Keywords: avtonomnыy эlektromehanycheskyy complex kompensyrovannыy asynhronnыy engine

Annotation.*The construction of autonomous electromechanics complex with compensated asynchronous machines is offered.*

Key words: autonomous electromechanical complex, compensated induction motor

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IMPROVING THE PROCESS OF transporting grain harvesters Tipper trucks

SG Fryshev, Dr.

Abstract.*Grounded improvement process transporting grain from combines and semitrailers tippers specified on rational method of determining the parameters for the application in the field of movable carts.*

Keywords: transportation of grain harvesters napivchovnykovyy movement tipper, podkatnymi vozok, performance

Formulation of the problem. The use of motor vehicle (NP) trucks as interoperable joints in the technological chain "harvesting combines (CAR) - Vehicles (vehicle)" becomes practical application in recent years in connection with the development and introduction of special truck tractor coupling for a similar construction of the road [1]. This device greatly reduces the time spent on coupling - vidchiplennya emergency and increases the efficiency of the grain transportation technology by eliminating idle cars. But the industrial use of such a device is limited by two factors: 1) truck towing device is installed manufacturing plants only on some brands of tractors, 2) the use of the device increases the load on the tractor wheels of emergency, which leads to soil compaction.

Therefore, the actual improvement of the process of transporting grain from combines Tipper trucks

preserving its positive characteristics and deficiencies, and accordingly refine the methodology for determining sustainable transportation options.

Analysis of recent research. The known method improving the efficiency of harvesting and transport complex (ZTK) for crops using car jacks as emergency trucks during the organization napivchovnykovoho

vehicle traffic [2, 3]. In [1] the only option of individual emergency team of auto trucks.

Distribution of this method is the last time in connection with the development and use of a part of the vehicle, between the tractor and the state of emergency, a special trailer - movable trolley, equipped truck coupling device (saddle - identical with auto tractors) [4]. The use of the trolley does not restrict the use of any tractor transport unit consisting of emergency, but with the additional supporting wheels trolley reduces the specific ground pressure. Organization of transport Tipper trucks with napivchovnykovoho use of their movement provides both combines productivity by creating conditions for continuing their work and increase productivity through the use of vehicles circulating NP. Therefore, a full assessment of the working conditions of emergency needs analysis of the interaction of NP with a corresponding group of HCC impact assessment on movable carts manufacturing process.

The purpose of research. APidvyschennya the efficiency of the machine set for the collection and transportation of grain harvesting by improvement of the process of refinement of methods of transportationrationale and rational parameters of complex machines using semi trucks.

Results. Some effect in the processing chain ZTK to crops achieved while ensuring the rational structure of its two parts: "HCC - NP with movable cart and a tractor" and "CS - Car trailer (BP)."

Special trailer - podkatnymi vozok, equipped truck coupling device also includes a special shaft for connection with tractor and chassis with one or more wheel axles (Fig. 1 - Fig. 3). Technical characteristics of movable carts presented in Table. 1. The use of movable carts can reduce the length of time perechipku (vidchiplennya - coupling) emergency, and reduce soil compaction, because the share of the weight of the trailer wheels perceived grain cart. To receive grain bins LC NP is a field with a tractor and movable trolley, and on the way from the field to the milled (HSP) - with BP. After filling the grain from combines state of emergency is transported to the edge of the field, vidchiplyayetsya and replaced by a blank for further work in the field, transported and loaded with emergency auto-tractors for HSP, discharged and returned to the edge of the field where vidchiplyayutsya.

Fig. 1. Trailer podkatnymi vozokof Dolly Trailer.

Fig. 2. Tractor Trailer podkatnymi vozok TONAR PTT-0000020.

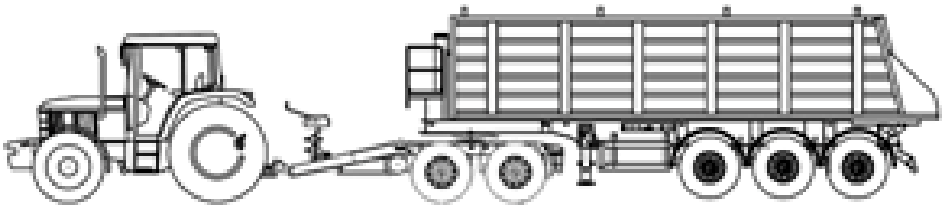

Fig. 3.Scheme tractor train, semitrailer with movable cart.

