



## Adaptive Air Preheater Brush Seals



# Adaptive air preheater brush seals. Extended, continuous sealing.

**Our patented adaptive air preheater seal system** provides a measurable improvement over the standard metal strip seals in fan and fuel consumption, heat rate and air pollution control equipment performance over a longer period of time. A properly sealed air preheater provides tremendous efficiency gains for a very small time and money investment. If a plant is fan limited, reducing leakage in the air preheater is the fastest and cheapest way to restore fan capacity and plant output.

Sealeze adaptive brush seals are very resilient in this environment due to basic fundamentals inherent in brush seals. In just about every repetitive motion environment where a solid seal was replaced with a brush seal, the brush seal outperformed it in sealing, reliability and functional service life. This functionality is the reason brush seals are now regularly installed as an upgrade to conventional labyrinth seals turbines.

Single layer brush seals are replacing multi-fin labyrinth seals because of their improved sealing capabilities (50-80% better), longer service life and greater reliability.

**Adaptive Sealing – Fuller Contact/Less Drag:** The Sealeze brush seal design is inherently flexible and adaptable. It naturally conforms to variances in gap size and surface irregularities, like a warped sector plate, providing more continuous sealing over a greater percentage of the rotation. Brush is inherently elastic. Each filament can move independently, dissipating stress, reducing drag and wear to extend functional service life providing consistent sealing over multiple outage cycles. In aggregate, the thousands of filaments nestle together to make a very tight seal. The

brush's impermeable, malleable membrane enhances sealing an additional 70-80%.

**Forgiveability: Many APH seals suffer from improper gap setting at installation, resulting in inadequate sealing, seal breakage, and even rotor stoppage.** Brush is very forgiving of typical setting variances, and allows for closer settings for more continuous and consistent sealing. Plus, brush seals are not prone to the break-away failures common with strip or fin-type seals.

**Long Functional Service Life: The key word here is functional.** The brush's elasticity reduces drag and wear extending functional service life to over multiple outages providing consistent sealing 2-5 times longer than standard seals.

Rigid OEM seals rapidly wear to the smallest gap size, leaving the larger gap sizes open to leakage. In a variable gap environment, a seal that can compress to the small gap, and expand to maintain

sealing at the larger gaps is critical for air preheater leakage reduction. This brush seal does this. Since June 2007, the same set of Sealeze air preheater brush seals have successfully been reducing air leakage and improving heat rate and boiler efficiency at Colorado Energy Management's Hardin Generating Station.

**Resilience in Aggressive Service Conditions:** The brush design has several unique patented features that ensures reliable and consistent sealing performance in the presence of sootblowers, extreme turndown, or high pressure outage basket cleaning. (More information is available upon request.)



The patented impermeable malleable membrane incorporated into the brush, enhances sealing an additional 70-80%



OEM seal



Sealeze's adaptive brush seal naturally conforms to variance in surface irregularities

# Sealeze, the leader in engineered brush solutions.

**Patented Replaceable Seal Cartridge Design:** Sealeze brush provides for fast and easy replacement with a 2-part system. The quick-lock holder is installed once. It holds the brush seal in place during service, but during the outage allows the brush to be removed and replaced quickly without disturbing the gap setting.

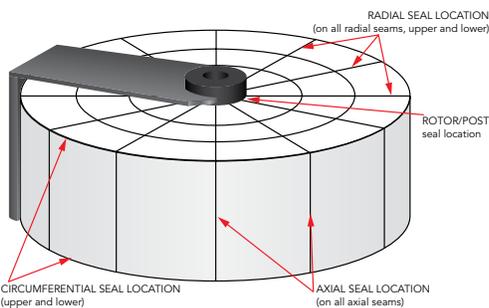


Sealeze brush seals are available for radial, circumferential and axial seal locations.

## Adaptive air preheater brush seals

- Enhance sealing an additional 70-80%
- Not prone to break-away failures
- Consistent sealing that lasts 2-5 times longer than standard seals
- Proven to reduce in air leakage, improve heat rate and boiler efficiency

**Ljungström Type rotary plate regenerative air preheaters** are widely used in the electric utility, petroleum refining and pulp & paper industries. Preheaters deliver some of the highest returns in thermal efficiency to the plant. In coal-fired power plants, the air preheater can account for over 10% of a boiler's thermal efficiency enabling reduced heat rates and fuel consumption.



### Factors Affected By Air Preheater Leakage and Effective Sealing

<b>Fuel Savings</b>	A properly sealed APH improves heat rate and can reduce fuel consumption by 1-5%. That equals lower dispatch costs and potentially millions in annual savings.
<b>Fan HP</b>	Reducing APH leakage reduces fan horsepower consumption, resulting in saleable MW's. It gets even more costly when a plant is prone to running out of fan.
<b>Capacity Loss</b>	Fan limitations can impact capacity output at the times when MW's are needed most and inability to deliver them is the most expensive.
<b>APC Performance</b>	More consistent, predictable air pollution control equipment performance due to better control of flue gas temperatures, pressures and velocities.
<b>CO2 Emissions</b>	The best way to reduce CO <sub>2</sub> , or other emissions, is not to generate them... by burning less coal. For every ton of coal not burned per MW generated, about 2.86 tons of CO <sub>2</sub> are not released.

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Sealeze Brush Products

Sealeze's reputation is built on rapid quotations, short design and manufacturing lead times, knowledgeable sales representatives and customer service.



Sealeze is the industry leader providing brush-based solutions for industrial, weatherseal and pest control applications. We manufacture brush products that provide simple and cost-effective options to seal, shield, guide, position, dissipate static, and close gaps. Sealeze brushes can be found on a range of equipment and vehicles from machine tools and conveyors to trains and aircraft.

Sealeze's high customer satisfaction is supported by our ISO 9001, Kaizen, and Lean TPM programs.

Sealeze supports the environment by considerably improving sealing in preheaters providing a measurable reduction in fuel consumption, fan power usage and CO2 emissions. Many of Sealeze's strip brush components are made of recycled materials and all are recyclable.

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