petrochemical processes, several blowers for material handling or pressure increases are needed. The American customer operating in the petrochemical industry has chosen Illinois Blower, Inc. as their supplier for blowers, providing the latest technology for a dust collection system within a reactor.

### Process description

The reactor in a petrochemical process works as a separator. Heated fuel oil vapour with a temperature of 650 °C (1,202 °F) is split into its heavy and gaseous components through the process of cracking. The gaseous components are transported downstream to a distillation tower. To provide this tower with clean cracked gas, the reactor contains a pressurized dust collection system, powered by a blower, to collect particles generated by material handling within the reactor system and the primarily inert gas. This system has to be maintained at high pressure and elevated temperature.

### Problem and challenge

For the small space between the blower housing and shaft bearing, the seal has to have a small axial installation length, a maximum of 70 mm (2.76"). The operating temperature is 75 °C (167 °F). The shaft rotates with 3,000 revolutions and has a diameter of 55 mm (2.17"). The operating pressure is 5.0 bar abs. (72.52 PSI). The medium is cracked process gas containing contaminants. The seal incorporates a provision for a buffer gas connection to keep process gas and dust contaminants within the reactor system and not passing into the seal. As buffer gas nitrogen is used. The buffer gas connection has to be designed in the form of a flange for maintenance purposes.



Blower for a pressurized dust collection system within a petrochemical reactor

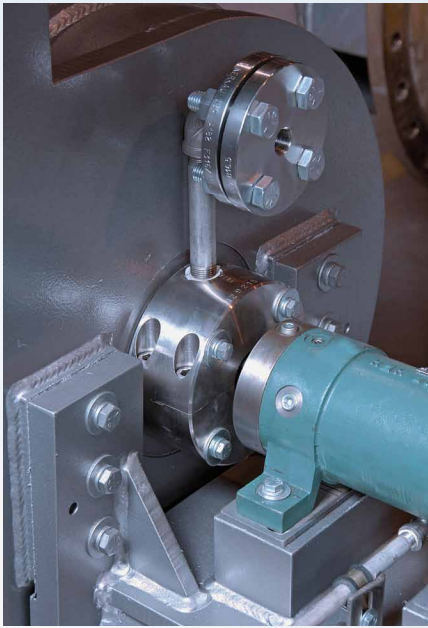
Photo by courtesy of Illinois Blower, Inc.

**EagleBurgmann Espey GmbH**

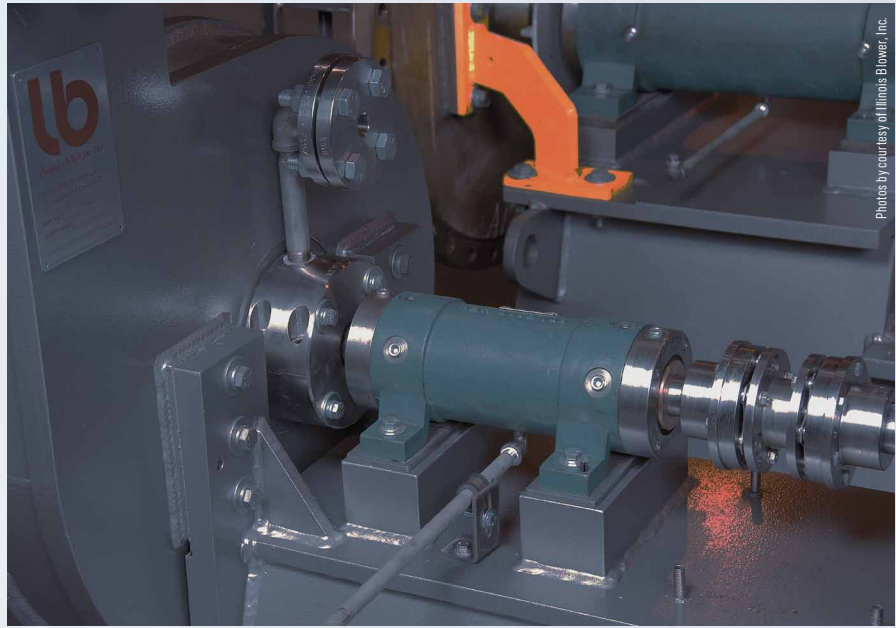
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Carbon floating ring seal Espey WD200, type WDKS with barrier gas connection in flange design



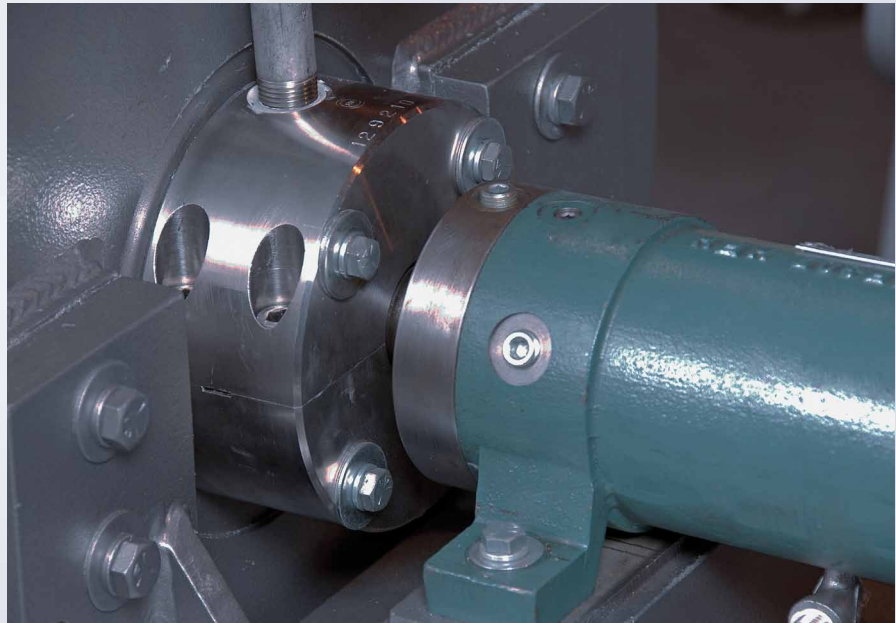
Photos by courtesy of Illinois Blower, Inc.

## EagleBurgmann Espey solution

To fulfil the application requirement of lowest leakages at operating temperature Espey designed the carbon floating ring seal Espey WD200, type WDKS with split housing for easy installation and maintenance, fitted with five seal rings and a buffer gas connection in a flange design for easy repair. This seal guarantees a long-term operation time.

### Operating conditions

Application: blower  
 Seal type: Espey WD200, type WDKS  
 Medium: cracked process gas  
 (dust-containing)  
 Operating temperature: 75 °C (167 °F)  
 Pressure abs.: 5.0 bar (72.52 PSI)  
 Revolutions: 3,000 min<sup>-1</sup>  
 Shaft diameter: 55 mm (2.17")  
 Barrier gas: nitrogen



Carbon floating ring seal Espey WD200, type WDKS