

**ANALYSIS OF STANDARDS FOR MAINTENANCE AND REPAIR OF YUTONG
ELECTRIC BUSES AND ADAPTATION FOR HOT CLIMATE AND DUSTY
CONDITIONS**Assoc. Prof. **Magdiev Shovkat Po'latovich,**PhD Assoc.Prof. **Avliyokulov Jamshid Sadulloyevich,**Magistr **Karimboyev Qo'shmurod Qurolboy o'g'li**

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Annotation: In recent years, the issues of environmental cleanliness, energy efficiency and modernization of the transport system have become increasingly important around the world. In this regard, electric vehicles, in particular electric buses, are increasingly widely used in the public transport system.

Keywords: electric bus, Yutong, maintenance, repair, climatic conditions, dusty environment, cooling system, TCK regulations.

Electric buses developed by Yutong are now also being introduced in the cities of Uzbekistan, and they are distinguished by their high level of efficiency, environmental friendliness and low operating costs. However, for the uninterrupted operation of these electric buses, it is important to adapt the maintenance and repair system to local climatic conditions. The hot and dusty climate of Uzbekistan does not comply with the standard maintenance and repair regulations designed for electric buses, as a result of which some systems experience a decrease in efficiency. This article discusses the analysis of the maintenance and repair system of Yutong electric buses, the study of existing standards and their adaptation to the conditions of a hot climate and dusty environment.

A lot of scientific and practical work has been carried out on the maintenance systems of electric buses. The experience of operating electric buses in China, South Korea and European countries shows that the maintenance and repair standards are mainly designed for temperate climatic conditions. According to the service regulations developed by Yutong, preventive maintenance is required after every 10,000 km.

However, in hot climates and dusty environments, these standards should be reduced. For example, as a result of experiments conducted in Saudi Arabia and the UAE, the MOT interval was reduced by 1.5 times.

Yutong E12 electric buses operated in Tashkent were selected as the object of the study. During the study, the MOT processes of electric buses were analyzed, and malfunctions that occur in hot and dusty conditions were statistically evaluated.

The following methods were used methodologically: technical diagnostics, thermal analysis, dust concentration measurements and analytical calculations to optimize the MOT interval.

MOT in Yutong electric buses includes the following main areas:

- Electric motor and inverter diagnostics;
- Battery pack inspection;
- Cleaning of air filters and cooling systems;

- Inspection of brake, suspension and wheel components;
- Diagnostics of electric control systems.

The analysis results show that in the conditions of Uzbekistan, the cooling system and air filters wear out especially quickly.

In many regions of Uzbekistan, summer temperatures reach 45°C and dust levels are high. As a result, electric buses experience the following problems:

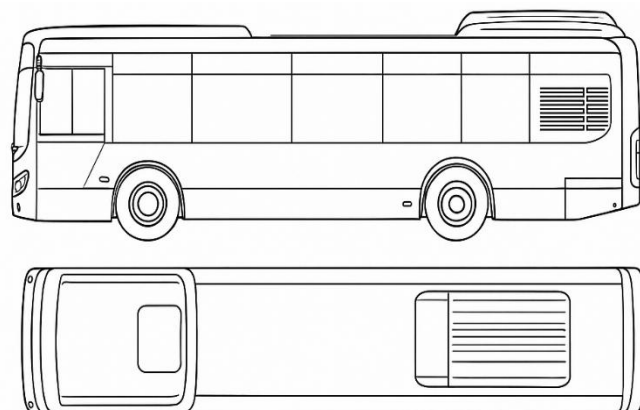
- Increased battery temperature;
- Reduced cooling efficiency;
- Dust accumulation in filters;
- Oxidation of electrical contacts;
- Overload in the air conditioning system.

These problems shorten the service life and reduce energy efficiency.

According to Yutong company regulations, the MOT is carried out after 10,000 km. However, in the hot and dusty conditions of Uzbekistan, it is recommended to reduce this distance to 6,000 km.

The study found that when the temperature exceeds 40°C, the battery efficiency decreases by 12%, and the energy consumption of the cooling system increases due to the increase in temperature.

The table below shows the recommended adjusted MOT intervals for hot and dusty climates:



Type of TCK	Original standard	Customized standard
Air Filter Cleaning	10 000 km	5 000 km
Coolant Check	20 000 km	10 000 km
Electrical Contact Cleaning	15 000 km	8 000 km

Air Conditioning Service	20 000 km	10 000 km
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Based on experience, it can be determined that as a result of the application of the adapted MOT regulations, the operational reliability of electric buses increased by 10%, and energy consumption decreased by 8%.

These results allow further adaptation of Yutong electric buses to the climatic conditions of Uzbekistan.

CONCLUSION

It is necessary to revise the MOT standards for the effective operation of Yutong electric buses in hot and dusty climatic conditions. In the conditions of Uzbekistan, long-term and reliable operation of electric buses is achieved by reducing the service intervals for the cooling system, filtering elements and contact parts.

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