both for terms of Ukraine, and taking into account features incident to Iraq.

Vine, SR-technologies, monitoring, ecology of irrigation.

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ECSPLUATATSIYNI engine parameters IN APPLYING biodiesel

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Powered theoretical dependence and the method of determining the operating parameters of the diesel engine depending on load type and characteristics of the fuel, the analysis of the theoretical and experimental data dependencies. The effect of biodiesel heating performance of the diesel internal combustion engine.

Mano-tractor unit, diesel, diesel biofuel heating.

Resolutionska problem. ParameterAgrotechnological and environment vary quite widely and affect the technical and economic performance of the machine and tractor unit (AIT). The issue of the relationship between the parameters of the MTA and its indicators in the performance of manufacturing operations, will perform simulations and obtain data to optimize its performance, which is especially important when used in a fuel biodiesel (DBP) based on methyl esters of fatty acids of vegetable oil.

AnaLiz recent research. The research [1]
marked reduction of engine power during the transition to DBP and indicated the need for taking into account structural features and modes of operation on power and fuel-economic performance of the engine. According to research [2] for the engine MD-14 when using 100% DBP observed maximum effective reduction of engine power by 12% and increase in specific fuel consumption by 10-13%. In [3, 4], the authors experimentally

found that for the same energy performance, engine efficiency when working on vegetable oil methyl ester is reduced from 12 to 20%. Studies of the engine D-
243 rapeseed methyl ester noticed a significant increase in the hourly and specific fuel consumption [5].

Andstitutionalism recent research shows that today made quite a large amount of work on experimental determination of changes in fuel costs during the transition to the BJP. However, the question of the theoretical prediction of changes in performance of AIT and
determine the factors that influence on the efficacy of DBP are not illuminated and require further research.

Metand dperssurvey findings. In thebe legislativedimensions frommines operationiynyh performance of diesel engine using diesel fuel (BF) and DBP oil origin based on vegetable oils. Determine the efficiency of heating DBP before injection into the cylinder internal combustion engine.

Rezultaty research. Enerhetychnyy means a part of the MTA will providetractive force is to perform moving and working machine drive, through the transfer of energy required using PTO.

According to our studies [6] and dependence for determining the efficiency of DBP reduction compared to the SE, which is given by:

$$k_{MCHBP} = \frac{k_{DBP}}{k_{DBP}^{\max}} = \frac{Q_{NDP\ G\ SE}}{Q_{NDBP}\, G_{DBP}} = \frac{\eta_{EDBP}}{\eta_{EDP}}, \quad (1)$$

where

$$\eta_{EDBP} = \eta_{EDP\ kZMDBP} = \frac{\eta_{EDP\ QNDP\ G\ SE}}{Q_{NDBP}\, G_{DBP}}, \quad (2)$$

where *kZMDBP* - Reducing the efficiency factor DBP compared with SE, ratio. ed .; *kDBP* - The actual efficiency ratio
using DBP, modn. $k_{DBP}^{\max}$ - maIACposure from.; coefficientsiyent
Effectsvnosti using DBP, ratio. ed .; GD_P- DP hour consumption, kg / h; GDB_P- Hourly consumption of DBP, kg / hr .; QHD_P- Net calorific value of SE, J / kg; $QHDB_P$- Net calorific value of DBP, J / kg; ηED_P- Effective efficiency of the engine in the SE, ratio. ed .; ηEDB_P- Effective efficiency of the engine on DBP, ratio. units.

