

ISSN 1680-9165



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АУКА И ТЕХНИКА 3 2008 КАЗАХСТАНА

НАУЧНЫЙ ЖУРНАЛ ПАВЛОДАРСКОГО ГОСУДАРСТВЕННОГО
УНИВЕРСИТЕТА ИМ. С. ТОРАЙГЫРОВА

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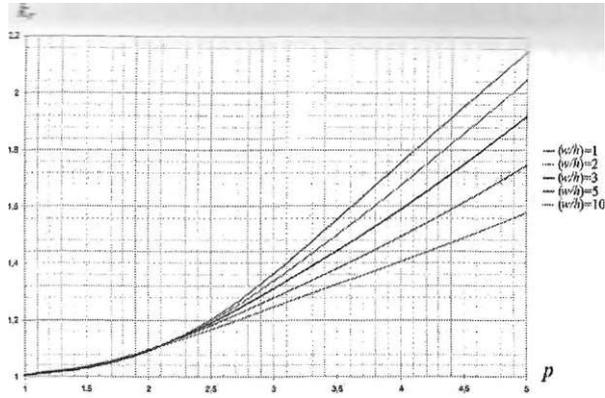
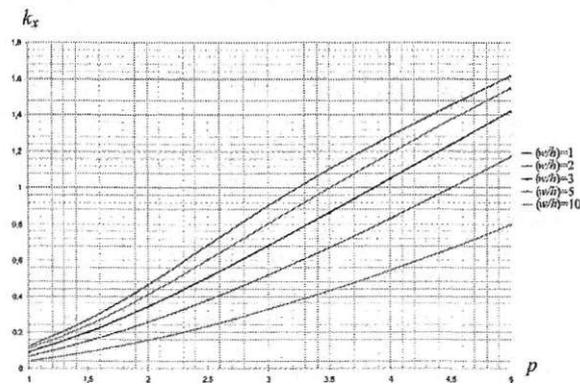


Рисунок 1



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Resume

The authors of given article gave a number of task solutions on determination of coefficients, resisting to alternating current.

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Resume

The article considers reliable means of engine diagnostics: perspectives and exploitation problems.

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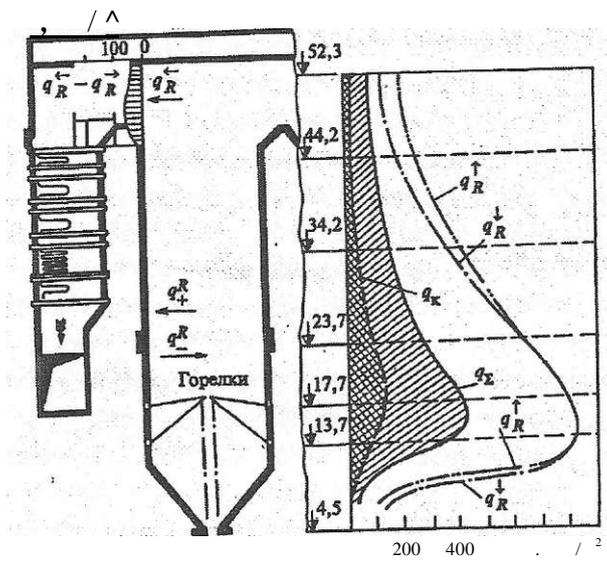
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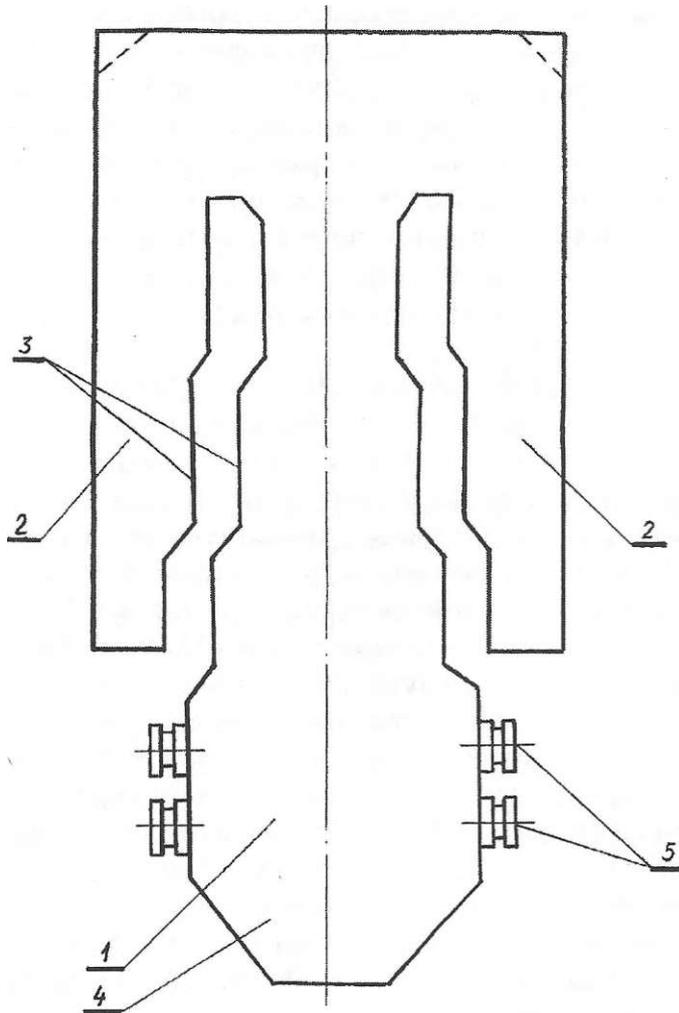
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4. Sudarev A.V.,Antonovsky V.I. Experimental study of Radiant and Convective Heat Exchange in Power Steam Boiler Pulverized - Fuel-fired Furnaces.//Proceedings of the 2nd International Simposium on Coal Combustion, October 7-10,1991.China Machine Press, Beijing, 1991.
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Resume

The author presents calculation methods, use and perfection of constructions of steam-boilers.

