

Otakulova Shakhnoza Burkhon kizi
Toshkent davlat transport universiteti

SERVICING AUTOMATION DEVICES AND FORMING A DATABASE

Abstract: This article provides recommendations on maintenance and repair of automation systems.

Key words: Automation, device, telemechanics, technical use, transportation, technical service, technological service, storage.

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Railway automation and telemechanics systems, a complex of automation, telemechanics, computing and informatics devices, designed to control, adjust, and ensure the safety and continuity of train movement with a given capacity.

Technical use of devices and automation, telemechanics systems on railways - in the period from commissioning to reconstruction, including technological and technical maintenance, repair, transportation and storage by means of vehicles, is a complete complex that ensures their high performance.

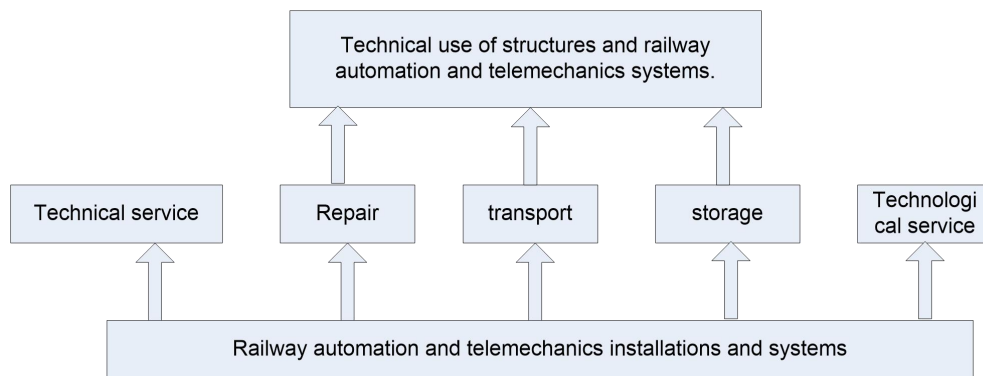


Figure 1. Complex of works performed during technical use of devices

All technological processes related to the technical use of railway automation and telemechanics devices and systems are regulated and performed on the basis of certain rules, i.e. with relevant documents. The same documents regulate the technical means used to perform the work. Most devices of railway automation and telemechanics systems used in the railways of JSC "Uzbekistan Railways" are made on the basis of relay elements and are called "SMB devices". In recent years, the railways of JSC "Uzbekiston temir yollari" have been implementing systems made on the basis of computer technology and informatics of railway automation and telemechanics systems on a large scale. From the point of view of technical use processes, all railway automation and telemechanics systems must be implemented in accordance with state standards. These standards, in relation to railway automation and telemechanics systems, introduce the following concepts and definitions:

Technical maintenance is a set of regulated operations that ensure that railway automatic and telemechanics systems or devices maintain their ability to work or function without damage during use.

Repair - to restore the functionality of railway automation and telemechanics systems or devices, as well as to restore the resource of the system, device or its components, depending on the type of repair (current, medium or capital) lum complex of operations based on rules.

Technical service and repair system - a set of technical tools, documents and technical service and repair workers necessary to restore and maintain the quality of the product included in the service system or device.

Transportation by means of a vehicle - delivery of a railway automation and telemechanics system or device to the intended destination with the help of technical means, according to the rules noted in the system or device documentation.

Storage - storage of the railway automation and telemechanics system or device, in the place designated for it, during the set time, as specified in the documentation of the system or device.

Technological service - readiness for use of devices and systems, storage, transport by means of vehicles and bringing them back to their original state after technological processes, as well as in the process of technical service of railway automation and telemechanics devices and systems based on technical documents a complex of regulatory operations that ensures the

Thus, the concept of "technical use" is understood in a broad sense compared to the concept of "maintenance and repair". In this case, in addition to "maintenance and repair", it includes regulation and execution of other works included in the state standard intended for railway automation and telemechanics.

One of the main issues of JSC "Uzbekiston temir yollari" is to significantly reduce costs in the technical use of railway automation and telemechanics devices and systems, and to increase the labor productivity of remote workers.