Effectstotal cross Efficiency dvyhunand mozhna toyznachytand according byhalnovidomoyi formula [7]:

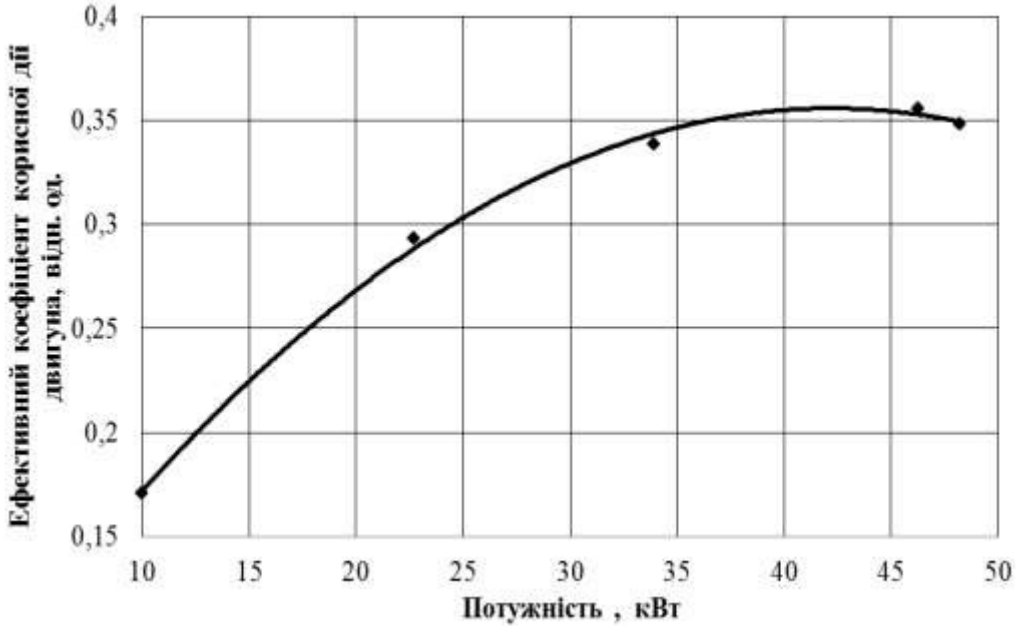
$$\eta_E = \frac{3{,}6 \cdot 10^6}{g\,E\,Qn} = \frac{3{,}6 \cdot 10^3 N\,E}{GQ_H}, \qquad (3)$$

where η_E- Effective efficiency of the engine, ratio. ed .; g_E- Specific fuel consumption, g / h W .; Q_H- Net calorific value of the fuel, J / kg; *Ne* - The engine output, W; *G*- Hourly fuel consumption, kg / h.

DTo further their theoretical calculations of the parameters of the diesel engine according to formula (3) is necessary to know the change of the effective efficiency of depending on the change of power. We analyzed the regulatory characteristics of the engine D-65N [8] on the regulatory branch and obtained dependence of the effective efficiency of the loading of the engine and made its approximation (Fig. 1). Established that effective efficiency, depending on the load of the engine, with a probability *R2 = 0,986* can be described by a polynomial of second degree:

$$\eta_{EDP} = \alpha N^2 + \beta N + \gamma, \qquad (4)$$

where *α, β, γ* - coefficientitsiyenty aproksytion (*α*= -0.000176953, *β*= 0.014935465, γ= 0, 040 581 582).



Ric. 1. Frombutzhnist effectivetion coefficientsiyenta crustsnoyi activity engine D-65N at the SE of downloading.

Andfrom expression (3) hour consumption of diesel fuel will be:

$$G_{DP} = \frac{3{,}6 \cdot 10^3 N_E}{Q_{NDP}\eta_{EDP}} = \frac{3{,}6 \cdot 10^3 N\,E}{Q_{NDP}(\alpha N_E^2 + \beta N + \gamma)}. \qquad (5)$$

Changing the effective efficiency of the engine D-65N according to its regulatory characteristics shows that the most efficient engine converts chemical energy in SE efficient operation when loading close to 40 kW. For this engine it meets its load at 85-90%. This range of engine load corresponds to the optimal power means to which it is advisable to approach when forming the MTA in the performance of manufacturing operations. In our opinion, to obtain adequate data reduction factor in determining the efficiency of DBP, it is useful to compare the fuel consumption of the engine is at a given load.