1. Characteristics of the biaxial movable tractor trucks with truck coupling device.

Model	1418 kompanyiyi Dolly trailer (Germany)	TONAR-THF (RF)
Maximum load on the saddle (saddle-coupling device), etc.	17-22	18
Seat height, mm	1150-1350	1150-1350
The load on the axle, etc.	9-14	8
Total weight of semitrailer, not more, t	-	21

To calculate the parameters of ZTK in [1] the rhythm of the first technological link:"HCC - semi-trailer tractor 'and defined forilkist emergency with tractors that simultaneously combines working in the field as follows:

$$n_{НП1} = \text{CEILING}\frac{m_K}{\rho}, \text{ Ed.,} \quad (1)$$

Where: Seiling - a function that returns the nearest integer value; m_K - Number of harvesters; ρ - The number of bins of grain HCC that is loaded in RS

$$\rho = INT(\omega_K \cdot d_B(\frac{9,25}{W_{KP}} + \frac{8,33}{W_{ШК}}) - 8,33t_{B-П} - 0,667),$$

where: INT - function that returns the nearest integer value; W_{KP} - Performance LC 1 hour of normal time, t / h; $W_{ШК}$ - Performance screw HCC vygruznogo 1 hour of normal time, t / h; $t_{B-П}$ - Average time perechipky (vidchiplennya - coupling) NP; ωK - volume hopper combine m3; DB - grain bulk density, t / m3.

Selecting emergency duty is performed based on the multiplicity of terms carrying the body and emergency bunker HCC:

$$q_H \geq q_Б \rho, \quad (2)$$

where: q_H - Rated capacity of emergency elected body; $q_Б$ - Grain mass contained in the hopper HCC.

The second condition is the choice brand RS container body ω_H NP chosen to be a multiple of capacity bunker harvester

$$\omega_H \geq \omega_K \rho. \quad (3)$$

Based on the expressions (2), (3) select the appropriate carrying capacity for q_H brand NP. Conditions potochnosti second link "NP - JSC" we examined a group of emergency and blood pressure and has the form:

$$R2 = I2, \quad (4)$$

where: R2 - groups of rhythm NP with tractors, h .; I2 - interval income pressure, h.

The rhythm of the group with tractors emergency is defined as:

$$R_2 = \frac{0,08 + 0,12\rho + 2t_{B-П}}{n_{НП1}}, \text{ H} \quad (5)$$

Timing of receipt AT:

$$I_2 = \frac{t_{ОБ}}{n_{AT}} = \frac{2t_{B-П} + \frac{2l_{ij}}{v_T} + t_{ВИВ}}{n_{AT}}, \text{ H} \quad (6)$$

where: $t_{ОБ} = 2t_{B-П} + \frac{2l_{ij}}{v_T} + t_{ВИВ}$ - Duration of traffic pressure, h; n_{AT} - The amount of pressure, from; $t_{ВИВ}$ - JSC length of stay in the unloading point, depending on the level of mechanization and organization of work hours; lij - distance transportation of grain from the field (and point) to the point

of discharge (item j), km; v_T - Average speed AO technology on the way from the field to the barn km / h.

After substituting values of (5) and (6) (4) and obtain the corresponding conversion number avtotyahachiv for grain HSP in the equation:

$$n_{AT} = CEILING\frac{n_{НП1}t_{ОБ}}{0,08+0,12\rho+2t_{В-П}} = CEILING\frac{n_{НП1}(2t_{В-П}+\frac{2l_{ij}}{v_T}+t_{ВИВ})}{0,08+0,12\rho+t_{В-П}}$$, From (7)

The total number of emergency needed for ZTK (moving and expect coupling under load) is the number of emergency operating in two levels, and is given by [3]:

$$П = П_1 + П_2$$, Ed., (8)

where: $П_1$, $П_2$ - The number of emergency under the link "HCC - NP tractor" and "NP -AT";

$$П_1 = n_{НП1}$$, Ed., (9)

$$П_2 = n_{AT}(1+\frac{(t_П + t_{ВИВ} + 2t_{В-П})v_T}{2(l_{ij}+v_T t_{В-П})}$$, Ed., (10)

where: $t_П$ - The average length of the loading operations [2, 3]

$$t_П = 0,08+0,12\rho$$, Hours.

