

*Materials of Conferences*

**THE LOADING – TRANSPORT  
COMPLEXES FOR THE UPLAND  
OPEN CUTS OPTIMAL  
AND EFFICIENT TYPES CHOICE**

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At present, the road transport in complex with the excavators or the bucket loaders are being used mainly on the world's upland open cuts. Its exploitation is being characterized by the high level energy content (e.g. by the large fuel consumption), by the cargo transportation considerable prime cost, by the difficult routes, and by the environmental pollution. The aerial cable – aerostat transport systems, which will be able to be provided the complete energy autonomy of the work by the shortest way over the surface, are suggested to be used by us, as the alternative. For all this, the high work standards and the good performance by the energy efficiency and the transport works ecology will be achieved.

The existing and the suggested upland open cuts' transport systems comparison is being carried out by the efficiency measures and the performance criteria, which are being defined during the mathematical – economically modeling on the PC. The cargo transportation prime cost, the energy specific consumption, the efficiency, the reliability indices and also the ecological qualities and characteristics are being related to all these criteria. The already developed mathematical – economically model is being provided, as the optimal (e.g. by one efficiency criterion), well as the rational (e.g. by efficiency measures and the performance criteria aggregate) versions. So, the preliminary calculations and the pre-designs have been shown, that the aerial cable – aerostat transport plants, in comparison with the motor transport have, in general, less its prime cost and the energy specific consumption, but and they have less efficiency, and also the low level technical availability for the service coefficient. The loading – transport complex with the aerial cable – aerostat gravitational plant (e.g. the cargo transportation distance has been varied from 1,5 up to 8 km in the different transport schemes) is the efficient one for the upland open cuts, having had the annual production rate from 0,2 up to 2,5 mln. tons and the transported cargoes apparent density from 1,5 up to 2,5 t/m<sup>3</sup>. The upland open cuts' efficient transport scheme choice methods are being developed on the basis of the received and the final results.

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**THE NEW WAY OF DIRECION  
OF THE COMPLETES  
OF REVERSIBLE GATED  
TRANSFORMER**

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Nowadays the way of combined direction of gated completes of m-phase reversible transformers at the IGBT, MOSFET transistors and thyristors with an artificial commutation is widely used at the transforming technics. The realization of idea of combined conformed direction is possible without revealing of not only average, but also momentary components of tension and current at the equalizing circuit, which includes the necessity at the equalizing reactors both in statistic and dynamic modes of working of transformer. But it should be recognized that this result is observed only in condition of momentary commutation of phase currents. At the real schemes of transformers of such type owing to final duration of commutations at the equalizing circuits there can develop commutative equalizing currents, the limitation of which requires saving at the mentioned circuits the current-limiting reactors, but with rather less inductance. Therefore, the carrying out of these transformers at the general case can be carried out not only by counter-parallel, but also by other known schemes of connection of gated completes, which are used while the combined direction for decrease of quantity of mentioned reactors.

And with it at the transformers of this type for improvement of dynamic and energetic indicators more often use there are ways of regulation at the base of high-frequency methods of modulation with repeated switching of each valve at the period of network tension begun to receive. While this, the carrying out of two-completed transformer is possible not only by counter-parallel, but also by cross and as it's called N-scheme of straightening [1]. Therefore it's reasonable to spread the idea of combined direction of gated completes without equalizing currents at the rest of known variants of carrying out of two-completed reversible transformers at two-operating valves independently from the force scheme and accepted law of modulation.

For it at the general case there is supposed simultaneous giving of unlocking impulses to next