Electric cars

Electric, plug-in hybrid or hybrid, which is the more suitable option for our country?

Written by Kamran Talebi Fard, PhD in Marketing – Market Research

During the current year, especially in the past few months, the movement to pay attention to the construction, production and assembly of electric vehicles has intensified. Recently, at the 5th Tehran Automobile Exhibition held in February last year, in a joint memorandum signed by the country's major automakers, namely Iran Khodro, Saipa, Khodro Managers, Kerman Motor and Bahman Group, these companies committed to investing in the development and creation of urban charging stations for electric vehicles. Considering this issue and the materials mentioned in this regard in previous issues of Machine magazine, in this article we will address the issue of which option is the most suitable for the conditions of our country to move from the option of internal combustion engine vehicles to alternative fuel vehicles? Hybrid cars, plug-in hybrid cars or all-electric cars.

Although these days the main focus of the Ministry of Energy and other institutions is on developing the production, assembly and import of EV electric cars, the development of the use of these cars can be effective on pollution and its reduction if the main sources of electricity production are renewable sources, such as wind, hydro, geothermal, solar cells or at least nuclear power plants. However, if our sources of electricity production are fossil fuels such as natural gas, diesel and oil, then the development of the use of electric cars will definitely not help much in solving the

problem of air pollution and will only cause the sources of pollution to move from one point to another. The problem is the lack of electricity produced during peak consumption times, especially in the summer, which will certainly cause many more problems with the addition of a heavy volume of all-electric vehicles to the country's electricity grid. This is while the country's electricity grid is currently facing a shortage. Therefore, developing the use of all-electric vehicles is perhaps the best solution for developed countries where the largest amount of electricity consumed is produced by renewable sources.

The second alternative to gasoline vehicles is hybrid vehicles. In HEV hybrid vehicles, the gasoline engine acts as a generator and provides the electricity needed to charge the batteries of hybrid vehicles. Although the volume of gasoline consumption and the level of pollution of hybrid vehicles are much lower than that of gasoline vehicles, generally the weaker technical performance compared to gasoline vehicles and also the complete dependence on gasoline, like gasoline vehicles, have caused us to gradually witness the fading role of hybrid vehicles in the global automobile market today.

But PHEV plug-in hybrid vehicles, in addition to using a gasoline engine to charge their batteries, can also charge their batteries with urban electricity, just like all-electric vehicles. This has several positive points. First, they consume less gasoline and cause less air pollution than hybrid vehicles. Second, they are no longer dependent on gasoline as a source of energy. Finally, they have better acceleration and technical performance than hybrid vehicles. All plug-in hybrid vehicles have AER or All Electric Range, which allows them to cover the entire distance in urban traffic using only electricity and without using a gasoline engine to charge the battery. The main reason for this is the larger volume of their batteries compared to hybrid vehicles, as well as their more modern technology compared to hybrid vehicles. Although

plug-in hybrid vehicles have an AER system to navigate in urban traffic in an all-electric manner, if urban fast charging stations are not available or even if there is no possibility of charging in home or workplace parking lots, these vehicles have the ability to move like hybrid vehicles by only receiving electricity from their gasoline engine. This capability makes them not completely dependent on urban electricity, and on the other hand, if charged with urban fast charging devices or home charging adapters, they have the ability to move completely with the electrical energy supplied by urban electricity. In fact, this flexibility of plug-in hybrid vehicles is their most important feature, as on the one hand they can be used like a hybrid vehicle and on the other hand they can be used like a fully electric vehicle.

It seems that, given the above explanations, for the current conditions of our country, given the lack of public fast charging infrastructure in cities and the production of the main volume of electricity in the country from fossil sources, the best option in the short and medium term is definitely plug-in hybrid vehicles, and perhaps then in the long term, if electricity production from renewable sources is developed, electric vehicles could be a more suitable option for the country’s automobile market.