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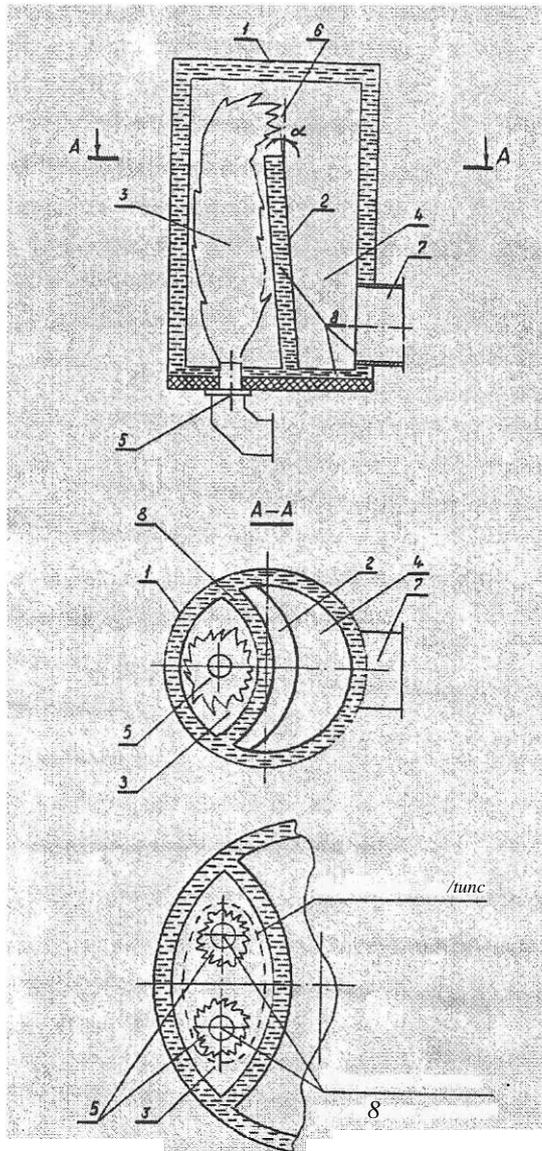
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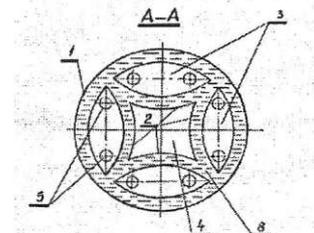
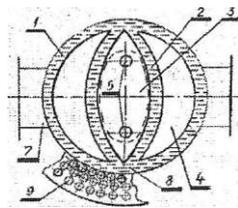
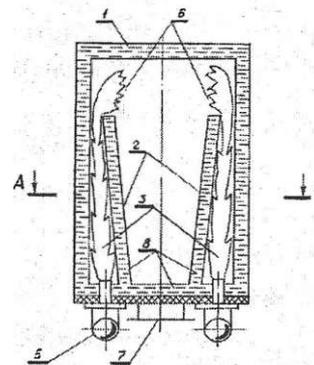
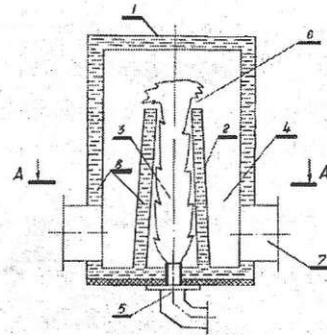
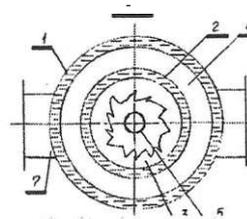
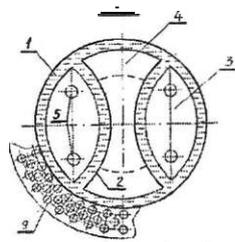
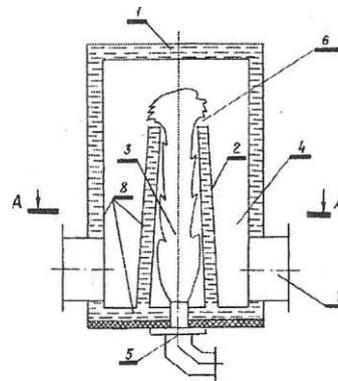
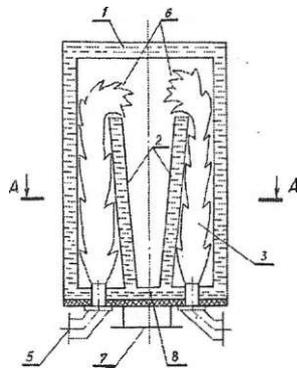
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5. () 15204, 15.12.2004, 12
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6. () 19867, 15.08.2008, 8 (2006/1329.1 29.11.06) « » / . . .
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8. 2008/0049.1 18.01.2008. « » / . . .



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Resume

The author presents scientific foundations of creation of high-performance heat-transfer devices, and also singles out the main factors, which influence upon reliability dropping and efficiency of steam-boilers.

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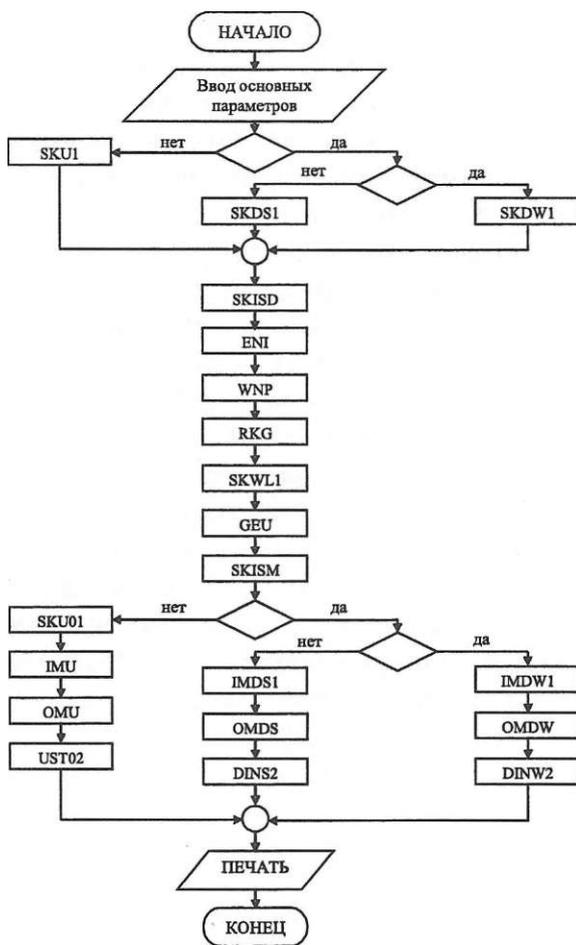
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Resume

The article considers an automation of new numerical account scheme of constructions by method of curvilinear nets.

