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CAR TUNING IN ADVANCED DESIGN PROCESS

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Abstract
In the advanced design process, car tuning means improving or changing a car's exterior, interior, mechanical systems, or technological capabilities. Tuning is often done to improve the appearance, power or performance of a vehicle. This process is mainly aimed at making the car more modern, powerful and aesthetically attractive.

Keywords: Tuning, spoilers, off-road, aluminum or carbon fiber trims, GPS navigation.

Introduction

In the advanced design process, car tuning is an innovative process aimed at improving the appearance, mechanical systems and interior comfort of a car. Although each car manufacture has its own principles and design concepts, car enthusiasts and experts often perform tuning to personalize the car, optimize its performance or integrate modern technology. This process makes it possible not only to improve the aesthetics of the car, but also to improve its safety, comfort and efficiency. Today, tuning has become an integral part of the automotive industry and provides new opportunities for drivers, which encourages them to make their cars more flexible, modern and high-tech. Car tuning is the modification of a car to optimise it for a different set of performance requirements from those it was originally designed to meet. Most commonly this is higher engine performance and dynamic handling characteristics but cars may also be altered to provide better fuel economy, or smoother response. The goal when tuning is the improvement of a vehicle's overall performance in response to the user's needs. Often, tuning is done at the expense of emissions performance, component reliability and occupant comfort.

As a culture has grown around modified cars the term tuning has grown to encompass the cosmetic and stylistic changes owners make to personalize their vehicles. These changes can range from functional modifications designed to improve the performance or functionality of the car, to visual modifications which alter the aesthetics of the car and, in the case of certain mods, sometimes be detrimental to the performance or functionality of the car.

The main directions of advanced design car tuning:

1. Change the appearance:

Adding additional elements to the body, such as aerodynamic spoilers, diffusers, or carbon-fiber parts to make cars lighter. Adding additional elements to the body, especially aerodynamic spoilers, can improve the appearance of the car, but also have a positive effect on its performance[1]. Spoilers help control the air at the rear of the car, thereby reducing air resistance and increasing stability at speed. This is especially important when driving at high speeds. In addition to aerodynamics, spoilers can also make a car more attractive in terms of design. However, before adding a spoiler, it is important to consider the overall aerodynamics and safety of the vehicle. Not all spoilers have the same effect, so it is important to choose the right one. Also,

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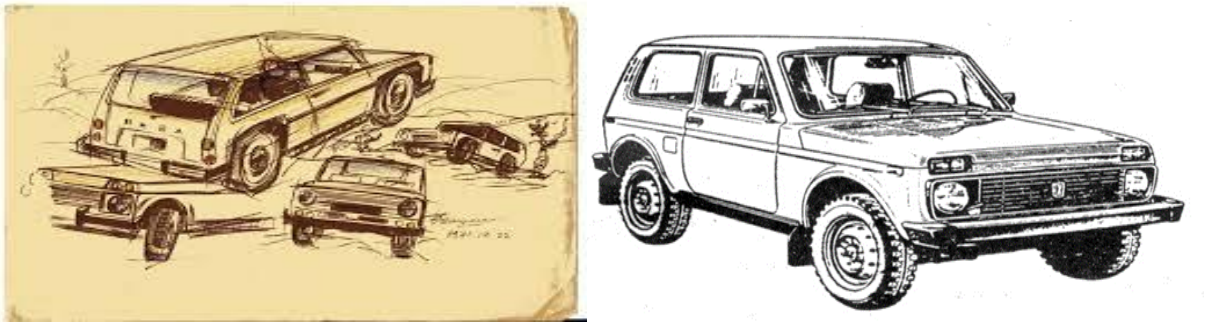
aerodynamic elements can be located on the sides of the car, in the front or even in the form of a network, which also helps to control the air flow.

Improving the design of rims and wheels for an off-road vehicle like the Niva can not only update its appearance[2], but also improve its performance. This works especially well in term or difficult situations. However, it should be remembered that with an increase in size, the dynamics of the car will also change. With the help of tires specially prepared for off-road conditions, the light effect of the wheel and the grip strength increase. These tires sometimes have large grooves to help stabilize the vehicle on bad roads and large rocky areas.

2. Improvement of mechanical systems:

Adding new engine components to your engine can help improve its speed and performance. Adding new engine components to an off-road vehicle like the Niva can be a great way to improve its overall performance. Several new components can be added to increase the efficiency of the engine and improve its durability. Adding a turbo or supercharger can significantly increase an engine's power. A turbocharger compresses air, which increases the efficiency of the fuel mixture and gives more power. But it willrespond faster. For light off-road vehicles like the Niva, this extra power can be useful.



1.1- picture Niva-2121 car

A good air filter and cold air intake will help the engine to work more efficiently. Cold air is the highest density air, which increases the combustion efficiency of the engine and also allows it to produce more power. A modernized high-performance carburetor or fuel injection provides more precise and efficient fuel delivery. This is especially useful for increasing the power of the engine, because it distributes the mixture better and ensures optimal combustion. A new and improved exhaust system (for example, a sports exhaust system) can improve the performance of the engine. This system improves air flow, helps exhaust emissions quickly, and thus allows the engine to run more efficiently at high speeds[4]. At the same time, the sound of the sports exhaust also changes, which may be aesthetically interesting for some drivers. Among these, it is necessary to add a high-efficiency radiator. This component ensures long-term durability of the car.

3. Improving interior design and amenities:

Improving the interior design and comfort of a car like Niva can ensure its long-term usability and more comfort for the driver and passengers. The Niva is known for its austere and simple design, but it can be updated with some modern conveniences and aesthetics. Adding soft, high-quality materials for the interior panels and seats (for example, alcantara, microfiber or high-quality artificial leather) will update the interior and increase comfort. Aluminum or carbon fiber trims

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will create a more modern and sporty look. These elements help to make the car more attractive. Installation of special ergonomic and comfortable seats for Niva increases comfort on long trips or in off-road conditions. High-quality, firm and contoured seats are beneficial for improving lower back and lumbar support[5]. In most Nivas, the seats are very basic and not comfortable, so installing new seats can be a good solution.

Including a multimedia screen, a new infotainment system (for example, a 7-9-inch touch screen) allows GPS navigation, bluetooth connection, music and phone call management. The ability to connect a smartphone to the car system provides not only convenience, but also safety.

Also, the seats should be made in a sports style, made of real leather or other high-quality materials, its structure will be improved by installing new panels and indicators, adding modern multimedia systems [6]. Improving the control systems in the car, for example, integration with smart phones, installing touch screens and navigation systems, improving voice control and security systems of the car is one of the priority issues.

Summary

In the process of advanced design, car tuning is a complex process aimed at improving not only the appearance, but also the technical performance. This process offers users a high level of comfort, safety and aesthetic value by individualizing the vehicle and optimizing its performance. Aesthetic changes, technical updates, and technological innovations together make the car look modern and sporty. However, in the process of tuning a car, it is important to follow the manufacturer's recommendations and put safety first. Changing a car should be a balanced and continuous development process, not just relying on flashy or speed-boosting elements. This process will definitely help to make great innovations in the automotive industry in the future

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