

STATISTICAL DATA OF 35 KV CABLE LINES OF TASHKENT CITY ANALYSIS

¹Pirmatov Nurali, ²Yakhyayeva Shokhida

^{1,2}Tashkent State Technical University named after I. Karimov

<https://doi.org/10.5281/zenodo.7904872>

Abstract. This article analyzes statistical data on 35 kV cable lines in the city of Tashkent of the Republic of Uzbekistan. The analyzes were carried out on the basis of 5-year statistical data for the districts of Tashkent.

Keywords: statistical data, electricity, 35 kV cable lines, industry.

Introduction

The demand for electricity in the territory of the Republic of Uzbekistan is increasing day by day. High-quality supply of electricity to consumers is one of the urgent issues facing industry experts. Cable lines play a big role in providing consumers with high-quality electricity.

Currently, developed countries are mainly using sewn polyethylene insulated cables in cable lines. Because polyethylene-insulated cables have a number of advantages over paper-insulated cables. Along with this, in the territory of the Republic of Uzbekistan, work is being done to gradually replace old cables in 35 kV cable lines with polyethylene-insulated cables.

Methods

As in any industry, various types of damage occur in cable lines. Damages in 35 kV cable lines are mainly caused by wear and tear of cable lines. Cable lines in Tashkent city are mainly cable lines laid during the time of the former Soviet Union, and already has passed its service life. Due to wear and tear on cable lines, cables begin to absorb moisture from the ground and damage processes occur. If we look at the ratio of Tashkent city and districts, this indicator is increasing year by year. However, sewn polyethylene insulation In the case of new cable lines carried out with the help of cables, almost no damages were observed. Bektemir district is an example of this.

To date, two cable lines ZIPS-1 and ZIPS-2 with a total length of $L=1474.7$ meters with sewn polyethylene insulation are in service in Bektemir district. These lines were completed and put into operation in 2014-2015. [1]

Results and discussion

To eliminate damage to cable lines, mainly old waste cables are used. Because newly sewn polyethylene insulated cable and coupling sets are economically valuable, because such sets are imported from foreign countries. This causes a high demand for cable products in our region. But despite this, foreign cable sets are used when damage damages the part of the cable line up to 200 meters long. In the case of damages up to 3 or 5 meters long, damages are being eliminated using old residual cables.

Table 1

Statistics of injuries over the years (Tashkent city)

№	Name of districts	Everything				
		2018	2019	2020	2021	2022
1	M. Ulugbek	13	15	5	22	29
2	Shaikhontohur	41	32	19	27	29

3	Almazar	24	27	27	35	15
4	Yunsabad	57	91	42	36	32
5	Yakkasaray	11	16	15	16	21
6	Chilanzar	0	3	5	3	1
7	Uchtepa	3	0	2	0	4
8	Mirabad	9	15	15	15	16
9	Yashnabad	32	43	31	33	21
10	Sergili	0	3	1	3	4
11	Bektemir	3	1	0	2	1
		203	246	162	192	173

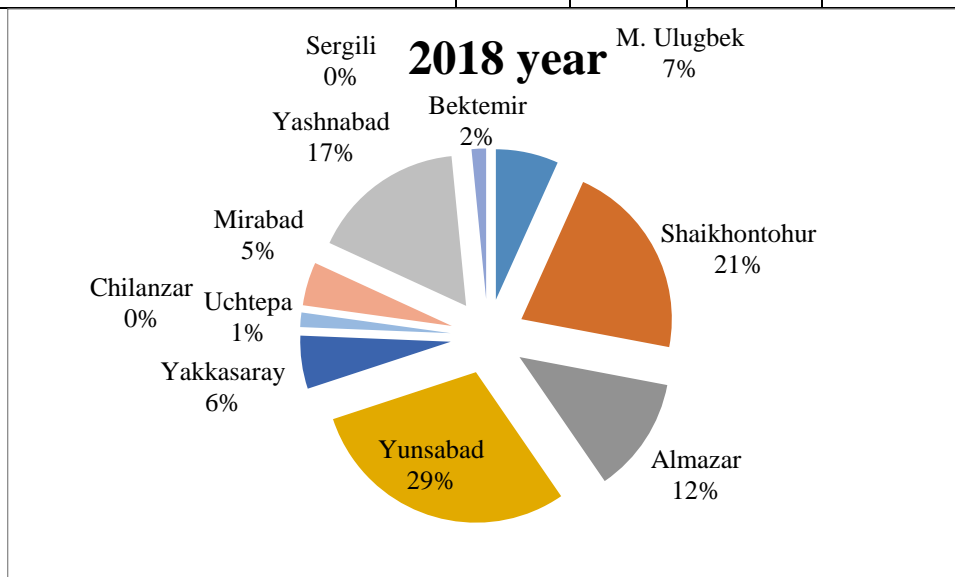


Figure 1. Indicators of damage to the 35 kV cable line (2018 in Tashkent city-district section)