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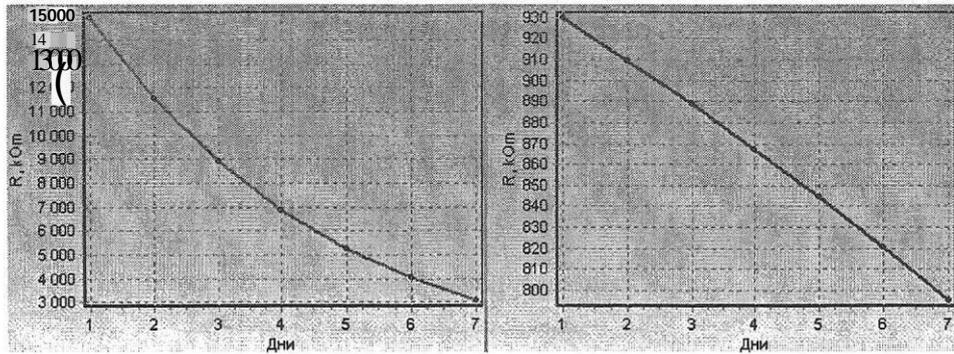
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Resume

The article presents modeling of electric characteristics of simple grounded systems depending on climate conditions.

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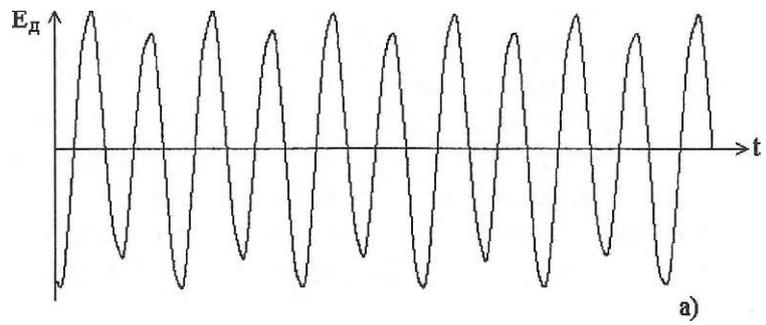
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1. William T.Thomson, Mark Fenger "Current Signature Analysis to Detect Induction Motor Faults"IEEE Industiy Application Magazine July/August 2001.

2. . . — 4- . . . - . . . , 1962.

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Resume

The given work investigates electric signal and digital processing methods in the conditions of modern computer application.

RESEARCH IF INDUCTION COEFFICIENT OF MAGNETIC CIRCUIT AND CHARGE OF IN- DUCTOR

! **A.P. Kislov, N.M. Kabdualiev**

Pavlodar State University named after S. Toraighyrov

ABSTRACT. Induction smelting crucible furnaces have the advantage of optimal management of the process, regulation of the capacity and have high technical indices. The research of electrical and energetic correlation of induction smelting crucible furnaces is necessary in order to analyze the work and elucidate the optimal condition of exploitation, to work out the methods of projection and determine the optimal constructions of magnet wires. The authors worked out the methods of calculating the energy of electromagnetic field according to the sections of the space of the induction system, to the - selection and installation of magnet wires in order to meet the technological requirements in the best way and to achieve high energetic and exploitation indices when building the induction crucible furnaces. The work represents the influence and interrelation of the inductor and the charge with the magnet wire depending on geometrical correlation of the induction system.

Introduction

Calculation of electromagnetic field for induction system of inductor-charge for melting pot furnaces is especially complicated. Because of determination of the magnetic field in surround area. The goal of research is the analysis of distribution of electromagnetic field and reactivity power on the areas of space of inductor-charge. Investigation was completed by means of mathematical model for space of inductor-charge.

Mathematical model

Calculation of energy of field is the base of mathematical model that allows to part the research external space of the inductor-charge system per tores of rectangular section and to define the tension of magnetic field H in it and the energy of electromagnetic field in given area. The whole energy of the inductor-charge defines as sum of energy that localized in the every particular tore.

Because of complexity of induction cylindrical axis symmetrical system, during calculation of radial and axis components of magnetic field tension, the real

induction system is substituted to idealized - real torsions is substituted by thread circular contours and it is considered that thickness of circular contour is equal to depth of penetration of current into metal of inductor, and current in every circular contour is equal to the current of inductor, besides that the assumption of sinusoidal change of electromagnetic values at the frequency 50 GHz.

Lets note expression for components of tension of magnetic filed [1,2] that was created by circular thread current at the point with coordinates $r_k - z_k$ for cylindrical system of coordinates:

$$H_{r_i,j} = \frac{J}{2n} \left[\frac{z_i z_j}{r_{i,j}^2} - \frac{z_i^2}{r_{i,j}^2} - \frac{z_j^2}{r_{i,j}^2} \right] \quad (2)$$

and E are full elliptical integral of first and second types of circular contours with current; indices I and j are contours that is equal to inductor and charge.

Modules of elliptical integrals and e is equal to:

Using expressions for components of tension of magnetic field $H_{r_i,j}$ and $H_{z_i,j}$ of circular turn with current and utilizing the principle of imposition of fields we would obtain formulas that define components of tension of magnetic field induction system inductor-charge:

$$H_r = \sum_{i=1}^N \sum_{j=1}^m H_{r_{ij}} \quad (4)$$

$$H_z = \sum_{i=1}^N \sum_{j=1}^m H_{z_{ij}} \quad (5)$$

$$= \dots \quad (6)$$

N and m are the quantity of thread contours with current in inductor, charge.

So components of tension of magnetic field H_r and H_z in investigated point of space defines as sum of tension, created by all elemental of thread contours of current inductor and charge.

In order to find energy of electromagnetic field concentrated at the volume dV we use following expression:

$$dW = \mu_0 H^2 dV \quad (7)$$

Formula of determination of reactivity power in the given volume is given in the following way:

$$dP_q = 2n\mu_0 J H^2 dV \quad (8)$$

In accordance to principle of imposition at the determination of components of tension of magnetic fields 4-6 of system inductor- charge, energy of electromagnetic field is defined by the integration of expressions 7, 8 in all investigated system volume.

The expression for energy of electromagnetic field is:

$$W = \int_0^{r_2} \int_0^{2\pi} \int_{z_1}^{z_2} \mu_0 J r \cos \alpha H^2 dr da dz \quad (9)$$

We use the following expression for reactivity power:

$$P_q = 2 \int_0^{r_2} \int_0^{2\pi} \int_{z_1}^{z_2} \mu_0 J r \cos \alpha H^2 dr da dz \quad (10)$$

After the integration by variable a , the rewriting of expression (9)-(10) comes in the following way:

$$W = \int_0^{r_2} \int_{z_1}^{z_2} \mu_0 J H^2 r dr dz \quad (11)$$

$$P_q = 4n^2 \mu_0 J \int_{z_1}^{z_2} H^2 r dr dz \quad (12)$$

Then the calculation just comes to determination of investigated space V , integration by this volume with respect to obtained components of tension of magnetic fields H_r and H_z so that the field would be homogeneous in the given volume and calculation of specific reactivity energy of electromagnetic field of system inductor-charge, as a sum of energy, localized in each particular investigated tore:

$$X \quad (13)$$

The expression for reactivity power in investigated space system of inductor-charge would be following:

$$\leq_{4=1}^* \quad (14)$$

Conclusions

Investigation of distribution of energy of electromagnetic field of induction system comes to the calculation and quantity value of energy in the areas of space with the aim of selection of place magnetic circuit and determination its influence on energy indices of plants, for axis symmetrical cylindrical system of inductor-charge of distribution of energy of electromagnetic field in the area of space the calculation of section of magnetic circuit might be done and its influence on the energy indices of all the system

Bibliography

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- [2] Kislov A.P. Mathematical model for calculation of energy of electromagnetic field of axis symmetrical system of inductor-charge. Scientific work of MEI, 1987. Issue-11, page 18-23.

