Monarch owners own the sensor and visual data collected from their units. The Monarch tractor is 100% electric and has zero tailpipe emissions. It serves as a kind of three-in-one tool, operating not only as a tractor, but with extra storage, it acts as an ATV, and it has the capabilities to be a powerful generator in the field. The tractor can perform preprogrammed tasks without a driver, or an operator can use Monarch's interactive automation features, including Gesture and Shadow modes, to have the tractor follow a worker on the job. The Monarch tractor features roll- and collision-prevention capabilities, vision-based PTO safety and 360-degree cameras to keep operations running smoothly and employees safe, day or night. The Monarch tractor collects and analyzes over 240 gigabytes of crop data every day it operates. It can work with farmers' current implements as well as the next generation of smart implements. Sensors and imaging are processed to provide critical data points that can be used for real-time implement adjustments, as well as long-term yield estimates, current growth stages and other plant/crop health metrics. Utilizing machine learning, the Monarch can digest this data and provide long-term analysis of field health, improving accuracy the longer it runs. By way of a smartphone or personal device, users receive tractor alerts, updates on current micro weather conditions, detailed operations reports, data collection and analysis [2].

This tractor is just one bright example of elecric tractors on modern market. Other companies such us John Deer and Kubota also produce electric tractors, helping us create a more sustainable future with zero carbon emissions and better energy efficiency.

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STANDBY ELECTRIC POWER SYSTEMS FOR AGRICULTURE

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Abstract. This article discusses the importance of backup power supply systems, as well as their need for the operation of agricultural equipment and facilities.

Keywords: electricity, diesel power plant, system, backup power plants.

To increase the reliability of power supply to agricultural production facilities, various methods of network redundancy are mainly used. However, it does not always provide uninterrupted power supply, in particular in adverse weather conditions. Therefore, along with network redundancy, it is effective to use backup autonomous sources of electricity, which can be used as traditional and non-traditional energy sources.

From traditional sources of electricity in agriculture, diesel electric units and power plants are common, among non-traditional ones, solar, wind, geothermal electrical installations and small hydroelectric power plants are of particular interest. However on-traditional sources of electricity have not become widespread in agriculture due to the difficulty of finding cost-effective technological means of concentrating and converting the considered types of energy. In addition, the somewhat small capacity of the existing non-traditional sources does not allow them to be used as the main autonomous sources of electricity when the centralized power supply is turned off.

Currently, it is recommended to use stand-by power station as the main autonomous sources of electricity: a diesel power plant is a stationary or mobile power plant equipped with one or more electric generators driven by a diesel internal combustion engine.

Diesel backup power plants are represented by two types: single and three-phase. The first ones are usually used for connecting household appliances, and the second ones are used for supplying industrial facilities.

The mobility of the power plant depends on its belonging to the high-speed or low-speed. The first differ in compact dimensions, but at the same time consume more fuel. The latter are designed for continuous use and are characterized by a large engine life with a small consumption of diesel.

It is economically feasible to use backup power plants, provided that the specific damage caused by the undersupply of electricity is equal to or greater than the specific reduced cost of electricity generated by the backup power plant.

In accordance with its purpose, the reserve power plants operate only when there are interruptions in the centralized power supply system. In rural networks, the total duration of breaks, even in the most unfavorable conditions, does not exceed 150-200 hours per year. The actual operating time of the backup power plants is even shorter due to the possible mismatch of power supply interruptions and technological processes of agricultural production. To increase the efficiency of the use of backup power plants, it is necessary to introduce a forced schedule of power supply for the emergency period by disconnecting non-responsible consumers, as well as shifting the time of technological processes.

A stationary diesel power plant is a backup power source for responsible consumers of electric energy – livestock complexes, farms, poultry farms and other agricultural facilities. The necessity and justification for the use of backup power at the facility, as well as the power of the station, are determined in a specific design. The choice of a site for the construction of a diesel power plant and the scheme for connecting the electric unit to the distribution networks of 0.38 kV of centralized power supply is decided on the basis of technical and economic indicators when designing a local reservation system. In agriculture, a diesel power plant with a capacity of 16-30 kW has become widespread. This capacity is usually sufficient for the backup power supply of responsible consumers.

Summing up, it should be noted that the appearance of diesel power plants has allowed us to solve many problems related to the power supply of both residential and industrial premises. Their high reliability, wear resistance and availability of the fuel used allows the units to be used in any climatic conditions and at facilities remote from the main networks.

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MAINTENANCE AND TROUBLESHOOTING OF ELECTRIC MOTORS

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Abstract. The article deals with the routine inspection and servicing of electric motors. Visual inspection, motor's windings test, brushes and commutator inspection, and vibration tests are described in the article.

Keywords: maintenance, bearings, lubrication, visual inspection, motor.

Introduction

Modern agriculture is heavily dependent on the use of electric motors to power vehicles, and electricity-powered machinery is becoming widely used in