

LEVITEX® SEAL

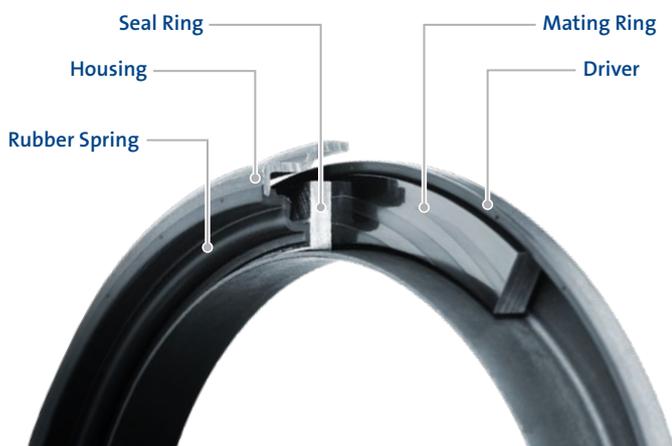
The Levitex seal is a **cost-optimized, dry gas seal**, which can be used in various applications such as combustion engine crankshafts or hybrid / electric powertrains instead of a conventional oil seal. This concept of dry gas sealing is already in mass production in many different applications, e. g., steam turbines, turbochargers, 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 CO₂/km. Considering future development in global emissions regulations, OEMs can take a great step towards the specified goals.

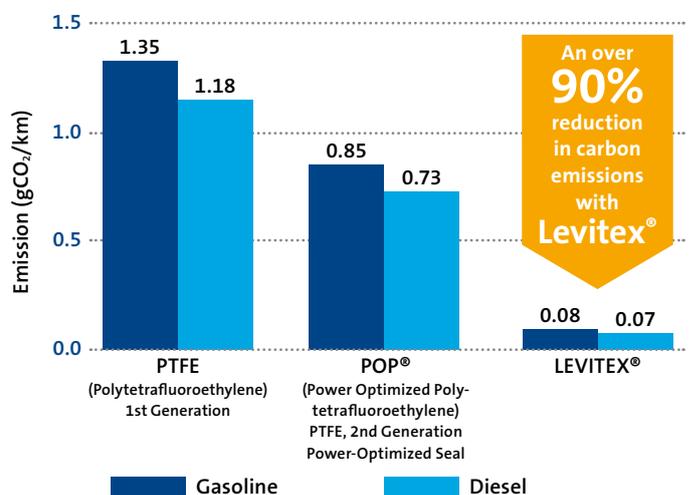
Levitex® construction scheme:



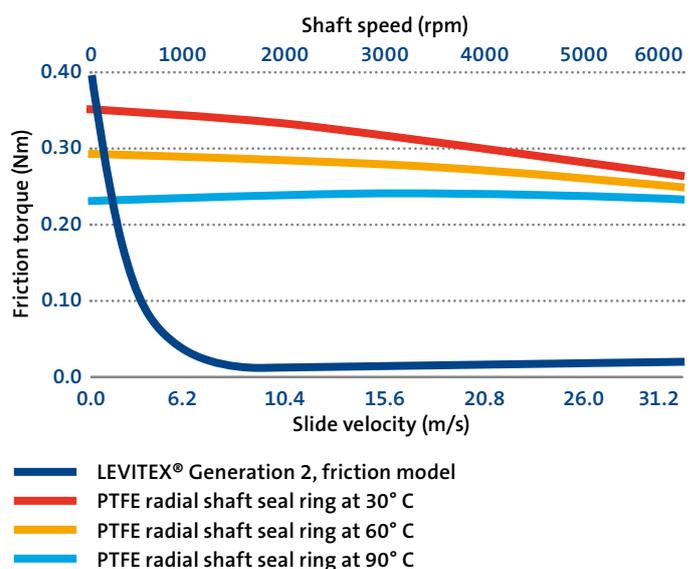
VALUES FOR THE CUSTOMER

Energy efficiency by friction reduction

CO₂ emissions caused by main oil seal inefficiency in a 1.6 litre engine with a double-clutch transmission