Resume

The authors of the article worked out the methods of calculating the energy of electromagnetic field according to the sections of the space of the induction system. The work represents the influence and interrelation of the inductor and the charge with the magnet wire depending on geometrical correlation of the induction system.

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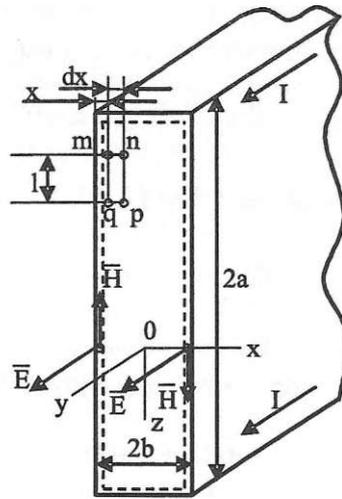


Рисунок 1 – Электромагнитное поле в ленточном проводнике

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$$E_1 = E_2 = E; \quad \quad \quad 4)$$

$$H_1 = - \quad \quad \quad 5)$$

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$$I = 2aH_z(x=b) + 2aH_z(x=-b) = 8 \quad \text{shpb.} \quad \quad \quad 6)$$

$$(2) - (6)$$

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$$E_y = \frac{J_p \text{chpx}}{4 \text{shpb}} \quad \quad \quad 7)$$

$$H_z = - \frac{J_p \text{chpx}}{4 \text{shpb}} \quad \quad \quad 8)$$

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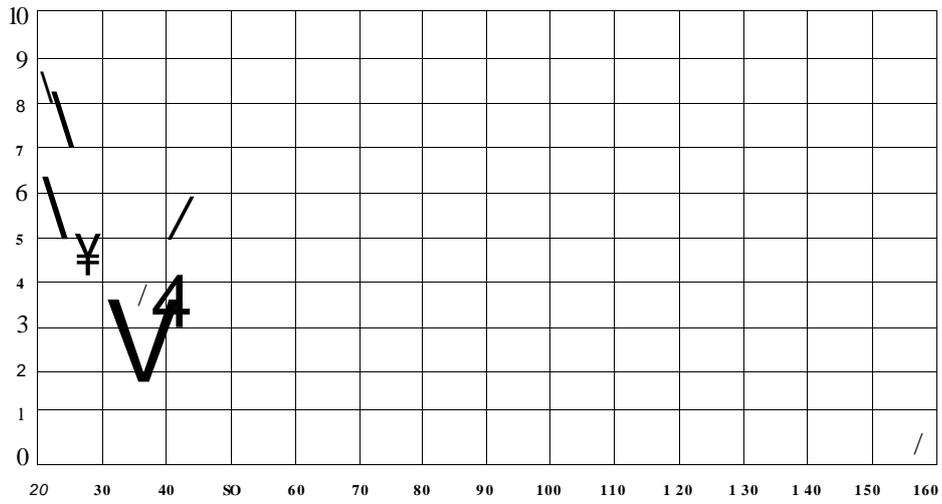
$$5 = \quad = \frac{\quad}{4 \text{shpb}} \quad \quad \quad 9)$$

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$$S_i = 2 \cdot 2 \cdot 1 \quad (\quad)_{H_z(x=b)} = \frac{I^2}{4} Z_c \text{thpb.} \quad \quad \quad 10)$$

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Resume

The authors of the article conducted research results on surface effects manifestation in belts.

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Resume

The article presents results of analysis of energy safety Kazakhstan regions in 2006 on provision of electric energy.

$$b_j = \frac{f_r}{I} ; d_p = \dots ; N = \dots ; b = \dots ;$$

$$f_v = d_p \cdot i f / \text{HI} - (V \cos(p) / d_p)$$

$$/v = (f_r \wedge)' f_r - \cos(P) / d_p$$

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$$f_{eu6p} = f^{im} \cdot f_v$$

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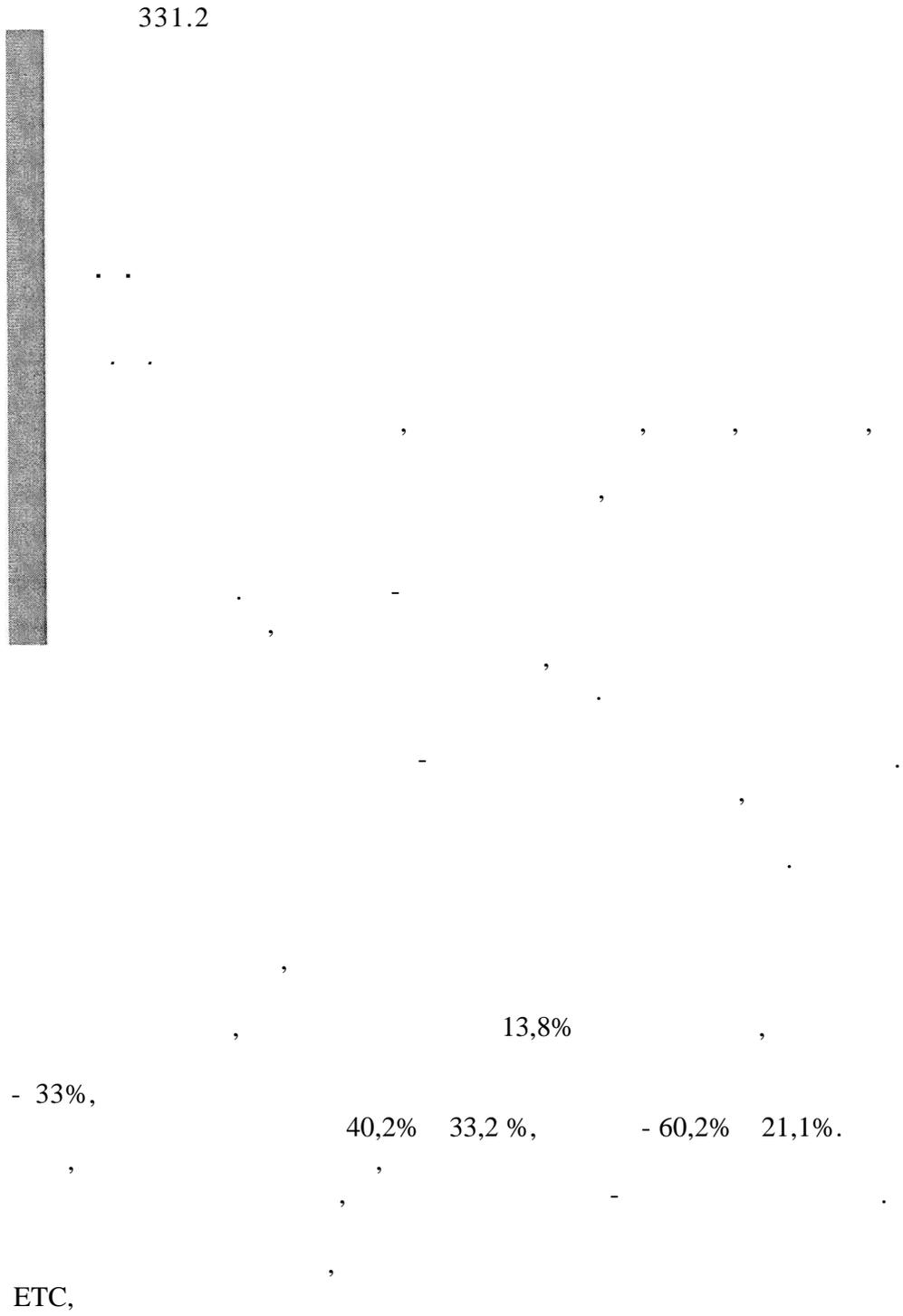
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Resume

