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ADVANTAGES AND DISADVANTAGES OF HYDROGEN VEHICLES

Hydrogen vehicles use hydrogen as fuel instead of gasoline in internal combustion engine or fuel cells to feed the electrical motor. Although the technologies for such cars are known since 1806, the development of hydrogen vehicles started in the second half of 20 century.

There are two main ways of using hydrogen. The first one is using liquid hydrogen in internal combustion engine. It's not very popular because of high cost and difficulties in operation. High cost could be decreased by mixing hydrogen with traditional fuels, for example, HCNG (hydrogen and compressed natural gas). Unfortunately, comfortable running of such cars requires special construction of motors and fuel systems, hydrogen infrastructure and hydrogen storage technologies [1]. Moreover, hydrogen is very explosive, so it's important to control all processes. Nevertheless, these vehicles have some advantages, like almost zero carbon footprints and potentially endless source of energy, because hydrogen is the most common element in the Universe. They also could have higher efficiency in comparison with traditional internal combustion engines.

The second way of using hydrogen is creating fuel cells for electrical cars. A fuel cell converts the chemical energy of hydrogen into electricity through a pair of redox reactions. This type of hydrogen vehicles is more widespread due to comfortable operation and safer construction. There are special refueling stations in some countries and their number is increasing. However, some disadvantages of FCEV are no development of this technology because of their high cost and undeveloped hydrogen infrastructure. The

efficiency of FCEV is also small and equal to 70% of efficiency of traditional cars.

It’s evident that hydrogen technologies are promising because they are environmentally friendly and could help to save fossil resources. However, we should solve some problems with hydrogen vehicles, like hydrogen production and storage, special infrastructure and, of course, safety of drivers. If we solve at least half of these problems hydrogen vehicles will replace the traditional cars in our life.

References

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