LEVITEX® SEAL

The LEVITEX seal is a cost-optimized, dry gas seal, which can be assembled on a combustion engine crankshaft in place of a conventional oil seal. This concept of dry gas sealing is already in mass production in many different applications, e. g., steam turbines, turbo chargers, and compressors.

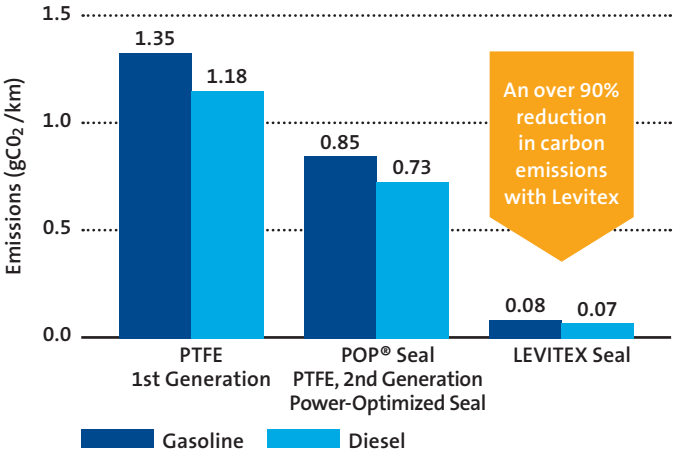
It operates with two interacting surfaces containing high precision micro-structures. This basic function generates a very stable gas film in the magnitude of a few micro meters, which prevents oil leakage.

The low viscosity in the gas film leads to a friction close to zero. The high rigidity of this gas film guarantees a safe function under all conditions. Additionally, running in this mode without rigid body contact, the LEVITEX seal has virtually no wear.

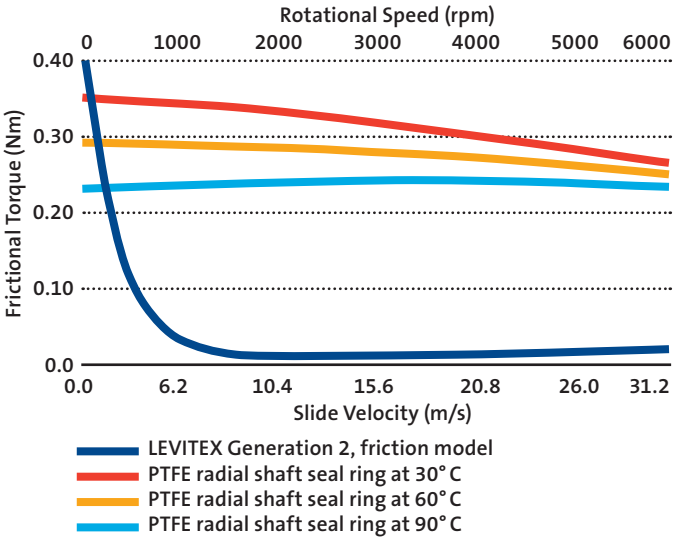
Compared with friction-optimized Simmerring shaft seals, there is an emissions reduction potential of approximately 0.5 to 1.0 g CO_2/km. Considering future development in global emissions regulations, OEMs can take a great step towards the specified aims.

VALUES FOR THE CUSTOMER

Energy Efficiency by Friction Reduction
CO_2 emissions caused by main oil seal inefficiency in a 1.6 liter engine with a double-clutch transmission



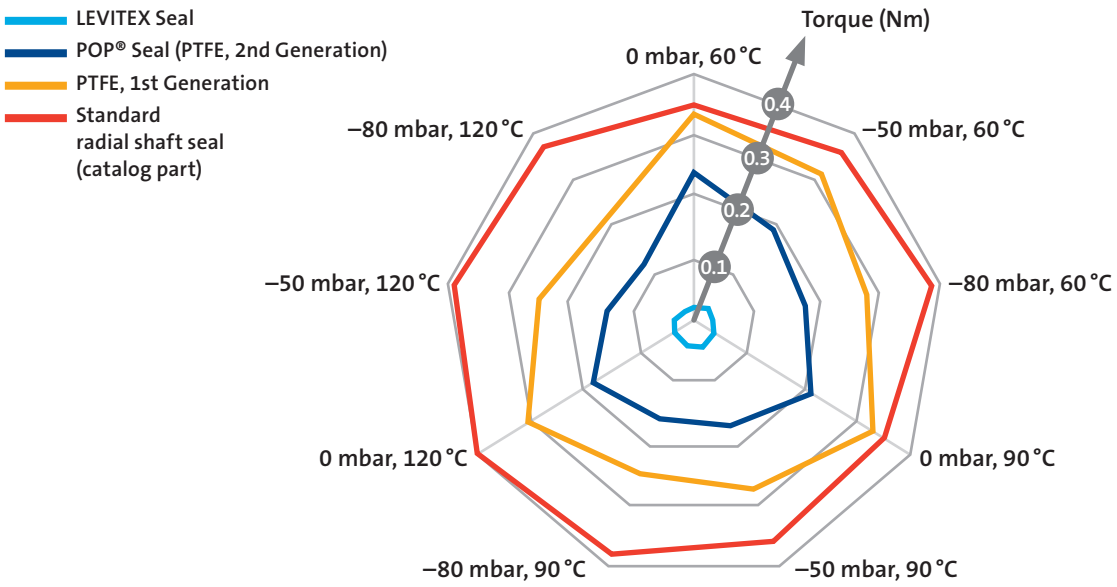
Friction Comparison: LEVITEX versus standard PTFE shaft seals



FEATURES AND BENEFITS

- Dry gas seal for crankshaft applications
- Shaft speeds of 8,000 rpm and higher are possible
- Higher pressure and underpressure stability and performance than standard oil seals
- Coated sealing surfaces
- Operating temperatures –40 °C to 150 °C
- CO_2 emission reduction of between approximately 0.5 and 1.0 g CO_2/km at NEDC
- Minimized friction torque due to optimized design typically < 5W friction power @ 2000 rpm
- Wear resistant (also with Start-Stop)
- No lubrication is needed
- Reduction of shaft surface finishing compared to standard oil seals
- Dry-sump lubrication is possible because there are no issues with boundary lubrication and under-pressure

Average torque of velocity sweep at different temperature and pressure



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