The authors of the article present an analysis of diagnostics methods of frictionless bearing condition in asynchronous motor, in result there was the foundation of inculcation of new, perfect diagnostics method in future.



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6. // .- 2005.- 7.
7. - - - , 2003. - 468 .
8. - . - , 2000. -373 .
9.- ., 1999. -119-124 .

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Resume

The author of the article presents an analysis and abstract of formation of salaries of workers from immaterial spheres, there was suggested to inculcate changes and measurement data, setting a remuneration of labour on rates.

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 2. . . : , 1988 - 287 .
 3. . : .
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 2004 - 2010 , 20 2003 838.

Resume

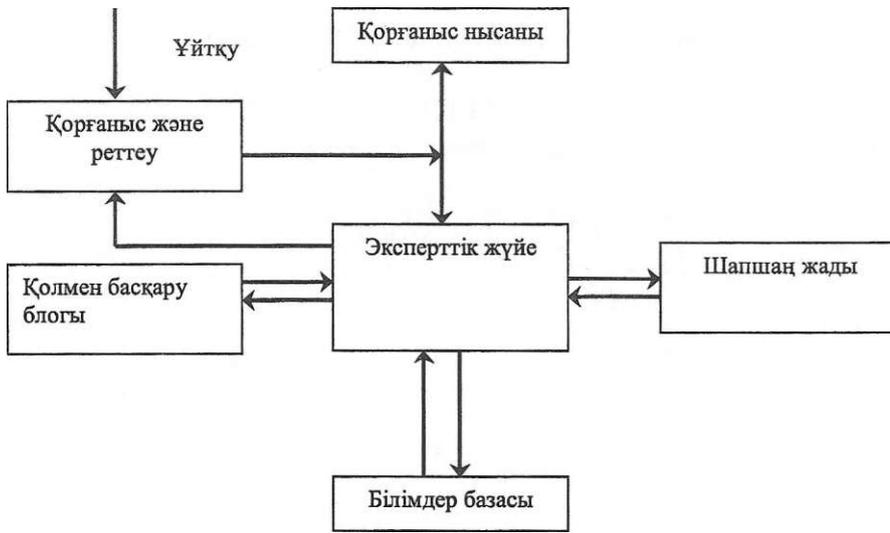
The article considers a social infrastructure.

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1. // - .: , 1985. - 320 .
2. A.M. : // - .
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Resume

The article states about use of automatic system protections of microprocessor protection models on the stage of creation of effective mathematical devices.

620.9(574.25)

1995

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	-2		-2
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14 1996 . "Whiteswan Limited". -1

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Resume

In the given article the author traces development and making of The given article Pavlodar power network till 1995 taking into account economical and historical characteristics of temporary period.

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$$m_i^* = \dots = w^{\max} \bullet$$

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$$5^* = -d(An') = - \dots + dn_{pc} = \sim dII_{wc} = -<$$

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): $\langle -d(An^*) = -dn \rangle$,

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$8W^\circ \langle -d(Air) = -dn \rangle$

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70.

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(7) (70),

- = =W^= QS-To/) = -T_0\AS_n\ = 0, -T_aAS^\circ_{oC} = E_Q , (1)

$$|A^{\wedge}V| = QJ^T n \sim$$

(XT)

$$E_Q,$$

$$Q_x$$

(1)

XT

$$- = \wedge) -$$

$$g_2 \quad \text{XT}$$

$$Q_y = Q_2 + E_Q$$

$$\backslash \quad 71$$

$$7D.$$

$$(\quad)$$

(),

$$= -0 + = + \wedge = -$$

$$= A E_{np} = W^{\wedge} = W^{TM},$$

$$- A W = A V = v C - \tag{2}$$

(2)

[1]

$$e_x = w^{TM} = h - h_0 + T_0(s_0 - s). \tag{3}$$

$$(1 \quad 71), \tag{3} \tag{2}$$

:

$$I \sim \sim + T_0(S_0 - J,) = \dots$$

$$, \quad (\quad)$$

()

$$AS = 5 = S_{mc} - \text{£} = \dots \tag{4}$$

$$dS^{\wedge}$$

(4)

$$1\text{£} = dS_{MKC} = 0 (\quad)$$

$$d(M^*) = dS_{mc} - dS_{HP[re]} = - \text{£} < 0 \quad -d(M^*) = dS_{HPIC} > 0.$$

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 . « AS* AS ».
 ,
 dS_{jjp}[^], (,)

-

$$=bw_{nm} =T_{oc}ds_{nc}=-T_{oc}d(AS\setminus c.$$

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: { , AS', AS}.

(,)

e_q : { ^ , \ , e_q}.

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() < 0, dA_{HC} < 0, d(A5*) < 0, dS_m = -d(AS') > 0. (5)

$$(5),$$

$$\hat{\alpha} > 0,$$

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 - 2002 - 3 - . 7 - 16.

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Resume

In the article the author considers in detail a notion of convertibility, the foundation of this conception, and also convertible processes in heat-power engineering systems.

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120- 150 [2].