Friction Comparison: Levitex® versus standard PTFE shaft seals



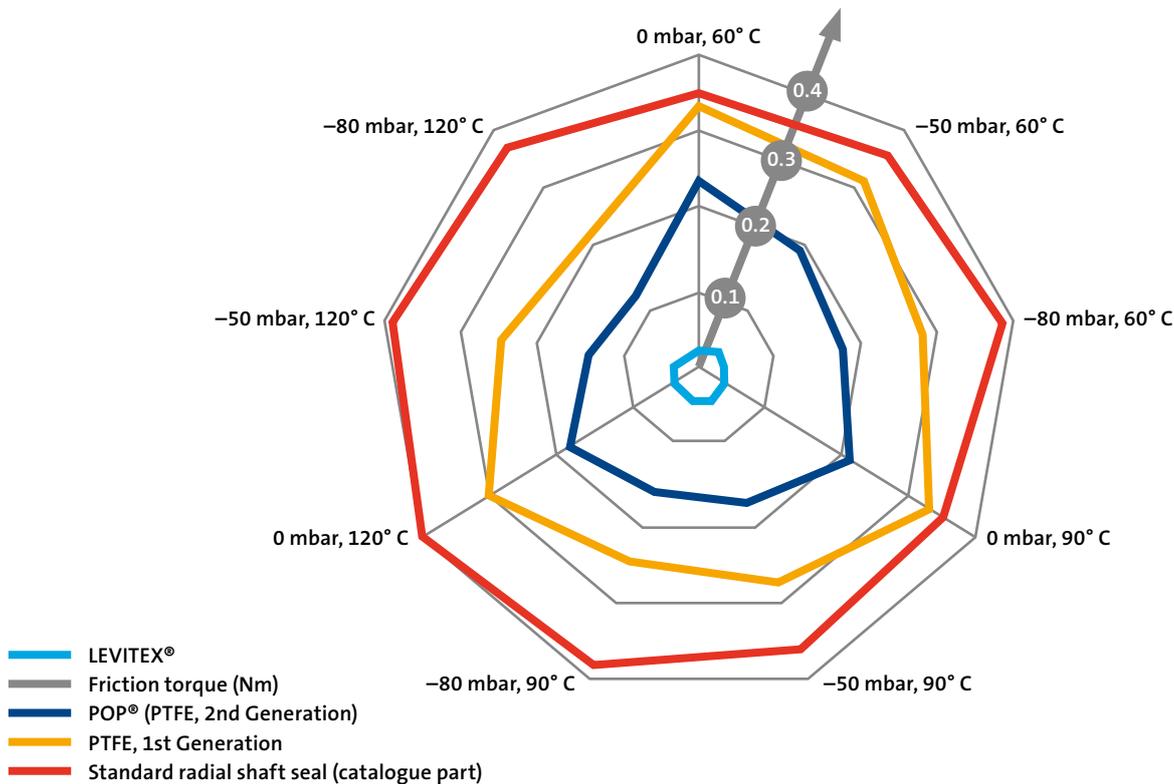
FEATURES & BENEFITS

- Dry gas seal for different applications
- Shaft speeds of 8,000 rpm and higher are possible
- Higher pressure and negative pressure stability and performance compared to standard oil seals
- Coated sealing surfaces
- Operating temperatures -40°C to 150°C
- CO_2 emission reduction of between approximately 0.5 and gCO_2/km at NEDC

OTHER IMPORTANT INFORMATION

- Minimized friction torque due to optimized design typically $<5\text{W}$ 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

Average torque of velocity sweep at different temperature and pressure



The information contained herein is believed to be reliable, but no representation, guarantees or warranties of any kind are made to its accuracy or suitability for any purpose. The information presented herein is based on laboratory testing and does not necessarily indicate end product performance. Full scale testing and end product performance are the responsibility of the user.

www.fst.com