Andfrom expression (5) hour consumption of biodiesel will be:

$$G_{DBP} = \frac{3{,}6\cdot 10^3 N_E}{Q_{NDBP}\,\eta_{EDP}\,k_{ZMDBP}} = \frac{3{,}6\cdot 10^3 N\,E}{Q_{NDBP}\left(\alpha N_E^2 + \beta N_E + \gamma\right)\left|\frac{Q_{NDP\,G\,SE}^{OPT}}{Q_{NDBP}\,G_{DBP}^{OPT}}\right|} \quad (6)$$

where G_{SE}^{OPT}, GDB_P^{OPT} – - moDPOrelat thmelon toytratand DP tandDBP to Optimaflax range kg / h.

DTo determine the operating performance of the diesel engine, the comparative bench tests of the engine D-65N. Characteristics of the diesel engine on the regulatory branch, while working at BF petroleum origin, DBP based on methyl esters of fatty acids of rapeseed oil and heating using DBP before injection into the cylinder. To perform bench tests performed modernization regular system power tractors PMZ-6 AKL according to [9], the temperature
heating DBP was taken at 120 C, which corresponds to the results of previous studies [10]. To test the methodology for determining the adequacy of the resulting changes in operating performance of the diesel engine, the calculations of the application of the appropriate type of fuel and Comparison of the theoretical and experimental data (Table. 1). In carrying out theoretical calculations of net calorific value of diesel fuel taken at 41 MJ / kg, biodiesel - 37 MJ / kg.

Based on the theoretical and experimental data graphs constructed (Fig. 2, Fig. 3) changes in the efficiency of the engine D-65N and its specific fuel consumption from load changes, with the application of experimental points and
theoreticallys characteristics according to DP and DBP with and without the use of heating fuel before injection.

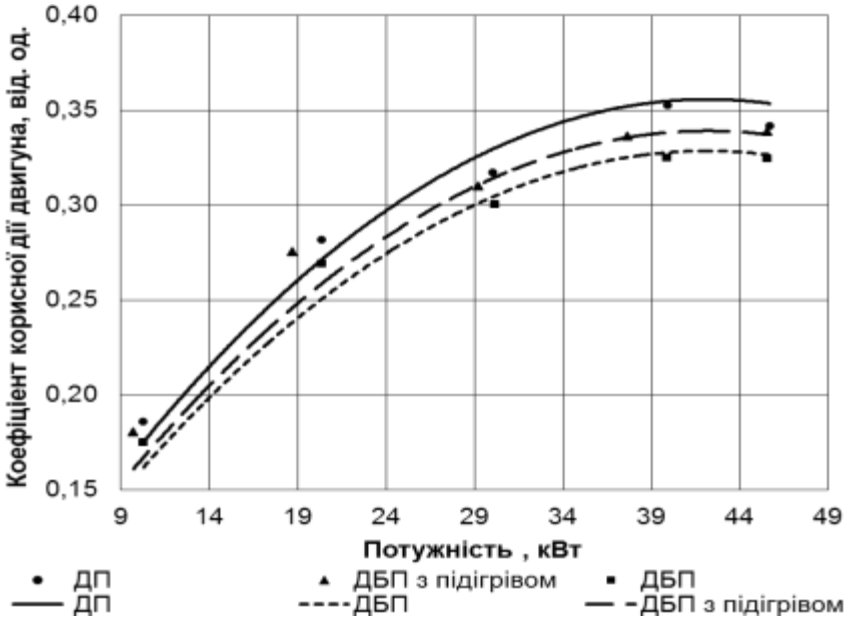
1. ZNAnite experimental and theoretical points of regulatory characteristics of the engine D-65N regulatory branch.