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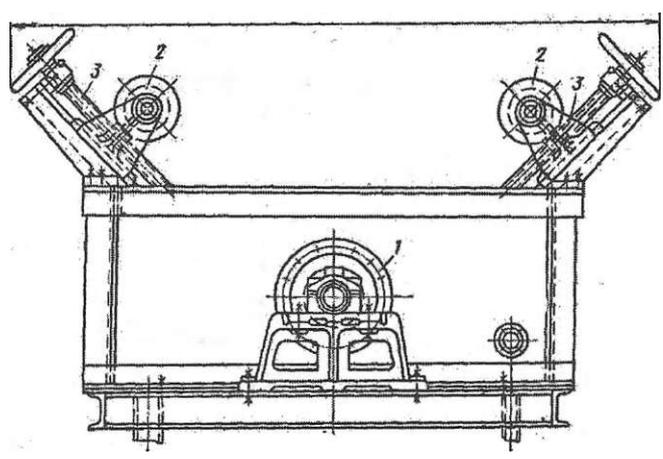
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- 1)
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- 5)
- 6)

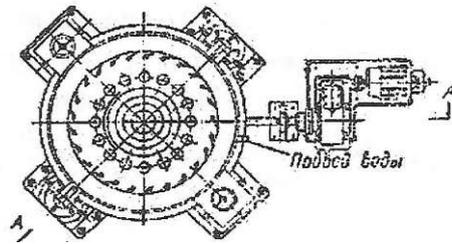
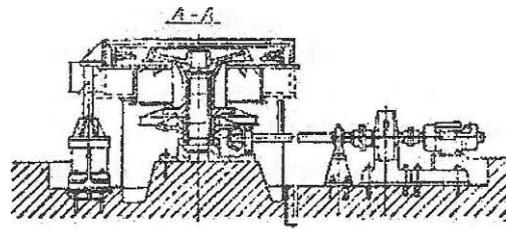
(1)

- 1.
- .: , 1962.
- 2.
- . , 1962.
- 3. : 2093590 .
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. - . 1996.01.25;
. 1997.10.20.

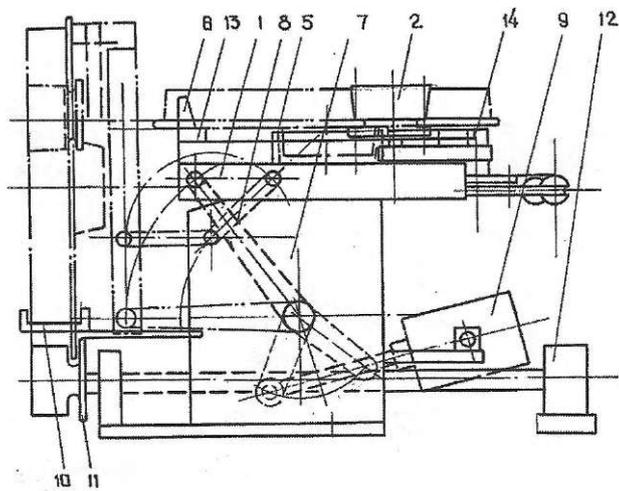
4. : . 1444370
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- A. ;
 , - . 06.01.87; . 15.12.88.
5. -
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6. / .JI. ,
B. - , 1983. - 480 .
7. / ,
. - , 1982. - 228 .
8. / - ,
1988.-336 .
9. :
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10. / ,
 - , 1975. - 352 .



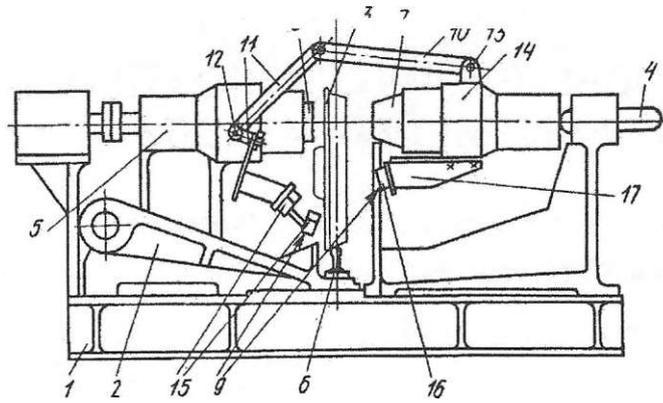
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[3]

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Resume

In clause it is resulted results of the analysis of a design of devices for training wheels of the crane.

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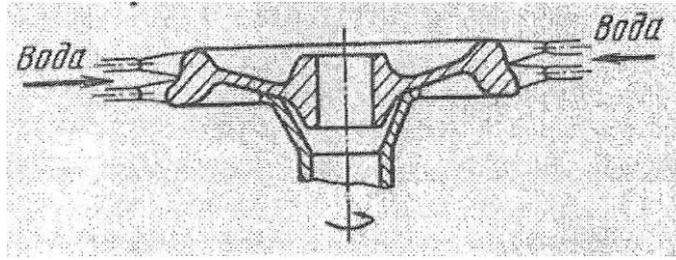
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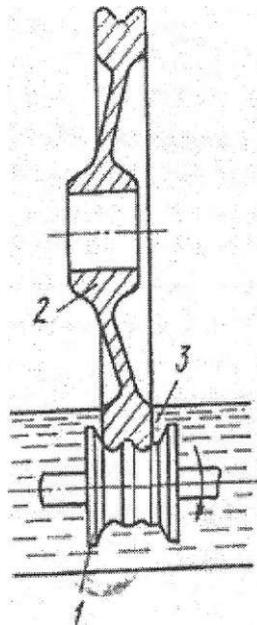
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1778-70

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74° ; 0,05. 18° ; 5-10% ; 5-7% - ().
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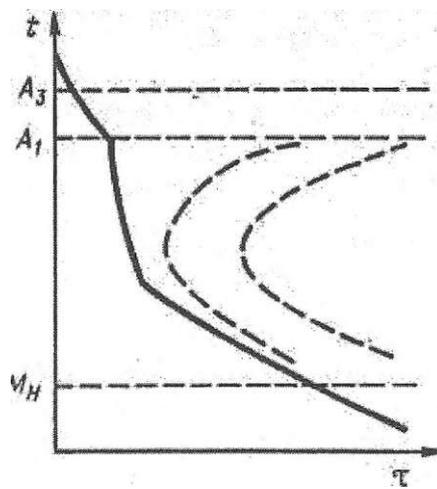
1 -

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, " :	650—550	330—200
18	600	270
28	500	270
50	100	270
10%- NaOH 18 °	1200	300
10 %- 1 18 °	1100	300
	100—150	20—50
	3	1

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(300 - 200 ° 300 - 100°).

[4].

(3).

