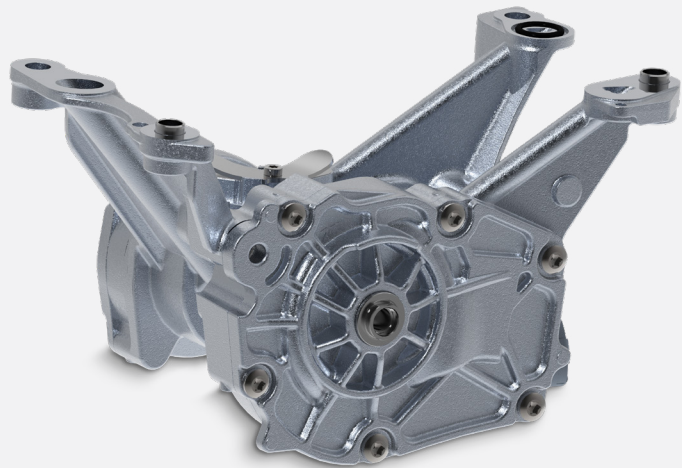


# Combined vacuum and engine oil pump



## Braking system and engine lubrication

The solution to meet also challenging packaging requirements



### Vacuum and oil pump combined

With a compact design and option to integrate high-pressure fuel pump

### 50% CO<sub>2</sub> reduction

Compared to average market vacuum pumps and fixed-displacement oil pumps (NEDC)

### One solution, many application

Able to fulfill several functions and complex installation space requirements

#### TECHNICAL CHARACTERISTICS

Individual components	Vacuum pumps, oil pumps (standard or variable), low-pressure fuel pumps, high-pressure gasoline and diesel pumps
External drive	Directly by crankshaft or by gear, chain or pulley
Internal drive	Coupling or through shaft
Installation position	In the oil pan, as part of the engine cover or as an engine component

- Two functions with a component: the mechanical vacuum pump supplies the vacuum required for pneumatic operation, while the variable oil pump performs engine lubrication and provides the circuit with the right amount of oil
- Compact design and optional measures for higher cold-start requirements
- Can be manufactured in different drive and control concepts, with possibility to integrate high-pressure fuel pumps (gasoline and diesel) and pre-supply pumps