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ANALYSIS OF POWER SUPPLY HYDROSTEEL PLANT "PPGHO" (GMZ)

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The Priargunsky Mining and Chemical Corporation (PMCW) – the Krasnokamensk city-forming enterprise, the largest in Russia and one of the largest uranium mining enterprises in the world, the biggest multifield mining enterprise of Zabaykalsky Krai. It conducts uranium production in the mine way on 16 uranium and molybdenum – uranium fields. 34 divisions, including the PPGHO (GMZ) hydrosteel works are a part of association.

Power supply of plant is carried out from the main step-down substation (MSDS) having two distributing devices: RU of 110 kV and RU of 6 kV. RU of 0,4 kV [1]. Electric power comes from RU of 110 kV of CHPP-3 on a two-chain air-line to the RU of 110 kV located in the territory of plant.

Figure 1 shows the block diagram of plant power supply.

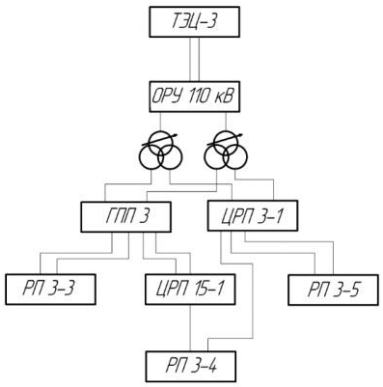

Fig. 1. The block diagram of plant power supply

Power supply is carried out on the first category of reliability. This enterprise has continuous technological process, difficult and dangerous production. Outage in power supply is allowed only on operating time of AVR devices [2].

Two power transformers TRDN-40000/110 type are installed on the RU 110 kV. It has the split windings of the lowest voltage of 6 kV. Windings of the lowest voltage are executed from two parts symmetrized in relation to a winding of the highest voltage. Rated voltage of branches are identical.

From conclusions of transformers energy transfers on the closed distributing switchgear of 6 kV: GPP 3, TsRP 3-1, TsRP 15-1, RP 3-3, RP 3-4, RP 3-5.

Input on GPP 3 is executed by the use of rigid tires, on TsRP 3-1 on the cable line.

Power supply of other ZRU of 6 kV is carried out on cable lines in the following order: from GPP 3 TsRP 15-1 and RP 3-3 are powered, from TsRP 3-1 RP 3-5 is powered. Cable lines are laid across the plant territory in a cable channel.

The arrangement of these ZRU is similar to the GPP 3 and TsRP 3-1 device, except for absence of section reactors.

Load of all ZRU of 6 kV are various electric motors, and also transformer substations of 6/0,4 kV.

RU of 0,4 kV receives energy from RU of 6 kV by the use of power TMZ-630 transformers; TMZ-1000.

TMZ transformers are executed in tight execution, as constructive protection of oil the dry nitrogen located between a mirror of oil and a cover of the transformer is used.

On the substation the following electric devices are installed.

RDZ-110/1000 disconnectors:

Р – disconnector; Д – two columns; Z – the index designating availability of grounding conductors; 110 – rated voltage, kV; 1000, 2000 – rated current, A;

Separators type OD-110/500:

O – a separator, D – two columns, 110 – rated voltage, kV, 500 – rated current, A.

Discharger of the RVS-110 type:

Р – discharger, V – valve, S– station, 110 - a class of voltage, kV.

VMPE-10-630-20U2 switches:

VM - the switch low-oil; П - suspended execution of poles; E - electromagnetic drive; 10 - rated voltage, kV; 630 - rated current, A; 20 - rated current of shutdown, kA; U2 - a climatic modification.

Section RBDM-6-1500 reactors:

R-the reactor, B – concrete, D – compulsory air cooling, 6 - a class of voltage, kV, 1500 – rated current, A.

Voltage measuring transformer of the NTMI-6 type:

NT – voltage measuring transformer, M – cooling oil with natural air circulation and oils, I – measuring, 6 – the rated voltage of a winding of VN, kV.

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PROSPECTS OF RENEWABLE ENERGY SOURCES USE AROUND THE WORLD

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Despite the fact that organic type of fuel (oil, gas, carbon) will hold the leading positions as consumed as primary energy resources (80%) up to 2030, the same period expects a continuous growth of energy production from energy sources.

Renewable energy sources include solar, wind, geothermal, biomass energy, hydropower, etc. As yet, many experts believe, a broad use of alternative energy sources is hindered by high cost of their development. Nevertheless, it is supposed that for the period to 2030, the increase in consumption of renewable may reach double figures. Actually, it will be due to a relatively low datum level and their share in the total consumption will remain by 2030 at the level of 7.5-8% [1]. Owing to continuous appreciation of organic types of fuel, especially oil, and also growing contamination of environment around the world many countries take certain measures to remove institutional barriers hindering the development of renewable energy sources.

The development of alternative energy sources sector is encouraged by financial and statutory regulation, while the major corporations create special subsidiaries and research centers within the frameworks of which corre-