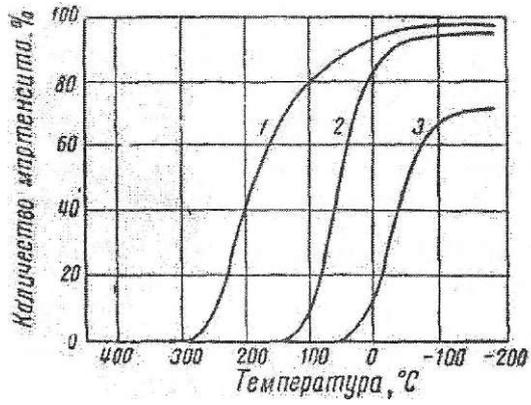


3 -

0,6%

(4).

[5].



4 - : 1 - 0,64%
 , 1,0% ; 2 - 0,62% , 5,1% ; 3 - 0,60% , 8,6%

(20—150°).

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40—80° [6].

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- 1 . . . / . . . ,
 . . . , - . . . : . . . , 1986. - 426 .
- 2 : C21D9/34 / . . . , . . . , . . .
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 . . . A.M., . . . , . . . , . . .
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 . - . 1997.06.10; . 1999.05.20
- 3 - . . . : . . . , 1978. — 647 .
- 4 - . . . :
 , 1981,- 648 .
- 5 :
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- 6 . . . / . . . ,
 - . . . : . . . , 1975. - 352 .

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Resume

In article it is introduced results comparative analysis of ways of termal hardening of axis symmetry ware on an example crane wheels.

665.7(575)

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38.001165 - 97

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387401 - 58 - 122

- 95

387401 - 58 - 127 - 95. - 76, - 80, - 91, - 92

- 96

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2084 - 77

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94

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(2084 - 77)

	-72	-76		-91	-93	-95
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:	72	76	76	82.5	85	85
				91	93	95
К	0,013	0,013	0,17	0,013	0,013	0,013
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Қ	35	35	35	35	35	30
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1	-72	-76		-91	-93	-95

10%							
0							
:	70	70	70	70	70	75	
К К	55	55	55	55	55	55	
50%							
0	115	115	115	115	115	120	
:	100	100	100	100	100	105	
К К							
90%	180	180	180	180	180	180	
0	160	160	160	160	160	160	
:							
К К	195	195	195	205	205	205	
К	185	185	185	195	195	195	
:	1,5	1,5	1,5	1,5	1,5	1,5	
К К	4,0	4,0	4,0	4,0	4,0	4,0	
К	66,7	66,7	66,7	66,7	66,7	66,7	
%,	66,7-93,3	66,7-93,3	66,7-93,3	66,7	66,7-93,3	66,7	
К	3,0	1,0	3,0	3,0	0,8	2,0	
К			5,0				
:	5,0	5,0	10,0	5,0	5,0	5,0	
К К	10,0	10,0		10,0	10,0	10,0	
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K K	80	92	96	98
, A3 :	76	83	85	88
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K , / 3	0,15	0,15	0,15	.
:	0,013	0,013	0,013	0,013
K :	35	35	35	.
0	70	75	75	75
,	120	120	120	120
:	190	190	190	190
10%	215	215	215	215
50%				
90%	1.5	1.5	1.5	1.5
K , %	4,0	4,0	4,0	4,0
K , %	79,9 (600)			
K K	3,0			
(.),		79,9 (600)	79,9 (600)	79,9 (600)
K /100 3	5,0			
1 /100		3,0	3,0	3,0
	600	5,0	5,0	5,0
K				
1, %	0,05	600	600	600
		0,05	0,05	
		K		
K				

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	- 80	- 92	- 96	- 98
К %, %, К %	0,001	0,001	0,001	5,0
				12
: К : , KY К К К , К К				

- К / К
- ¥ К
1. J.I.C. , 1992. 120 .
 2. B.C.
. , 1996. 444 .
 3. A.M. , 1996. 231 .
 4. - / ,
. , 1986. 352 .
 5. : ,
1987. 192 .

Resume

The motor gasoline of different makes (of the cars) using in Kazakhstan, their state standards, the octane figures, characteristics, as well as the characteristics of the motor petrol which are exported abroad and their brief information are considered in the article (clause). Along with this the ecological problems of current importance are considered.

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Resume

determine the mechanism of oxidizing cracking of high-boiling oil fractions on the catalysts from Kazakhstan natural raw materials as well as principles of liquid phase heterogeneous oxidation of unsaturated hydrocarbons in order to find effective catalysts for obtaining the products of incomplete oxidation in aqueous, water-acetate media and dimethylformamide.

666.973.6 (083.1)

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% Κ			/	VB	/	28 R	RPRej
Κ 1	Κ 2	Κ 3					
		0,6	0,66	44	410	1,9	0,06
		0,4	0,76	92	378	1,87	0,07
	0,2	0,3	0,85	120	220	0,9	0,05
	0,3	0,3	0,95	128	290	1,2	0,09
	0,4	0,6	1,05	133	180	0,66	0,11
—	0,5	0,4	1,15	145	190	0,74	0,11
	0,9	0,6	1,75	154	140	0,22	0,09
1			0,85	84	205	0,86	0,11
3		0,3	0,85	88	214	0,95	0,11
5		0,3	0,77	65	226	0,99	0,14
7		0,4	0,75	72	245	0,85	0,13
10	—	0,4	0,75	66	262	0,89	0,16
10	0,4	0,4	0,75	98	208	0,82	0,15

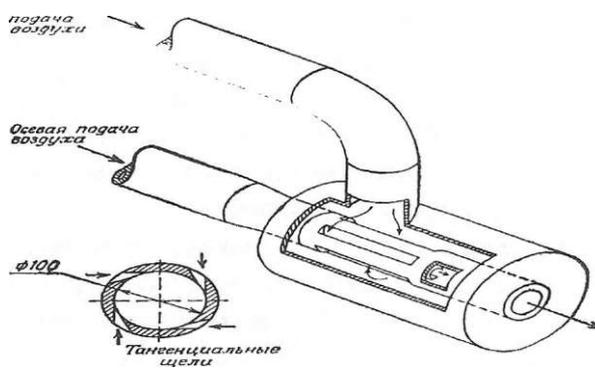
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 - κ 1 - Hoechst Movilith LDM 2040 P
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 - 2 - κ Υ
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0,8-1,0 200-250 / ³.

Resume

The article reveals the principles of extraction capability of foam concrete under pressure of 0,8-1,0 and consistence of 200-250 Kg/ .