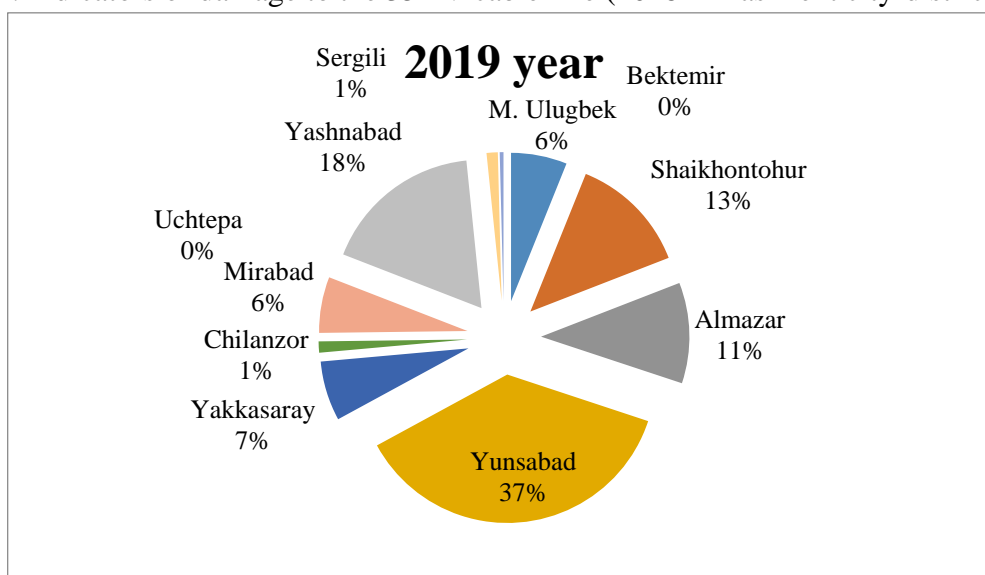


Figure 2. Indicators of damage to the 35 kV cable line (2019 in Tashkent city-district section)

According to the information provided by the high-voltage networks exploitation service of the Republic of Uzbekistan, there were almost no injuries in Bektemir district during 2019. But if we compare other districts with last year's data, we can see that the number of injuries has

increased. In 2018, the number of damage to 35 kV cable lines was 203. This indicator increased by 43 to 243 by 2019. [2,3]

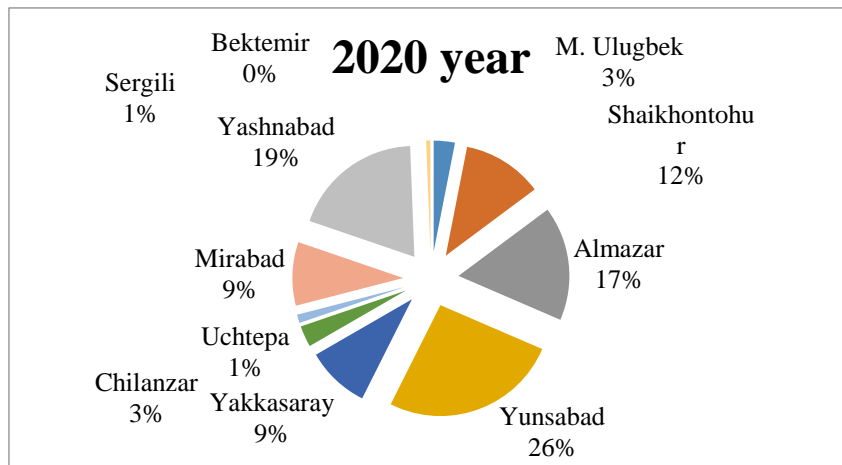


Figure 3. Indicators of damage to the 35 kV cable line (2020 in Tashkent city-district section)

Based on the results of the analysis, it can be said that in the section of the districts of Tashkent city, electric punctures are mainly detected in Shaikhontohur, Yunusabad, Yashnabad and Almazor districts, compared to other districts. Electrical punctures occurred mainly in couplings and cables. Corrosion, mechanical wear, defects in production and other reasons are the main causes of these damages.

