# Aero & Thermodynamics

Aerodynamics is one of the key enablers to fulfil future environmental requirements. At the same time, it shall be balanced towards an attractive styling.

The key parameters to work with and optimize are drag and lift forces. In addition, the customers expect the vehicle to be without any disturbing wind-noise and no build-up of dirt on the side or in the back of the vehicle.

Fulfilment of requirements can be achieved having the right focus of the aerodynamic performance of the total vehicle as well as components early in the project.

Thermal performance, mainly under-hood, is affected by the styling and design of the front opening and the engine bay design. The design of these parts needs to be balanced to meet several requirements including thermal- and aerodynamic requirements, to reach an optimized product.

Hybridization is a new challenge for the thermodynamic performance in terms of complexity in developing the systems to keep the right thermal conditions for compartment, energy storage and power electronics.

AFRY has experienced teams and a well-developed process to optimize aerodynamic and thermodynamic performances by means of virtual tools in a cost and time efficient way.

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