An employee survey is defined as a survey process in which the opinions of employees are ascertained, as well as the motivation and performance of the company's employees. An employee survey is an integral part of ongoing employee feedback to obtain an overview of factors such as managerial behavior of superiors, motivating elements in the workplace, and satisfaction.

Conclusion. The software module is a well-thought-out information system that serves for automated processes of working with personnel, storing all the credentials about the employees of the enterprise in a single database. After the completion of the testing phase, the results that were obtained confirm the operability of the created system and its full compliance with all the requirements.

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COMPARATIVE ANALYSIS OF THE WING AND SPOILER AERODYNAMIC PROPERTIES

Introduction. In this work, the downforce of a car wing and a spoiler was compared. The creation of the car model, wing and spoiler was carried out in the SolidWorks program.

Aerodynamics is a section of continuum mechanics, in which the purpose of research is to study the patterns of air flow and their interaction with obstacles and moving bodies [1, p. 1].

The rear wing is a special part designed to improve the grip of the wheels with the road surface, as well as improve the aerodynamic properties. It is fixed on special brackets and is made much higher than the rear of the body. [2, p. 1]. You can see an example of a wing in Figure 1.

Figure 1 — Wing

The spoiler has other aerodynamic features and takes the shape of the body, tightly fitting it around the edges. In addition, the spoiler has a tight mount, smoothly flowing into the body of the car. [3, p. 1]. The spoiler is shown in Figure 2.

Downforce is the aerodynamic force that pushes the vehicle against the road surface. This force improves the grip of the car's tires on the road and thereby improves its maneuverability, braking and acceleration. [4, p. 1]

Figure 2 — Spoiler

Main part. A model of a Tesla Cybertruck car, as well as a rear wing and a spoiler for it were created. The image of the car is seen in Figure 3.

Further calculations of the wing were carried out in the FlowSimulation add-on. For downforce calculations, a speed of 180 km/h was set. Then the optimal angle of the wing was calculated to obtain the maximum possible downforce. The result is shown in Figure 4.

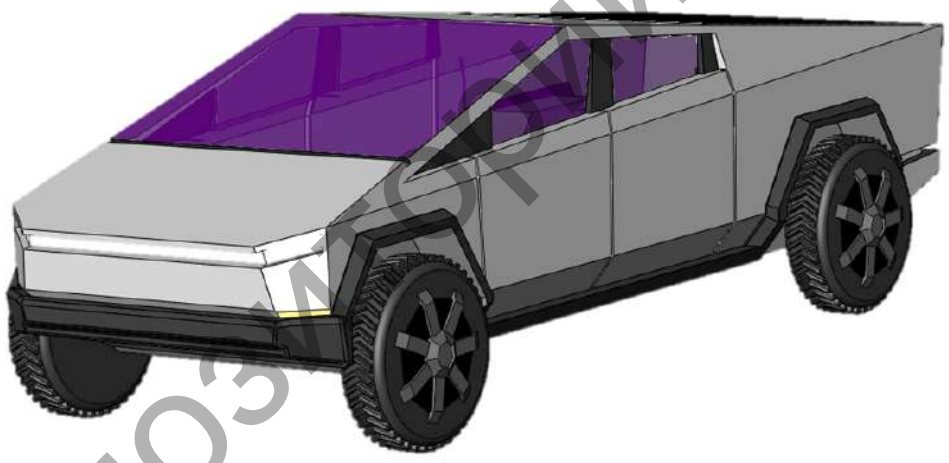

Figure 3 — Automobile model

Сводная таблица	Расчетная точка 1	Расчетная точка 2	Расчетная точка 3	Расчетная точка 4	Расчетная точка 5	Расчетная точка 6
D1@Угол1@Антикрыло в сборе.Assembly	0	0.0872665	0.174533	0.2617995	0.349066	0.4363325
ПЦ Сила давления 1 [N]	35.6186682	101.781465	233.17366	270.317665	387.49073	341.723869

Figure 4 — The results of the parametric calculation of the wing

Based on the calculations, we can conclude that the optimal angle is 0.35 radians (20 degrees). Downforce is 387.5 Newtons, or 39.5 kilograms. Such a low load value is justified by the angular shape of the car body. The direction of the flows passing through the wing can be seen in Figure 5.

Finding the optimal spoiler angle occurs with the same settings as the wing. The results are shown in Figure 6.

