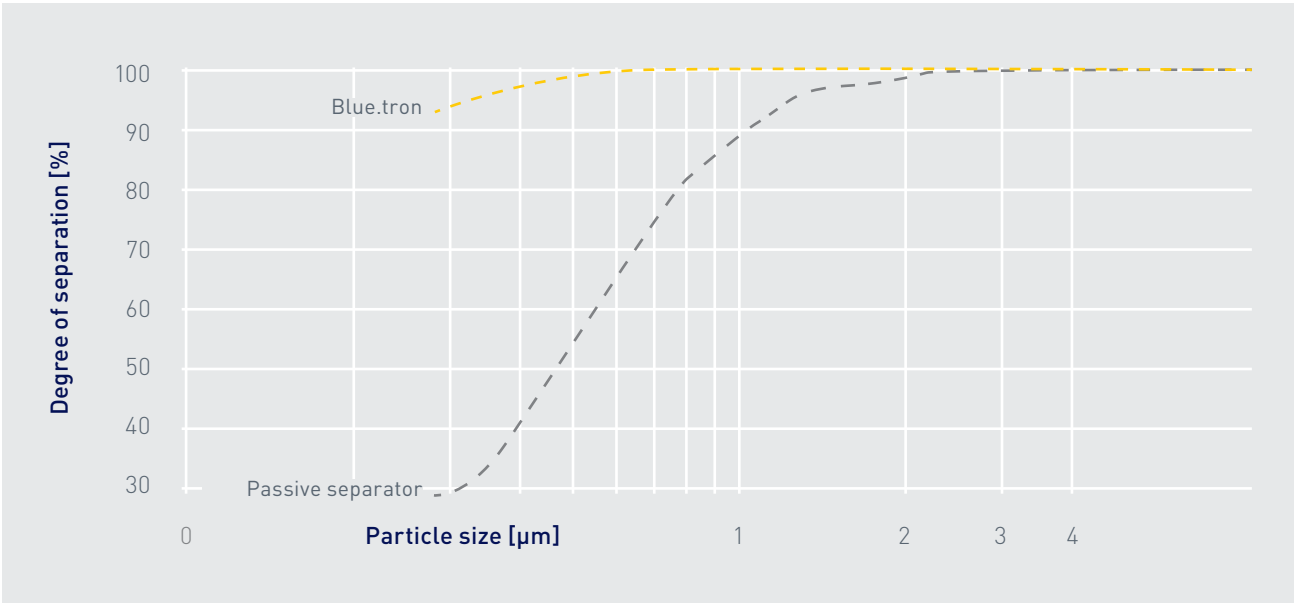


Increased engine power and improve emissions performance.

All around the world, new emission standards are imposing rigorous requirements on engine development. Low-emission gasoline and diesel engines with modern combustion technology make excellent oil separation values a necessity for the crankcase ventilation. Consequently, the technological trend is towards active ventilation.

Engine development challenges	Crankcase ventilation requirements
Downsizing, higher operating temperatures, supercharging, low-viscosity oil, water injection, low-pressure EGR	Significantly finer particle spectra
De-throttling the engine air duct	Less energy for passive separators
Higher specific engine load requires cooling of engine components with oil (pistons, valve train, etc.)	Higher oil concentration



For active crankcase ventilation Blue.tron offers significantly increased degrees of separation, particularly for fine particles.

Blue.tron - ready for future fuels.



Sustainable fuels from renewable energy or using biological sources are currently subject of many discussions. Not only do these fuels emit no additional CO₂ during combustion, they also enable significantly lower-emission combustion. Engines that operate with hydrogen, methanol, ethanol, ammonia and OME are currently being tested and developed to production maturity. The electrically driven Blue.tron disk separator ventilates the crankcase in parallel with the crankcase itself. This leads to a minimization of water accumulation and high concentrations of harmful gases in the crankcase - and all of this without any disadvantages for the separation efficiency, the differential pressure or the oil return.

Any other questions?

Hengst SE
Nienkamp 55-85
48147 Münster
Germany
info@hengst.de
+49 251 20202-0

[X](#) [in](#) [f](#) [ig](#) [yt](#)

www.hengst.com/blue.tron



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The electric disk separator.

Active crankcase ventilation for maximum efficiency and minimal emissions.

Blue.tron

purifying our planet



The electric disk separator.

The electrically-driven Blue.tron disk separator is currently the most advanced crankcase ventilation device. It offers high-efficiency oil separation and active blowby conveyance for crankcase ventilation.

Reduction of the oil input in the engine intake system enables higher charge air pressure level, which can be utilized to boost engine performance and efficiency.



The Blue.tron construction kit.

