

ENGINE AIR CLEANER INNOVATION FOR FILTRATION AND BEYOND BY FLEXIBLE DESIGNS OF PANEL FILTERS

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A good engine requires for its performance and durability an excellent air cleaner. Major tasks are airflow handling in clean and dirty side ducts and protection from particles, water or snow. For this filtration task the key component is the filter element. The size and shape of a typical air filter element has evolved over the years due to reduction of the available design space in the engine compartment. The trend goes to smaller sizes and different shapes, such as a cut of edges. However, most time, the shape of a filter element remains defined by composition of straight lines.

We are going to explore for a generic case how a more flexible element design would affect filtration performance. Looking at a typical design space we will do a simulation comparing filter element design options - even beyond common production standards. A very interesting aspect of the technical study will be acoustics. It will be presented how slight design changes by a more flexible element geometry can have a major impact on the acoustic performance. Furthermore, we will discuss how a technical change of the gasket result in better filtration performance. The presentation will focus only on the technical innovation of how the combination of housing and flexible element design improves filtration performance and acoustics for a generic case.