IMPROVING THE ELECTROHYBRID VEHICLE AND ITS COMPONENTS

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Annotation: *Plug-in hybridization is a technology that combines the benefits of two different types of energy in one system. It is a combination of using an electric motor and an internal combustion engine in one car.*

Keywords: *hybrid electric vehicles, control modes, control parameters, controller, electric charge, internal combustion engine, electricity.*

The dialectic of excellence in the context of EVs and their components refers to the ongoing process of improving and optimizing these technologies. It includes a continuous cycle of analysis, criticism and development to achieve even higher levels of performance, efficiency and sustainability.

One aspect of this dialectic is the improvement of the technology of electro-hybrid vehicles itself. As new advances in battery technology, electric motors, and power electronics emerge, engineers and researchers analyze existing components, identify weaknesses or limitations, and propose new solutions. For example, the shortcomings of early electric vehicle batteries, such as limited range and long charging times, led to the development of more efficient and high-capacity batteries with the ability to charge faster. This process of continuous improvement aims to increase performance, increase range, shorten charging times and improve the overall driving experience of electric hybrid vehicles.

Another aspect of the dialectic of excellence is the continuous improvement of the components and systems that make up electric hybrid vehicles. This includes various subsystems such as regenerative braking systems, electric motor controllers, thermal management systems and power distribution networks. Engineers and researchers analyze existing designs, identify opportunities for improvement, and propose new solutions to improve the efficiency, durability, and reliability of these components. For example, advances in regenerative braking systems have made it possible to capture more energy during deceleration, thereby making electric hybrid vehicles even more energy efficient .

The dialectic of perfection also extends to external factors that affect the functionality and efficiency of electric hybrid vehicles. For example, the development of charging infrastructure is an important aspect of this dialectic. As

the number of electric hybrid vehicles increases, the need for a comprehensive and efficient charging network is becoming ever more urgent. Innovations in fast charging technologies, the deployment of more charging stations and improvements in charging protocols are all contributing to the continuous improvement of electric hybrid vehicles.

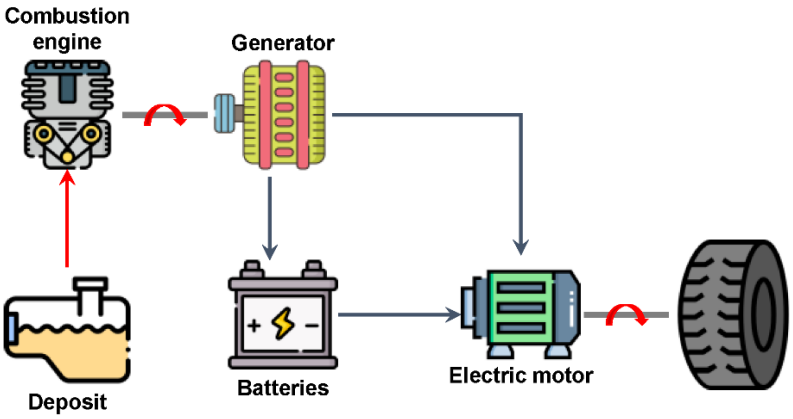

Fig. 1. Plug-in hybridization of ICE cars

Overall, the dialectic of excellence for electric hybrid vehicles and their components involves a continuous process of analysis, critique and development aimed at achieving greater performance, efficiency and sustainability. This iterative cycle ensures that these technologies are constantly evolving towards perfection. Plugin hybridization has many prospects and challenges for development. Here are some of them:

1. Environmental benefits: Plug-in hybrids use an electric motor, which reduces emissions of harmful substances into the atmosphere. This helps improve air quality and reduce the negative impact on the environment.

2. Fuel Economy: Plug-in hybrids can be fuel efficient, especially in urban environments where the electric motor can be used for short distances. This reduces fuel costs and saves money.

3. Extended driving range: Due to the combination of two types of engines, plug-in hybrids have a longer range compared to fully electric vehicles. This makes them more comfortable for traveling long distances.

4. Charging infrastructure: One of the challenges of plug-in hybridization is the development of the necessary infrastructure for charging the electrical part of the car. There are now many fast charging stations, but their distribution and availability in some regions may be limited.

5. Cost and Availability: Plug-in hybrids typically cost more than conventional combustion vehicles. However, with the development of technology and the

increase in demand for these cars, they are becoming more accessible to a wide audience.

Plug-in hybridization has great potential to improve the environmental performance of cars and reduce dependence on petroleum products. However, to realize the full promise, continued research and development in electric vehicle technology and charging infrastructure is necessary.

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