Diesel fuel					
Power, kW 1	10 2 28	20 3 39	30 4 08	39 5 96	45 6 73
Hourly fuel consumption, kg / h.	4.86	6.36	8.33	9.96	11.76
Specific fuel consumption, g / kWh.	473	312	277	249	257
Koefitsiyent efficiency of the engine on.	.1857	.2815	.3171	.3523	.3414
Pozrahunkovyy efficiency dith engine off. units.	.1754	.2715	.3297	.3548	.3535
Reaznytsya between practical and calculation engine efficiency,%	1.03	1.00	1.27	0.26	1.21
Pozrahunkova hour costs consumption, kg / h.	5.15	6.59	8.01	9.89	11.36
Pozrahunkova specific consumption fuel g / kWh.	501	323	266	247	248
Vaylennya estimated proportion toytraty fuel from the experimental%	5.88	3.67	3.84	0.72	3.42
Bio Diesel	Sectionalyvo without				
Power, kW	heating			39.89	45.61
Hourly fuel consumption, kg / h.	5.72	7.36	9,78	11.95	13.68
Specific fuel consumption, g / kWh.	556	361	324	300	300
CCD engine off. units.	.1749	.2692	.3002	.3248	.3244
Koefitsiyent reduction efficiency IRyhuna from. units.	.924	.924	.924	.924	.924
Pozrahunkovyy efficiency dith engine off. units.	.1620	.2506	.3049	.3277	.3266
Reaznytsya between practical and calculation engine efficiency,%	1.29	1.86	0.47	0.29	0.23
Pozrahunkova hour costs consumption, kg / h.	6.17	7.91	9.63	11.84	13.59
Pozrahunkova specific consumption fuel g / kWh.	601	388	319	297	298
Vaylennya estimated proportion toytraty fuel from the experimental%	7,93	7.41	1.53	0.88	0.69
Biodiesel from		heatedon			
Power, kW	971	18.70	29.23	37.66	45.61
Hourly fuel consumption, kg / h.	5.23	6.61	9,17	10.90	13.10
Specific fuel consumption, g / kWh.	539	353	314	289	287
CCD engine off. units.	.1806	.2753	.3100	.3362	.3388
Koefitsiyent reduction efficiency IRyhuna from. units. *	.953	.953	.953	.953	.953
Pozrahunkovyy efficiency dith engine off. units.	.1610	.2460	.3107	.3356	.3372

Extension Table. 1

Diesel fuel					
1	2	3	4	5	6
Reaznytsya between practical and calculation engine efficiency,%	1.96	2.93	0.07	-0.05	-0.16
Estimated hourly fuel consumption, kg / h.	5.87	7.40	9.15	10.92	13,16
Pozrahunkova specific consumption Fuel theoretical g / kWh. Deviation	604.20	395.60	313.12	289.88	288.57
calculated specific fuel consumption of experimental,%	12.18	11.92	0.24	0.16	0.47

* Fuel consumption values obtained by interpolation, based on fuel consumption under load 38 kW.

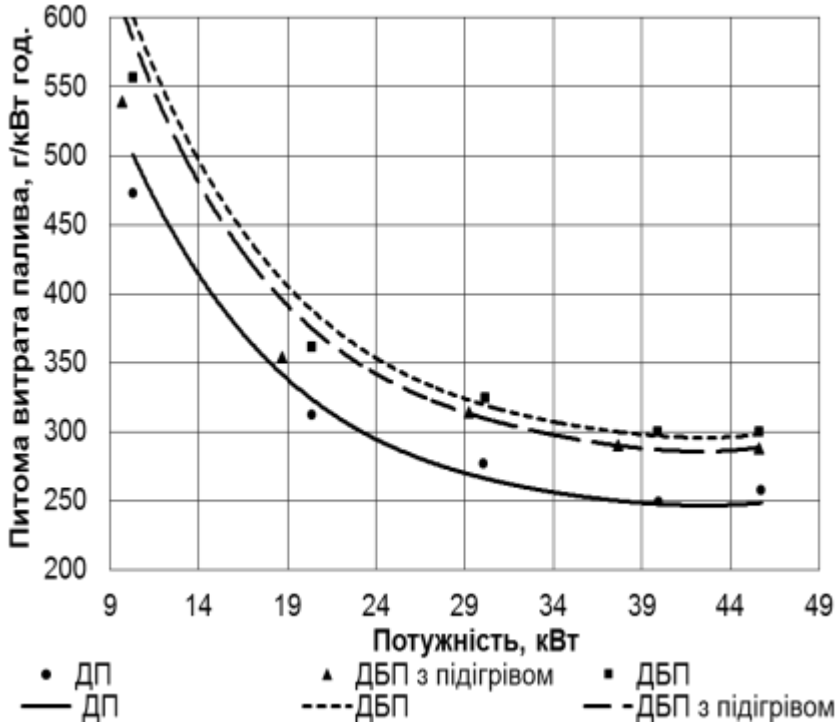


Ric. 2. Change the fuel efficiency factor of diesel internal combustion engines.

