

THE POWER SUPPLY OF RAILWAY ENTERPRISE

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Annotation: Despite some peculiarities, power supply to non-tradable railway transport consumers is carried out on the same principles as industrial power supply. Due to significant moral and physical wear and tear of the main production equipment and its electrical networks and systems, a number of enterprises are undergoing a comprehensive reconstruction of the entire production process. At the same time, it becomes possible to revise the power supply system in a new way, re-optimize the configuration of the supply and distribution network, and apply modern samples of electrical equipment.

Keywords: power supply, labor protection, technological processes, electrical equipment

During reconstruction, modernization or new construction, the main problem of industrial power supply is a rational choice:

- Power supply;
- Locations of step-down substations and power stations;
- Number and power of transformers;
- Cross sections of wires and cable cores;

In the total balance of electricity consumed by railway transport enterprises, non-heavy consumers account for about 30 %. The largest non-tradable consumers of railway transport are concentrated at marshalling yards and precinct stations and at railway junctions. Power supply to these consumers is performed, as a rule, using the schemes adopted for the power supply of industrial enterprises. Over the past decade, new designs and types of electrical equipment for power and measurement transformers, reactors, CSR cells, switching devices, and surge protection devices have been created.

Proper system design supply depot, rational distribution substations in the center of the electrical loads and a uniform distribution of electric loads, reduce power losses, improve the reliability of power supply, will reduce costs and reduce the specific consumption of electricity [1].

The overall goal of updating power supply devices for non-tradable consumers is to combine a qualitative increase in technical and operational, energy, and economic performance of the power supply system with minimizing the cost of modernization, taking into account the actual or planned volumes of cargo traffic.

Along with this, when switching to market relations in the electric power industry, it became necessary to introduce new electricity meters and create communication channels for its automated accounting.

The purpose of the special issue is to improve and automate electricity metering. The purpose of the economic section is to calculate the reconstruction of the locomotive depot's power supply.

The purpose of the section labor protection and ecology is to develop a technological map for the safe performance of work when replacing the 6 kV KTP, as well as the calculation of emissions from technological processes carried out in the depot. The mode of operation of the main workshops of the depot is single-shift. A three-shift work schedule is applied for individual sections that are engaged in preparing locomotives for a trip.

The depot plan with the location of the process equipment is presented in the source data. The main production building of the depot consists of 15 departments and sections located in a common building in separate rooms. Near the warehouse of aggregates there is an open area for storing bulky parts and trucks of rolling stock equipped with rail tracks. Administrative and household premises are located in a separate building on the second floor above the pantograph Department.

Power supply for workshops and individual electrical installations is provided by low-voltage cable lines with a voltage of 380/220 V. Basically, the service life of cable lines (CL) of the depot is more than 15 ... 20 years, as a result of which

there is a frequent exit from work. The power supply system of the locomotive depot has developed over the previous years, constantly changing to meet new production tasks and as a result of eliminating the consequences of breaks and accidents.

The deterioration of the entire power supply network and depot equipment led to the gradual replacement of previously laid underground or internal cables in the external design and changes in the scheme, which were often not reflected in the technical documentation. This can create many difficulties in organizing work and ensuring the safety of the work.

In the total balance of energy consumed, a significant part is made up of electric lighting. To save fuel and energy resources, it is necessary to increase the natural lighting of the premises of the enterprise and apply new types of lighting installations and fixtures.

In most of the depot premises, General electric lighting is used from the mains with a phase voltage of 220 V. Lighting of inspection ditches in a number of workshops for maintenance and repair of rolling stock is carried out using a voltage of 12 V. The safety and productivity of the enterprise depends on the illumination of the production room and the specific workplace. Lighting loads for individual workshops and sites can make up a significant part of the power consumption.

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