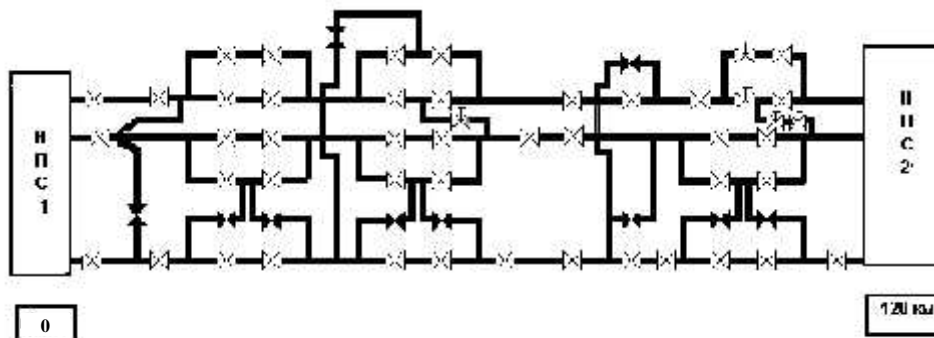


« . . . »

[1].

[2].

(. 1).



. 1.

(. 1).

4,75 [2, 3].

1 %

5 %.

l

« »

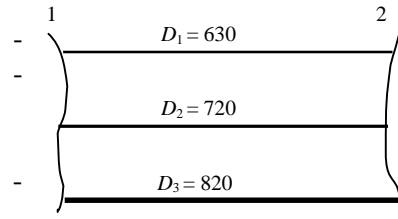
	0...120-		120...233-	
	, .	, .	, .	, .
∅ 630	5	3	3	4
∅ 820	8	3	8	3
∅ 720	8	0	9	0
	12	6	11	7
	233...355-		355...441-	
	, .	, .	, .	, .
∅ 630	4	0	5	0
∅ 820	2	0	4	0
∅ 720	3	0	1	0
	5	0	6	0

(. 2).

L

1-2

1000 .



, L_{Di} / D_i

θ_D

D .

$$\Delta N_{Di} = \Delta N_D ,$$

$\Delta N_{Di}, \Delta N_D$ -

D_i D

/

θ_D

D

1-2, (. 2).

D_i

(

1.

(

1-2 (. 2)

[2]

$$\Delta N = \gamma g \Delta h Q ,$$

γ -

, $\gamma = 860 / ^3$; g -

, $g = 9,81 / ^2$; Δh -

(. 2), ,

– [2], –

[3] –

:

$$\Delta h = 0,0246 \frac{Lv^{0,25} Q^{1,75}}{D^{4,75}},$$

$L = 1000$, $v = 17,5$:

$$\Delta h = 1,59 \frac{Q^{1,75}}{D^{4,75}},$$

Q – , $Q = 1,51$ ^{3/} ; D –

(. 2), $D = 1,0813$.

N

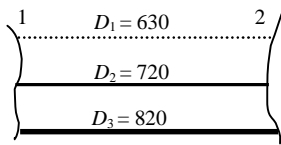
29155 .

2.

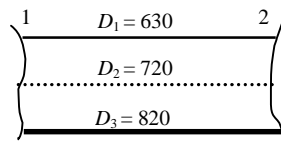
ΔN_{Di}

,

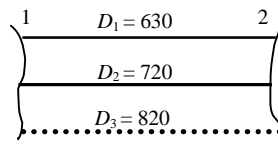
D_i (. 3).



. 3.



... –



:

. 2.

2

(. 3)	D ,	Δh ,	ΔN_{Di} ,
$D_1 (D_2//D_3)$	0,985	3,5	44882
$D_2 (D_1//D_3)$	0,934	4,5	57686
$D_3 (D_1//D_2)$	0,862	6,6	84219

3.

,

D_i

–

:

$$\Delta N_i = \Delta N_{Di} - \Delta N,$$

/

D_i
 D :

θ_D

$$K_{Ld \rightarrow Ld} = \frac{\Delta N_i}{\Delta N},$$

$\Delta N = 630$; $\Delta N = \Delta N_{D1} - \Delta N$.

.3.

D_i	630	720	820
ΔN_i	15727	28531	55064
$Ld \rightarrow Ld$	1	1,81	3,5

: $D_1 = 0,61 \dots 0,63$; $D_2 = 0,7 \dots 0,72$; $D_3 = 0,8 \dots 0,82$.

$$K_{Ld820 \rightarrow Ld630} = 10,58 + \frac{5,318}{D_1} + \frac{1,039}{D_2} - \frac{13,94}{D_3} ;$$

$$K_{Ld720 \rightarrow Ld630} = 5,47 + \frac{2,496}{D_1} - \frac{5,692}{D_2} + \frac{0,228}{D_3} ;$$

$$K_{Ld630 \rightarrow Ld630} = 3,05 - \frac{1,291}{D_1} .$$

L, Q, v, γ , $Ld \rightarrow Ld$

θ_t , $Ld \rightarrow Ld$

$$\theta_t = \theta_{t-1} + \theta_D$$

$\theta_D = \dots / D$, $L_{Di} (\dots)$, θ_D , $\ll + \gg$, $\ll - \gg$) , $t - 1$.

