

# Electronic Cooling Fan with Brushless DC Motor



## Description

The **Electronic Cooling Fan (ECF)** is composed of a brushless DC motor (BLDC) with integrated control electronics without sensor, the fan and the shroud. Blades and shroud are engineered and optimized with latest fluid dynamics (CFD) and FEM tools for best in class performance and efficiency.

The ECF contributes to lower emission and fuel consumption.

## Features/Specifications

**BLDC** advantages over brushed DC motors:

- Higher efficiency and reliability
- Fuel consumption/CO<sub>2</sub> and noise reduction
- Longer lifetime (no brush erosion)
- Elimination of ionizing sparks from the commutator, and overall reduction of EMC
- Lower power consumption
- Size and mass savings
- ECU integrated in motor, high current separated from control electronics
- All motor classes are VDA validated.

**ECF**

- Multilevel safety concept incl. thermal fuse
- Electronically tuned torque and drive to accomplish highest aerodynamic efficiency and thus optimized motor power.

## Innovation Pillars



CLEANER



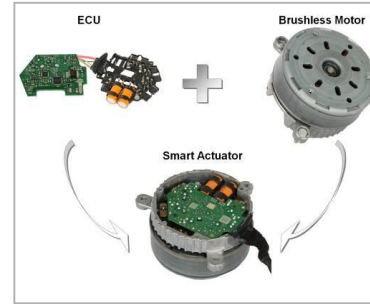
LIGHTER



SMARTER

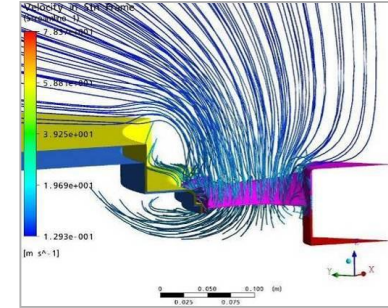
## Smart Actuator

Brushless DC motor (BLDC) with integrated Electronic Control Unit



## Aerodynamics

Simulation for highest efficiency and optimized BLDC motor power



## BLDC Motor Range

300W

400W

500W

600W

850W

## Applications

- Single Fan
  - Dual Fan
- Complete module design to accomplish highest possible efficiency and lowest possible noise and vibration

