

ESI Virtual Performance Solution helped ŠKODA Score 5-Star Rating from Euro NCAP



Challenge

Ensuring that new cutting-edge automotive designs meet the latest safety and performance requirements can be quite an obstacle for automakers. This challenge is intensified by the fact that designers and engineers are not able to iterate on designs early in the product development cycle - unless they are using Virtual Prototyping.

Benefits

Using ESI Virtual Performance Solution (VPS), ŠKODA engineers were able to virtually test the performance of the car, investigate several options and perform iterations before design was frozen. Using VPS paid off as the ŠKODA Superb received the highest safety rating from Euro NCAP.

Story

Striving to meet recent changes in automotive safety regulations presents new challenges for design engineers. They know they need to take their testing to the next level and for that, they can rely heavily on ESI Virtual Performance Solution (VPS) simulation software.

ŠKODA uses VPS early in the engineering process, before design freeze. VPS's single core model enables users to run thousands of simulations to investigate different design variants and optimize both the vehicle structure and the passive safety system (such as airbags). The ability of VPS to take into account the manufacturing effects during performance tests facilitates a high level of simulation accuracy.

Specific tests can also be conducted to observe the behavior of the car's front, taking into account the latest pedestrian protection regulation. With the VPS single core model, the hood's reinforcement, shape, and stiffness can be enhanced.

ESI Group's local subsidiary has been working with ŠKODA for over 20 years: using ESI Virtual Performance Solution software paid off for this OEM. It was possible to investigate and improve the proposed new vehicle design, develop a new generation of passive safety features and incorporate high strength steel into the car body. Last but not least, they secured a 5 star rating, from Euro NCAP and was able to bring another highly innovative and safe vehicle to market.

"Virtual Performance Solution (VPS) continuously improving performance in High-Performance Computing (HPC) based on its numerical robustness and outstanding stability in result quality. Scalability and parallel processing techniques were the key items to speed-up solving complex computational problems that helps to run thousands of structural crash and occupant safety simulations needed in car development to achieve best ratings in Euro NCAP test procedures."

Miloslav Pašek

ŠKODA AUTO Support Team Leader
MECAS ESI s.r.o.

"ŠKODA has been using ESI Virtual Performance Solution (VPS) successfully for many years, to conduct virtual car crash tests, to ensure the safety of both the occupants and pedestrians, and to check the stiffness or frequency response of car body components such as the hood or headlamps, all on a single-core model. In designing the new and revolutionary ŠKODA Superb, we used VPS early in the development cycle, before design freeze, conducting thousands of virtual tests, investigating different options and design variants, making the best trade-offs, and ultimately obtaining 5 stars at the EuroNCAP."

Tomáš Kubr, Ph.D.

Head of Functional Development (EKF),
ŠKODA AUTO

"Reliable numerical simulations are fundamental for a successful car body development."

Dipl.-Ing. Arne Leetz

Head of Development Exterior and Interior (EK)
ŠKODA AUTO



Physical test versus simulation of a frontal impact with ESI Virtual Performance Solution



for more information
www.esi-group.com/VPS

