

Active Seal™

All mechanical seals leak to some extent, but the leakage should be kept on a minimal level to avoid costly breakdowns. However, even a minimal leakage may cause problems over time, especially for pumps and mixers in continuous duty. Accumulated leakage may cause costly service actions, such as emptying the inspection chamber or the stator housing. In worst case, it may cause motor or bearing failures. A zero leakage into the drive unit increases the sealing reliability and minimizes the risk for such service actions.



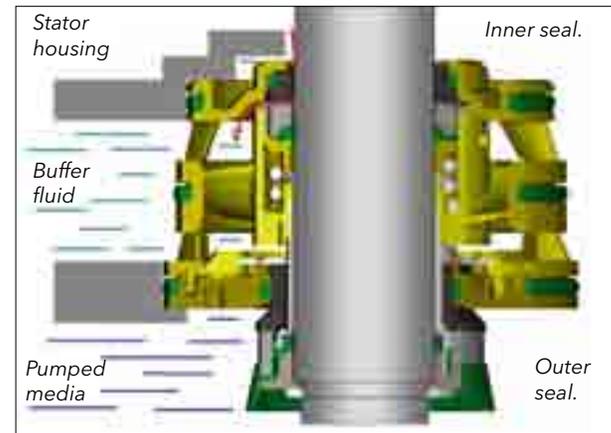
Active Seal™ do just that.

Unique and patented

Prevents liquid to enter into the motor

The Active Seal system is a zero leakage, double seal system that prevents liquid from penetrating into the motor housing. The active inner seal acts like a micro-pump, continuously preventing liquid from entering the motor housing, while the outer seal prevents leakage of the pumped media into the buffer chamber.

Used as inner seal, the active seal will continuously pump liquid from the stator-housing side of the seal to the seal cavity side. That is, if there would be any liquid to pump. In reality, the seal never pumps liquid from the stator side since the fluid is pumped back already before it has fully penetrated through the seal into the dry side. The active seal is only applicable as inner seal in a double face seal system.



Active sealing applied in a Plug-In seal. Any buffer fluid that may leak into the stator housing is immediately pumped back to the buffer fluid chamber.

The principle

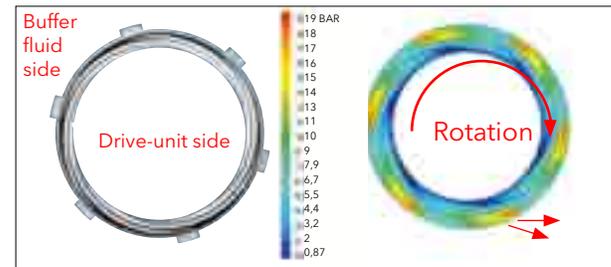
Pumping action through laser cut grooves

The pumping action is achieved by laser cut grooves in the rotating seal face, continuously pumping liquid from the inner diameter to the outer diameter of the seal ring. The viscous shear of the fluid creates a hydrodynamic pumping effect that directs any liquid on the drive-unit side back to the buffer-fluid side of the seal.

The shallow laser cut grooves are spiraling from the inner diameter to the outer diameter, opposite to the rotation. During operation, any fluid in the grooves will be forced along the groove to the outer tip by the viscous shear/drag of the fluid, not the centrifugal action. Any leakage from the oil housing that enters between the seal faces penetrating to the inner diameter will continuously be forced back to the oil housing.

The grooves are open at the inner diameter but are

leaving a 1mm unbroken seal face around the outer diameter. The unbroken seal face will act as a normal seal face, blocking the seal when the pump stands still. The pressure increases along the groove to reach maximum at the groove tip.



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Less downtime and lower maintenance costs

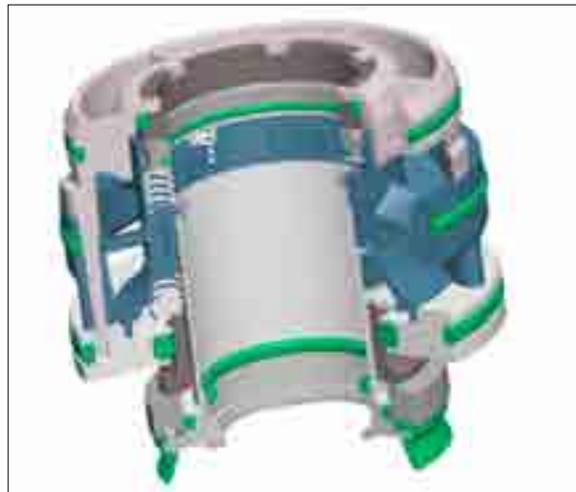
Extended service inspection intervals

Extensive field tests prove that Active Seal minimizes the risks for bearing and stator failures. Thanks to this, Active Seal facilitates extended service inspection intervals in many applications. The intervals for major overhaul service/repair, when certain wear parts are changed, remain. The recommended interval for service inspections is extended from 8,000 hours to 12,000 hours for the 3000-and 3001 series (midrange and large wastewater pumps), 4600-series (compact mixers) and for the 7000-series (propeller pumps).



Easy to upgrade

Plug-in seals with the Active Seal™ system are completely interchangeable with earlier generation of Plug-In seals. In addition, active inner seals are separately interchangeable with inner seals in Flygt double seal systems with separate single seals. Re-lapping of inner single seals with laser cut grooves is possible, but will destroy the Active seal functionality.



Range

The following Flygt pumps and mixers contain the Active Seal system

Flygt product range	Pump or mixer model											
2000 series	2201	2250	2290	2400	2610	2620	2630	2640	2660	2670		
3000 series	3140	3152	3153	3170	3171	3201	3202	3231	3240	3300	3301	
	3306	3312	3315	3351	3356	3400	3501	3531	3602	3800		
4000 series	4610	4620	4630	4640	4650	4660	4670	4680				
5000 series	5100	5150	5540	5550	5560	5570						
7000 series	7045	7050	7055	7061	7065	7076	7081	7101	7105	7115	7121	7125

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