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- () ;
- () .
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.1.1 -

9500 /

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(u=v=0).

co=f(r).

u=v=0

= rot(o = - $\frac{1}{or}$)

= / (1.11)

($\epsilon = 0$).
 ()

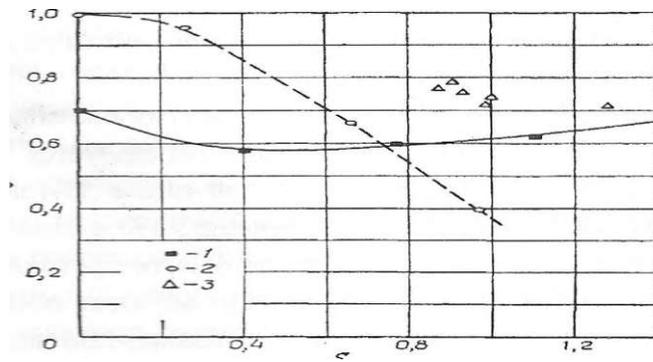
$\epsilon = 0$ (1.12)

$\epsilon = 2$,

$Q = 1$ /.

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v,



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s

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1 - (R = 80); 2
 - ; 3
 - (R = 62).

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 s
 S
 1. -
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 S=T =40%.

2.
 (s=58% S=0,4),

3. (s=75% S=1).

4. (s=30% S=1).

S;
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 S,

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 (,),
 (S > 0,6)
 .

1. :
- 2.
- 3.

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1. ; S
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(d/d_h).

4.

(D/d).

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(.4.1),

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κ .

Resume

The authors consider the effect of spin in designing and ecology in development of the new equipments.

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 t1, t2, t3 ...
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 t1, t2, t3 ...
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 ti
 [ti,, ti+1)
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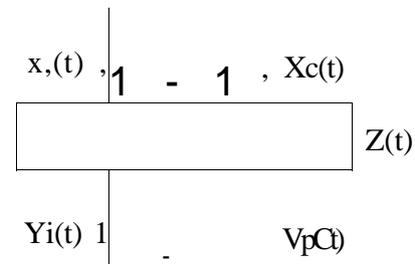
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$$X = \{x_1, x_2, \dots, x_n\}$$

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$$Y = \{Y_1, Y_2, \dots, Y_m\}$$

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$$z = \{z_1, z_2, \dots, z_N\}$$

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Resume

By the authors of the article in detail was considered a notion of finite automaton, described distinctive peculiarities, classified by features.

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Resume

The article concerns the main reason of transformers breakage - short circuit, the authors propose a protection of it in the form of experimental plant with special program supply.

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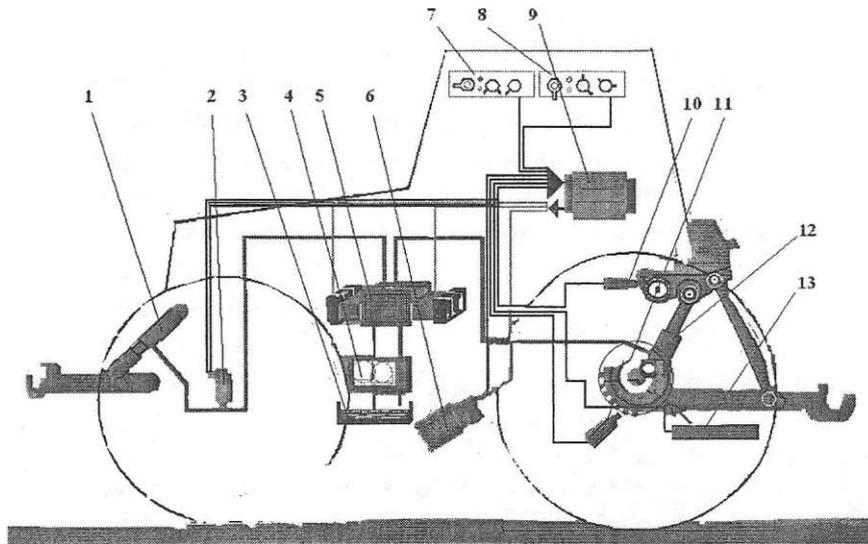
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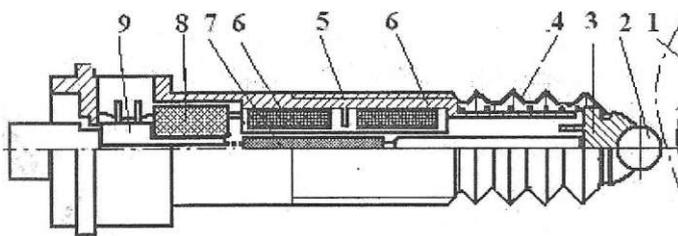
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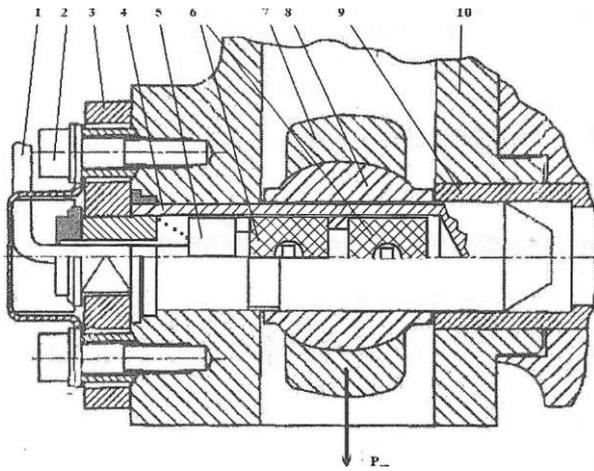


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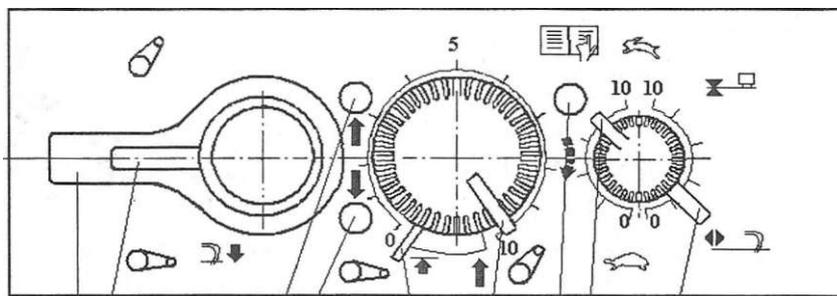
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Conclusions:

Wider application of automatic control systems in agricultural tractor units has ample opportunities of increase in productivity and profitability of cultivation of various agricultural crops.

Resume

Work can be interesting to students, employees of scientific research institute and teachers as area of search and work in the given direction. In clause the analysis of existing ways of automatic control MTA and directions of scientific searches in the given area is resulted.

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4. C.Christopoulos, The transmis-
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