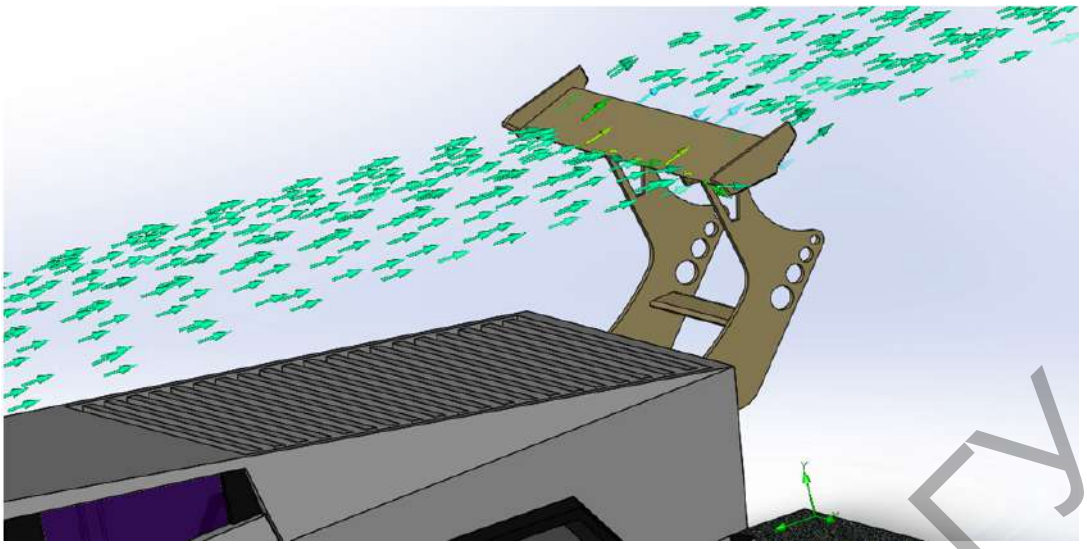

Figure 5 — Flow direction

Сводная таблица	Расчетная точка 1	Расчетная точка 2	Расчетная точка 3	Расчетная точка 4	Расчетная точка 5	Расчетная точка 6
D1@Угол2@Flow tesla-spoiler.Assembly [rac	0	0.0872665	0.174533	0.2617995	0.349066	0.436332
ПЦ Сила давления 1 [N]	210.285401	174.224822	151.385879	126.582579	94.2695868	77.5858667

Figure 6 — Spoiler parametric calculation results

Based on the calculations, we can conclude that the optimal angle is 0 radians (0 degrees), that is, the spoiler is located parallel to the ground. Downforce is 210.29 Newtons, or 21.44 kilograms. The flow direction is shown in Figure 7.

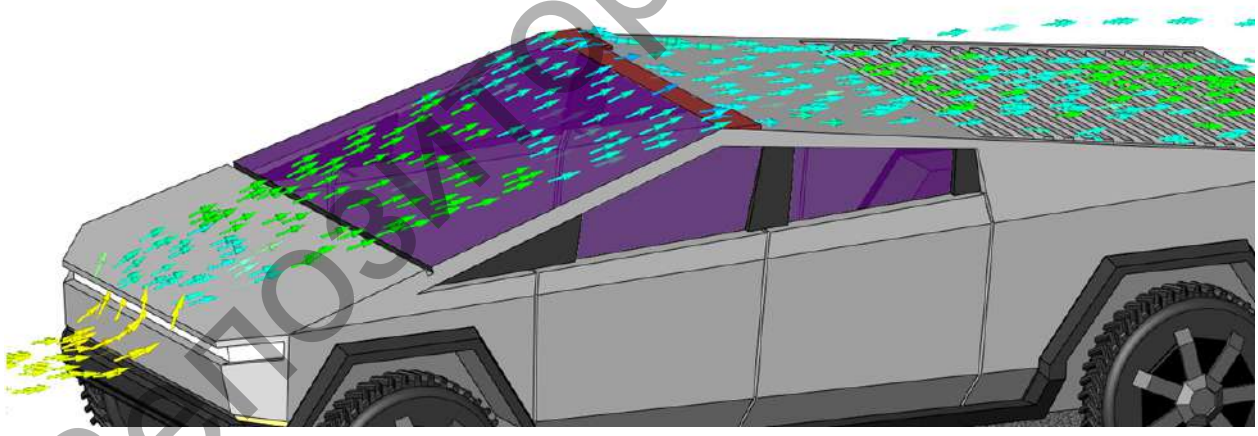

Figure 7 — Flow direction

Conclusion. Based on the calculations obtained, it can be argued that the wing has more downforce than the spoiler and performs its main functions. It has also been proven that the spoiler is not able to replace the wing completely, as it does not have similar aerodynamic properties. Although it is intended to increase downforce, it also has one more purpose: redirecting air flows to reduce the aerodynamic drag of the car and combat body pollution.

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