Andstitutionalism the experimental and theoretical data changes in the efficiency of the engine confirming compliance experimental calculation data. Thus the maximum deviation of the estimated value of the efficiency of the engine from the pilot to the SE was 1.27% with a load of 30 kW for DBP unheated 1.86% with a load of 20 kW and 2.93% for DBP heated at a load close to 19 kW . The use of heating DBP before injection into the engine cylinder improves its combustion occurs as a result improve the efficiency of the engine on the value of 2.2 to 4.2% depending on the load.

AndAnalysis reveals that the values of specific fuel consumption obtained by calculations correspond

eksperymentalnym. Thus the maximum deviation of the calculated specific consumption of experimental SE was less than 6% at 10.28 kW load, the DBP without heater - 7,93% at 10.28 kW and 12.93% with the use of DBP in heating load 9,71 kW . It should be noted that the deviation calculated specific fuel consumption of experimental data in the range of loads from 30 to 45 kW, did not exceed 4%.



Ric. 3. Change in specific fuel consumption for DP and DBP using heat and without depending on the effective power of the engine.

Conclusions

Andstitutionalism experimental results suggests that DBP heated before injection into the engine cylinder improves its combustion, consequently, an increase engine efficiency and a decrease in specific consumption of an average of about 4%.

Aboutdriven analysis of operational performance of the diesel engine on different types of fuels derived calculations and experimentally, allows

argue about the adequacy of the obtained mathematical relationships and the applicability of the proposed methodology for forecasting changes in fuel consumption depending on the load of the engine, the type and characteristics of the fuel used in the MTA work.

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Pryvedeny Theoretical dependence and suggestions methodology for determining parameters Changed ekspluatatsyonnыh diesel engine work in dependence from the load, the type and characteristics of the fuel, Flag poluchennыh Theoretically dependence analysis and eksperymentalnыh data. Installed Effect on the heating diesel byotoplyva effektyvnye indicators diesel engine work vnutrenneho combustion.

Manotraktornыy unit, diesel fuel, diesel byotoplyvo, podohrev.

It showed theoretical dependence and given method for determination of technical and operational parameters changing of diesel engine operation beholds load, type and characteristics of fuel, analysis of obtained theoretical dependences and experimental data. It is effect of

diesel fuel heating for effective performance of diesel internal combustion engine.

Power tool, diesel fuel, diesel biofuels, heating.

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MODEL with quality units TECHNICAL SERVICE TO THEIR CERTIFICATION

VD Voytyuk, PhD

The results of research determining quality technical service units. The model quality measures technical service units in their certification. Developed by a team of technical and economic parameters as indicators of quality and safety technology and technical service.

Technight service, farming, standardization and quality.

Resolutionska problem. Beforeand acts in Ukraine were published in 1993. Decree of the Cabinet of Ministers of Ukraine "On standardization and certification and" The list of products subject to compulsory certification in Ukraine. " In 1996 published some new ISO which establishes the basic principles, structure and rules of the existing state system of certification - UkrSEPRO. Certification should generally provide life insurance and health, protection of their property and environmental protection. In Ukraine there is a single certification system - UA-performing interrelated activities: product certification (processes and services); certification of production; certification of quality.

The most important is the need to consider the quality management (goods and services) create a common culture of quality and continuous improvement of quality control in the industry andhropromyslovoho complex. Program of the Government of Ukraine determined "On measures to improve the quality of domestic products" articulated state policy in the field of asistyu based on supporting and encouraging the efforts of enterprises and organizations in their efforts to meet the needs of