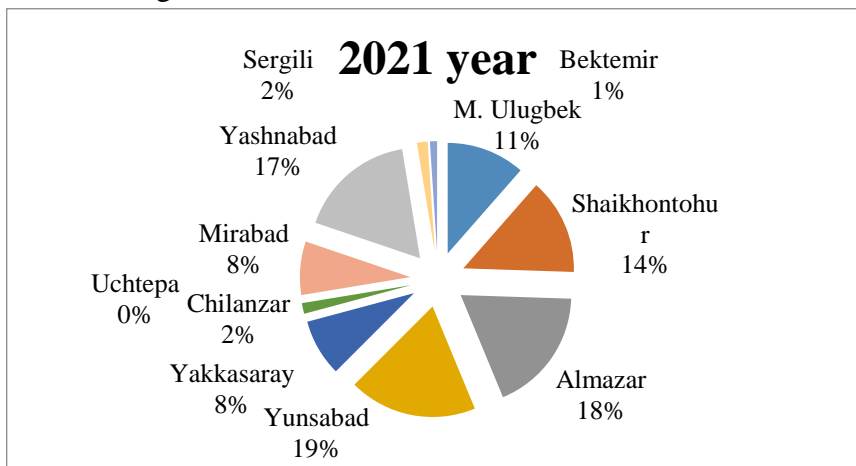


Figure 4. Indicators of damage to the 35 kV cable line (2021 in Tashkent city-district section)

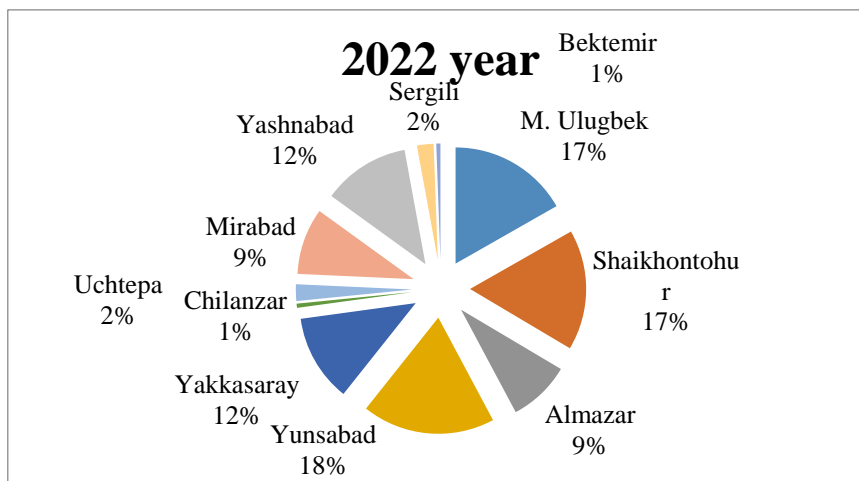


Figure 5. Indicators of damage to the 35 kV cable line (2022 in Tashkent city-district section)

Conclusion

It can be seen from statistical data that the number of damage to 35 kV cable lines is decreasing year by year. In 2021, the number of injuries was 193, and in 2022, this figure was 173. The main reason for the reduction of injuries is the large-scale installation work carried out on cable lines, including the replacement of cables with paper insulation for cables with sewn polyethylene insulation.[4,5]

REFERENCES

1. Yaxyayeva Sh. A., Pirmatov N. B. O'zbekiston Respublikasi Toshkent shahar tumanlari kesimida 35 kV li kabel liniyalarining holatini tahlil qilish. // Education Research in Universal Sciences. July 2022. p.25-28.
2. Yaxyayeva Sh. A., Pirmatov N. B. 35 kV kuchlanishli kabel liniyalaridagi shikastlanishlarni Toshkent shahar tumanlari kesimida tahlil qilish. Scientific progress, Scientific journal, VOLUME #2, ISSUE #6, OCTOBER 2021. Uzbekistan. 98-101 betlar.
3. Yaxyayeva Sh. A., Pirmatov N. B. //Ishlab chiqarishning texnik, muhandislik va texnologik muammolarining innovatsion yechimlari I qism. Xalqaro miqyosidagi anjuman. Jizzax-2022 yil. 124-125-betlar.
4. Анализ повреждений кабеля с изоляцией из сшитого полиэтилена в сети 35 кВ металлургического завода. М.В. Ильиных, Л.И. Сарин, А.И. Ширковец ООО «ПНП Бolid», г. Новосибирск, 2011.
5. В. М. Булатова. Сравнительный анализ эксплуатационных характеристик современных высоковольтных кабелей // Вестник Казанского технологического университета 2012 г. стр. 45-48.