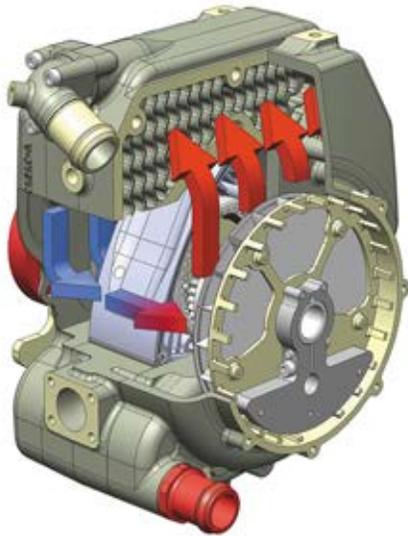


## Technology: Patented, Liquid-Cooled Compact SPARCS\*

Compact SPARCS\* is integrating an intercooler, or heat exchanger within the rotor housing. As with SPARCS\*, the re-circulating oil-gas mixture passes through the engine's rotor, absorbing heat before being ducted through the integrated heat exchanger, which rejects heat into the engine's rotor housing and ultimately to the engine's main liquid cooling system.



The Compact SPARCS\* system utilises the same self-pressurising blow-by gases from the SPARCS\* patent detailed overleaf. As in the standard SPARCS\* system, the pressurised oil-gas mixture is again recirculated in a completely closed loop circuit through the rotor and then through a heat exchanger by an internal fan which is mounted to the engine drive shaft. In Compact SPARCS\* however, the heat exchanger is integrated within the engine's rotor housing meaning that the heat can be transferred to and ultimately be rejected through the engine's main liquid cooling system. Compact SPARCS\* builds on the benefits of SPARCS\* by delivering an even more compact cooling system with even fewer components.

Integrating the heat exchanger within the rotor housing also has the positive effect of heating the previously cold areas of the engine (i.e. induction port area), improving overall thermal balance and allowing a more even axial thermal expansion of the engine to take place. This thermal balance improves gas sealing at the axial ends of the apex seals which results in increased engine operational efficiency and reduced work load for the rotor's seal pack.