DEVELOPMENT OF MOBILE ELECTRIFIED POWER TOOLS

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Every single country can count on a place in the global economy, depending on the level of innovation policy - scientific and technical activity and state support for the creation of a competitive domestic producers. Activation of world globalization coincided with profound social and economic reforms in Ukraine, which led to the raw reorientation of our economy and the crisis depends on economies more successful countries.

The purpose of research - improving the efficiency of mobile energy resources for agricultural purposes through the use of electricity.

Results. One of the characteristics of agricultural production in Ukraine is a significant dependence on imported energy, the need for energy Ukraine is 220 million tonnes. In. n., including imports - 60% and own oil production - about 30% of the required diesel fuel only if the core processes of crop is more than 20% of the cost of plant products originally sold (and a very limited time) crop production, and purchased fuel. Any increase in profits from sales of crop easily lost in the procurement of fuel. A country that sells bread, always a loser country that sells fuel.

On the other hand, Ukraine is now one of the most developed and advanced countries for power generation: a powerful system of thermal power plants (14 thermal power plants with installed capacity of over 30 thousand MW). This coal reserves Ukraine ensured for 400 years. With the installed capacity of nuclear power Ukraine occupies 8th place in the world and has significant reserves of uranium ore, the share of electricity derived from solar and wind energy in 2030 should be 15 %, the current wind power capacity is 30,000 GWh · h per year, promising use of crop residues for power generation in terms of individual farms.

Thus, it can be argued that one of the factors efficiency of agriculture Ukraine will continue development of a new production of electrification. Important in this process is

the question of transfer of mobile power means, including tractors agricultural land to electric drive.

First elektrooranka held October 22, 1921 Elektropluh was created Petrograd workers power.

On the chassis was installed capacity of 70 hp motors Electric equipment turned fastened to the chassis drums, and each drum namotuvavsya steel cable. The whole design is called elektrolebidky. Two elektrolebidky were installed in the field at a distance of 450-500 meters apart. With steel cable they moved across the field tipper 16-share plow. When the flip plow was at the right elektrolebidky, began work left elektrolebidka. Rotating drum, steel wire rope and pulled namotuvavsya flip plow. Plow furrows made 8 total width of more than 2 m and 8 other buildings plow were at this time in the raised position. When he reached the left elektrolebidky, plow upset and moved back to the right lebidtsi, reserving and 8 grooves.

However, in the last century in USSR were rapidly developing agricultural elektrotraktoriv, and the work involved a number of leading research institutions. Among them is the All-Union Institute of Electrification of Agriculture, Kharkov Tractor Plant and many others. In Kharkov produced a small series of ХТЗ-12 that were tested in their research sector.

The main disadvantage of these tractors was limited in range of the labor movement, which was determined by cable length - 850 m. The lack of powerful batteries or connect to a network contact inhibited the development of the project.

May 1, 1957 Chelyabinsk Tractor Plant was started manufacturing tractors ДЭТ-250 with electric transmission.

Tractor engine power of 330 hp has proved a reliable car, especially in the northern regions, where used in large construction and mining industry. These models movers and now Viko-cluded in repairing trains on the railway. Engine В-31М2 spent fuel 165 g to 1 hp an hour and a bulldozer mode was one of the best economic indicators.

The exhibition "Agro-2013" NSC (IMESH) presented a tractor with electric power at the ХТЗ-2511-04. Tractor runs on batteries and traction characteristics are not inferior to the basic model with a diesel engine.

Generally recognized barriers to mass adoption cars drive elektroakumulyatornomu considered the lack of required batteries and charging them.

In many countries is rapidly developing and introducing new types of high-energy batteries, lithium-ion (too expensive); sodium-sulfur (operating temperature of 300 ° C and more); NiMH; based polypropylene, fuel cells, Supercapacitor, solar cells, etc. However, the most affordable, reliable, and are still common lead-acid batteries (battery). Recently, their characteristics, as a source of energy for elektrotraktora significantly improved (Figure 6) - specific energy consumption reached 45 W h / kg. And while ensuring a two-hour continuous operation tractor unit with 80 % -s load weight ratio of batteries and elektrotraktora in which they are set is 20 %, and the corresponding value and tractor batteries is about 25 %.

Comparative characteristics of lead-acid batteries and Lithium show that currently use lead-acid cheaper, but their total mass is large enough for Lithium. During the execution of manufacturing operations at the same weight capacity Lithium batteries will be three times greater.

With respect to recharge the batteries, then elektrotraktoriv this issue is resolved somewhat easier than for cars, due to the limited territory, which operates a tractor, well-defined route and a small distance moving it. By introducing a number of stations quick replacement battery (3-5 min) plan and optimize production targets can be achieved practically continuous operation elektrotraktora throughout the work shift. At each station replacement batteries required number of units installed battery replacement is carried out on the tractor in automatic mode and charging is made from one of the possible sources of energy: centralized power grid, wind power unit, photovoltaic modules, thermal power generator on biofuels (straw, biogas, etc.) and al.

In previous works of foreign and domestic scientists, including specialists from the National Scientific Center "Institute of Mechanization and Electrification of Agriculture," The particular issue of work elektrotraktoriv, choice of electric power, development of motor control schematic, the economic, environmental and social impact.

Given the strong potential of JSC "Kharkiv Tractor Plant" and the high level of the electricity sector, Ukraine has good conditions for the solution in the short term all

technical issues and successful implementation in the production of tractors with elektroakumulyatornym drive.

The use of electric power in heavy saturation of mobile agricultural units means of information and automation technology opens up the possibility of creating a new generation of high-electrification processes and elements kompyuterezatsiyi that will significantly reduce energy costs, increase comfort and environmental friendliness life and overall effectiveness of agricultural land.