$$\theta_D = \pm L_{Di} K_{Ld \rightarrow Ld}$$

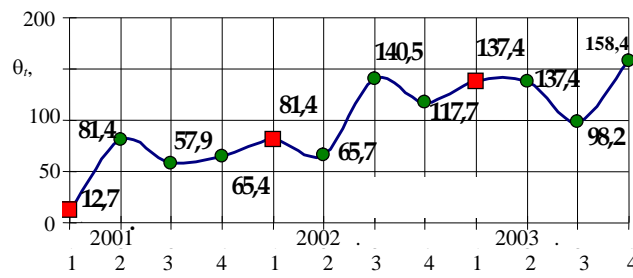
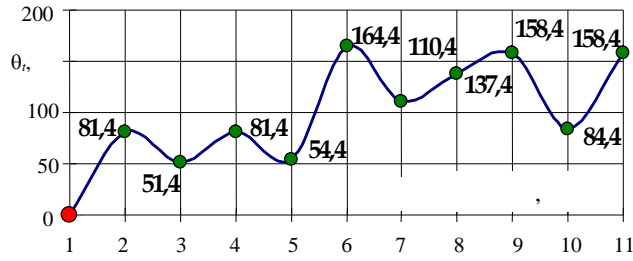
$L_{Di} = \dots / D_i$.

t_0 , t .

. 4

« ».

10 (. 4).

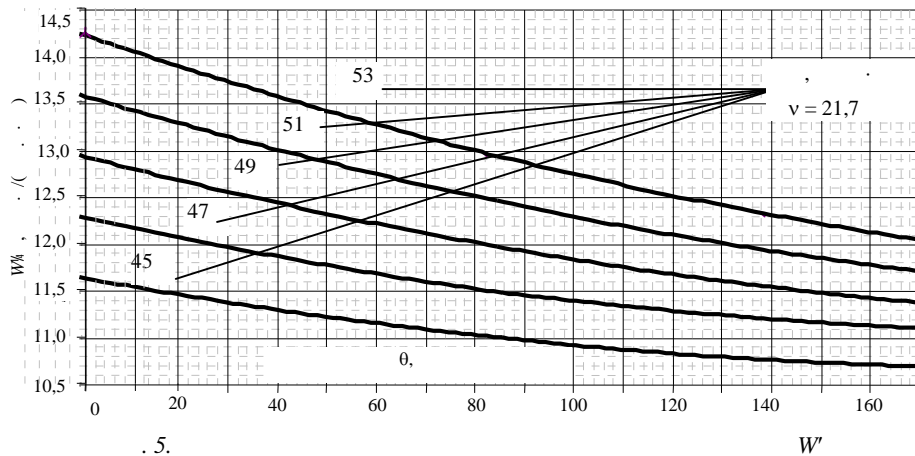


. 4. -

2001-2003 .; ■ -

2001-2003 .

. 5, 6.



. 5.

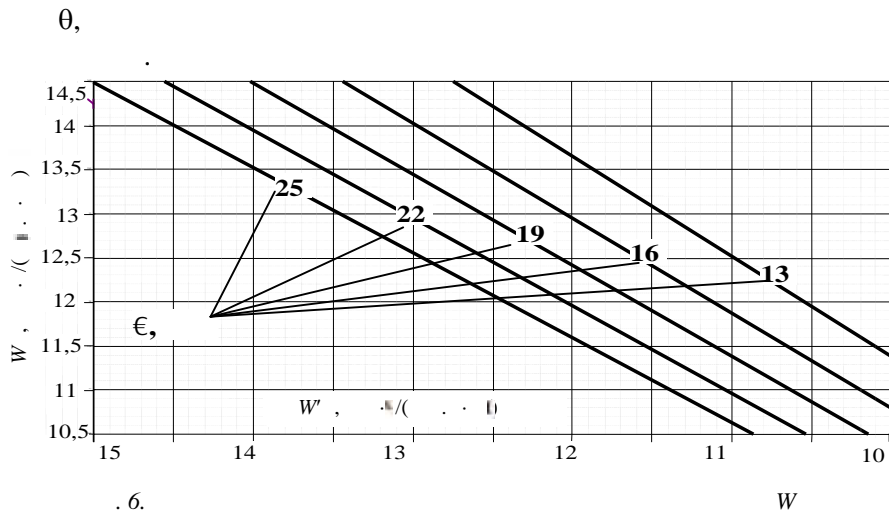
$v = 21,7$

W' , . . / (. . .) ,

θ , , $v = 21,7$ (. 5).

W ,

v (. 6).



1. // - 2002. - 3.
- .71-76.
2. -
- , 1999. - 36 . -
3. / .
- . - : , 1977. - 519 .

20.04.2005