Fin the process of operation, regular technical maintenance is carried out, regardless of the technical condition, in the amount and periodically specified in the instructions. Regulatory maintenance is essential for railway automation and telemechanics devices and has a planned-warning feature in relation to device failures. Servicing SMB devices takes up 60-70% of staff time.

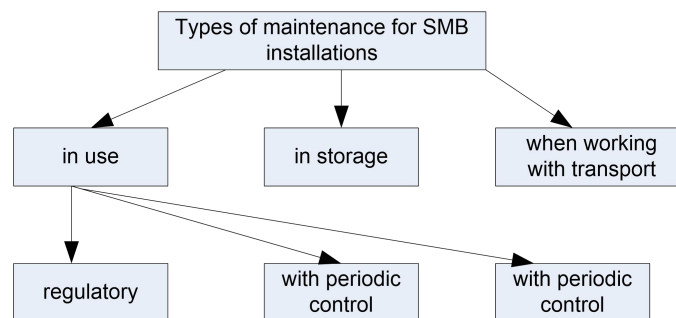


Figure 2. Types of maintenance for SMB devices

One of the important ways of increasing labor productivity in SMB JSC "Uzbekiston temir yollari" is to reduce the regulatory share of service provision in technical use.

Maintenance of SMB devices with periodic control, with regulatory documents, and the scope of the performed work is determined based on the actual condition of the controlled devices. Therefore, this type of maintenance is also known as maintenance based on the actual condition of the devices. (For example: painting of devices and equipment depending on their condition; ALSN field devices, SAUT, commission inspections, etc.).

The volume of periodic maintenance of SMB devices is significantly less than the volume of regulatory maintenance. Periodic maintenance of SMB devices can be carried out in two directions.

-By increasing the share of control, using various technical means (motor vehicle, wagon-laboratory, etc.).

-Periodical control of the sections connected to LPUs by the method of allocation of highly qualified employees and compilation of defect reports.

Identified deficiencies and malfunctions must be eliminated by local or centralized teams. Maintenance with continuous control involves automatic monitoring of the technical condition of SMB devices using technical means. These tools should detect the fault in the simplest case. Or more generally, it should determine whether the pre-failure state is permanent.

In the first case, a hot-spare (ready-to-use) component in the device that may fail is installed and activated when necessary. This type of control encourages the abandonment of some regulatory maintenance operations and enables the transition to a restorative maintenance approach. (An example is the installation of two-filament lamps).

Continuous monitoring of the health of SMB installations and backup of less reliable elements is the basis for reducing labor-intensive maintenance work. But such conditions cannot be applied to all elements. In such cases, automatic control types that take into account the conditions leading to the failure should be used. (security alarm installed at ETS posts).

As a complex, but very useful control system, a dispatch control system based on VTI tools is used. Such systems can perform a whole range of functions, and the main thing is to automatically take into account the received information.

The application of the dispatch control system makes it possible to organize maintenance of the SMB devices under control, depending on the state of the elements. In this case, adjustment, repair and replacement operations of elements are performed.

When choosing the type of maintenance for MB devices, it is determined not only by the guarantee of traffic safety, but also by economic justification. should be done accordingly. Violation of the rules during storage and transportation by vehicles usually leads to a decrease in reliability during use and premature failures.

Railway automation and telemechanics devices must be stored in special buildings at acceptable temperature and humidity. Transportation by vehicles should be carried out in special containers adapted for transportation.

Accurate regulation of transportation and storage processes, as well as regulation of other SMB devices, allows to reduce costs in the use of railway automation and telemechanics.

Current maintenance is carried out to replace individual parts of devices and restore their functionality.

Current unplanned maintenance is considered the main type of maintenance of devices in technical use and occupies 6% of the average working time of employees. Such works are detected during regular maintenance or troubleshooting, and are usually carried out at the location of the malfunction, without stopping the movement of trains. The current unplanned maintenance effort reduction reserve includes the following measures:

- reducing the time of transporting employees to the place of failure by means of vehicles;
- use of information technology in troubleshooting (diagram of fault finding);
- training of employees using railway automation and telemechanics devices (trainers for troubleshooting).