After substituting components (9), (10) in equation (8) we obtain the total number of emergency as:

$$П = n_{НП1} + n_{AT}(1+\frac{(0,08+0,12\rho+t_{ВИВ}+2t_{В-П})v_T}{2(l_{ij}+v_T t_{В-П})})$$, Ed. (11)

Compare this variant technology collection and transportation of grain from the most progressive in terms of implementation in Ukraine cargo handling technology using trailer-conveyors in the following example. Consider use of technological schemes grain harvest area 2100 hectares of grain harvesters John Deere 9780 and for transporting grain reception center (WKP = 15,3 t / h $\omega_K = 10м^3$, DB = 0.75 t / m3, yield U = 6 t / ha, the number of working days for harvesting grain ahrovymohamy DR = 10 days duration changes TZM = 8 hours, coefficient of variability Rr = 1.5, grain haulage distance lij = 8 km, vm = 40 km / h). Calculation parameters for technology using NP conducted using techniques presented in this paper. For handling technology calculations made by techniques contained in [5]. The calculation results are presented in Table. 2.

2. Comparative technical, operational and quantitative indicators of ZTK for cargo handling and transportation process scheme using the emergency.

technology options	The composition and number of machines, units.	Aver age yield

	HCC John Deere 9780	Kinsey PP 850	NP Langerdorf	Tractor John Deere 8440	auto, truck Iveco Trakker AT260T44	ATZ KamAZ 6520 AGRO	Dolly trailer dolly vozok	
The overload flowsheet	9	3	-	3	-	6	-	210
Transportation semitrailers	9	-	7	3	4	-	3	315

The data shows that the use of emergency that work napivchovnykovym movement in two levels: in the field and on the road, enhances productivity (average output) ATZ 1.5 times from 210 to 315 t / r.d. by reducing their downtime. This allows them to reduce accordingly the number of members in the ZTK.

Conclusions

1. Based on the theoretical analysis of ZTK with variable road Tipper trucks reasonably improvement process transporting grain from combines and semitrailers tippers refined method of determining the relevant rational parameters set in the application in the field of movable carts.

2. The use of emergency that work napivchovnykovym movement in two levels: in the field and on the road, ensuring minimal downtime of vehicles, which allows 1.5 times to raise their productivity and thus reduce their number and reduce fuel consumption.

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Abstract.*Obosnovano usovershenstvovanye tehnolohycheskoho process of transportation of grain from combine Tipper semi refined and*

sootvetstvuyuschaya method for determining parameters at ratsyonalnыh Application for work in the field podkatnыh vozkov.

Keywords:*Transportation of grain kombaynы, poluchelnokovoe motion, Tipper semitrailer, podkatnoj vozok, proyzvodytelnost*

Annotation.*It is proved developments of technological process of conveyance of grain from combines by semi-trailers dump trucks and the matching technique of determination of rational parametres is specified at application for work in the field of roll sleigh.*

Key words: *transportation of grain, harvesters, semi-shuttle movement, dump semi-trailer, roll sleigh, productivity*

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Self-propelled chassis layout SCHEME - REALITY AND CONSTRUCTION AREAS OF IMPROVEMENT

GV Shkarivskyy, Ph.D.

Abstract.*The results of the analysis of structural and circuit layout carrier chassis agricultural purposes.*

Keywords:*mobile power unit, layout, self-propelled chassis design, development*

Formulation of the problem. Mobile power unit (MEW) is the basis for creating machine-tractor units (AIT). The volume of manufacturing operations that can be performed using

this power means and efficiency of its use in determining the composition of the unit tractor fleet management, and hence the cost of the final product. It is the ability to create units for various purposes and layout essentially depends on the design-layout scheme MEW. Recently, the company specialized in manufacturing self-propelled machines put emphasis on the creation of such units at the self-propelled chassis. Under such conditions the relevant question is aimed at studying the trends of structurally-layout circuits MEW and with the provisions of state program realization of technical policy in agriculture.

Analysis of recent research. Operating MEW design-layout circuit carrier chassis connected both advantages and challenges that accompany it. One of the main problems of self-propelled chassis layout, at this stage, there are imperfections in the overall design of the traction