The Blue.tron is available in three standard sizes. Individual customer solutions are also possible, thanks to the modular structure. The performance requirement can be matched to every engine

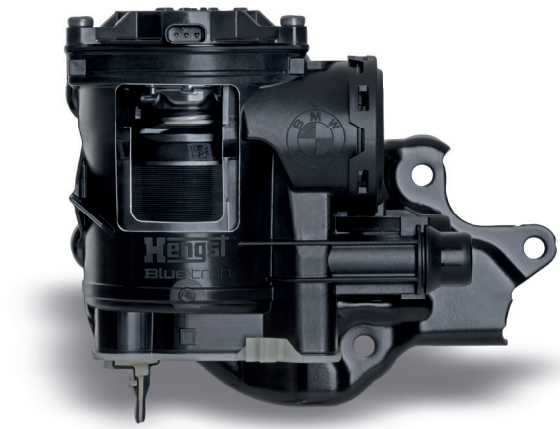
operation point, and positioning on the engine can freely be selected. This offers technical excellence and high commercial efficiency for every area of implementation.

Criteria	Individual	Blue.tron 160	Blue.tron 240	Blue.tron 300
Displacement/ engine power	< 16 dm³ / < 500 kW	< 5 dm³ / < 250 kW	< 9 dm³ / < 350 kW	< 16 dm³ / < 500 kW
Blowby flow rate	< 400 l/min	< 160 l/min	< 240 l/min	< 400 l/min
Width x height x depth (mm)	As desired by the customer	138 x 173 x 100	138 x 188 x 100	148 x 249 x 170
Orientation	Horizontal or vertical	vertical		
Blowby- connections	As desired by the customer	Normaquick or tube connector		Tube connector
Oil drain	As desired by the customer	Tube connector		
Supply voltage	12 V nominal (9 ...16 V) or 24 V nominal (18 ... 32 V)			
Power consumption	25 W nominal 60 W max. acceleration 140 W cold start (–30 °C)			
Electrical connection	12 V Hirschmann Automotive 12 V & 24 V Tyco HDSCS			
Control	12 V LIN Bus (speed controlled) 12 V & 24 V CAN Bus (speed controlled) 12 V & 24 V constant rotational speed			

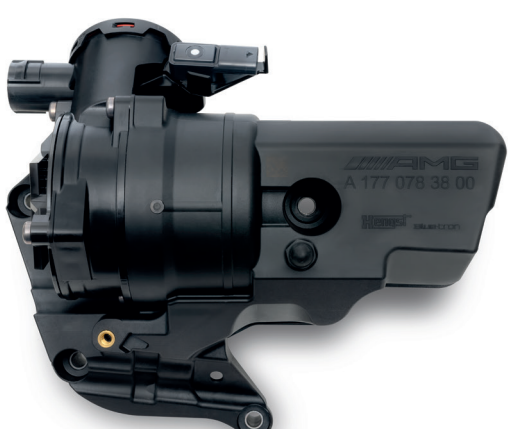
Effect on engine operation.

The Blue.tron modular system makes it possible to implement customer-specific requirements in an efficient manner. In combustion engines, the excellent separation performance of the disk separator reduces the sooting tendency of the compressors and thus allows increased boost pressure levels. In gasoline engines, the low oil transfer into the combustion system is particularly beneficial in preventing pre-ignition

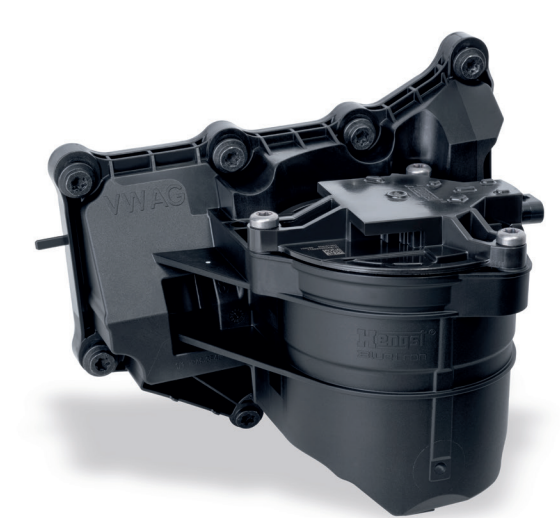
effects. In both cases, the conveying effect of the disk separator supports oil recirculation and thus extends the continuous operating time of the engine. At the same time, this feed effect creates the basis for negative crankcase pressures across the entire engine map. This makes the Blue.tron the complementary technology for compliance with future emissions regulations.



Customized solution for BMW.



Customized solution for Mercedes AMG.



Customized solution for Volkswagen.



Modular solution scalable for any application.