Scheduled current maintenance is the main type of SMB equipment repair, performed in the repair-technological section (TTU) of the distance. TTU carries out a large volume of planned repairs based on a planned schedule. The main ways to reduce labor costs for planned current repairs:

- reduction of the number of tools required for planned current maintenance. In this case, switching to electronic devices or carrying out repair work with the help of other organizations;

- Extending the periodicity of SMB devices repaired at TTU on a scientific basis;
- use of stands and automated workplaces (ARM) in carrying out repair work.

Repair according to the technical condition is carried out when the amount of repair is determined according to the actual condition of the devices and service is provided with periodic control. An example of repair in terms of technical condition includes railway automation and telemechanics devices that have used up their amortization period of use, and they are carried out by the decision of the qualification commission. This commission evaluates the periodicity established by the signaling and communication center and gives its opinion on the use of devices or their repair. Capital repair, works performed by replacing some elements in order to partially or completely restore the capabilities of the product. Such work requires the disconnection of SMB devices from the interconnection and is carried out in the place where the possibilities for full execution of the work are created, that is, in the workshop (TTU) or in the factory.

Capital repair, work performed by replacing some elements in order to partially or completely restore the capabilities of the product. Such work requires the disconnection of SMB devices from the interconnection and is carried out in a place where the possibilities for complete work are created, that is, in a workshop (TTU) or in a factory. Overhaul is an expensive activity, and some in some cases, it can be more expensive than the residual price. As an example of planned capital repair, we can mention the repair of the arrow electric conveyor (once every eight years).

In order to reduce the costs of scheduled capital repairs of railway automation and telemechanics, it is necessary to extend the time between repairs, taking into account various conditions, on a scientific basis.

Unplanned capital repair is carried out when it is impossible to restore the device's operational capabilities with current repair.

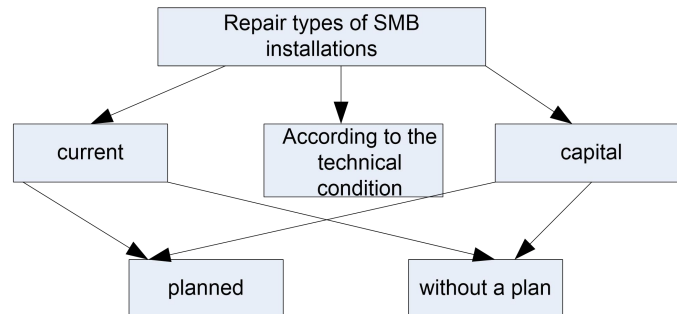


Figure 3. Schematic description of types of repair of SMB devices.

The main purpose of forming a database in railway automation and telemechanics installations is to monitor the execution of annual monthly and rapid work plans based on the technological schedule determined by the electromechanic and electrician responsible for the relevant stations of the signaling and communication distance. As a result, the on-site worker personnel enters the created program, enters the daily report of the work according to the annual and monthly work plan into a special form of journals and sends confirmation to the SHCHDS. .

Access to the program is 2 types: SHCH and station. The user at the station enters the station department using the individual code assigned to him (for example, INPS). He can only enter the station assigned to him. section enters through the code.



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Fig. 3. View of the database creation program in automation and telemechanics installations

Summary:

One of the main issues of JSC "Uzbeksiton Railways" is to significantly reduce costs in the technical use of railway automation and telemechanics devices and systems, and to increase the labor productivity of railway employees. It is carried out when the scope of repair is determined and service is provided with periodic control. An example of repair in terms of technical condition includes railway automation and telemechanics devices that have used up their amortization period of use, and they are carried out by the decision of the qualification commission. This commission evaluates the periodicity set by the signaling and communication center and gives its opinion on the use of devices or their repair. When choosing the type of maintenance of SMB devices, not only with the guarantee of traffic safety, but also with economic justification is determined.

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