

(6)

3)

가. (總說)

(air washer,) 1950 (冷却減濕器),
가 ,
가 .
(調濕) (煙草工場)
(冷却減濕器) .
(外氣冷房時)
, (省) .

< 10>

(噴霧形)	1) (橫形低速式)	가 , $v_f = 2\sim 3\text{m/s}$.
	2) (橫形高速式)	$v_f = 5\sim 8\text{m/s}$,
	3) (形高速式)	Carrier Co. Luwa Co. , 10m/s . 가 .
(充填形)	4)	. 1m .
	5)	.

< 10> 가 , , ,

. ,

(4) (形) (多用) .

η_s
 , (冷却減濕) (成績係數) p , (成績效率)
 F , (傳熱效率) X 가 .
 X , p F . K_a , $k_x a$

(機器)

$$: \eta_s = (t_1 - t_2)/(t_1 - t_1') \quad (3.1)$$

$$(\text{傳熱效率}) : X = (h_1 - h_2)/(h_1 - h_{w1}) \quad (3.2)$$

$$(\text{成績係數}) : p = (h_1 - h_2)/(h_1 - h_3) \quad (3.3)$$

$$(\text{成績效率}) : F = 1 - (t_2' - t_{w2})/(t_1' - t_{w1}) \quad (3.4)$$

$$(\text{kcal/m}^2\text{h } h) : K_a = (U/V) \times G \quad (3.5)$$

$$(\text{kcal/m}^2\text{h } h) : k_x a = (U'/V) \times G \quad (3.6)$$

$$: U = \int dh/(h_w - h_a) \quad (3.7)$$

$$: U = \int dh/(h_i - h_a) \quad (3.8)$$

$$\text{가} \quad (h_w = a + bt_w)$$

. (誘導) (大獻)

$$X = \frac{1 - e^{-r}}{1 + (bG/L)} \quad (3.9)$$

$$\eta_s = 1 - e^{-m} \quad (3.10)$$

$$p = 1 - e^{-r} \quad (3.11)$$

$$X = \frac{p}{1 + (bG/L)} \quad (3.12)$$

$$K_a = \frac{G}{V} \frac{1}{\{1 + (bG/L)\}} \ln \frac{1}{1 - p} \quad (3.13)$$

$$K_a = \frac{G}{V} \frac{1}{1 + bG/L} \ln \{ 1 - X (1 + \frac{bG}{L}) \}^{-1} \tag{3.14}$$

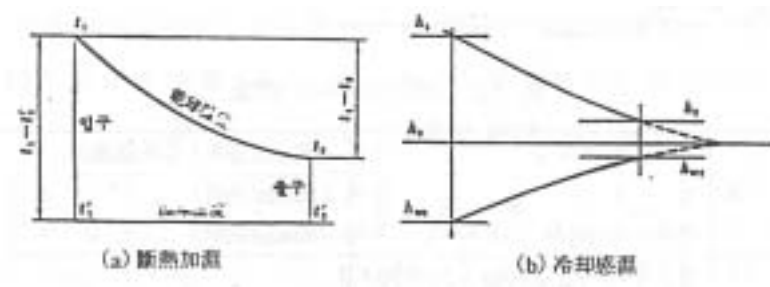
$$k_{xa} = (G/L) \ln (1 - \eta_s) \tag{3.15}$$

$$m = K_a V / G \tag{3.16}$$

$$r = (K_a V / G) \{ 1 + (bG/L) \} \tag{3.17}$$

< 11>

$h_1 :$ (kcal/kg) $h_2 :$ (kcal/kg) $h_w :$ < 10> $h_{w1} :$ (人口水溫) (kcal/kg) $h_a :$ (kcal/kg) $h_i :$ $h_w :$	$G :$ (風量)(kg/h) $L :$ (水量)(kg/h) $K_a :$ (kcal/m ² h h) $k_{xa} :$ 가 (kcal/m ² h h) $q_T :$ (交換熱量)(kg/h) $U :$ $V :$ (內容積)(m ³) $t_1, t_2, t' :$ < 8>
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< 10>

(水量)

< 11> (前部) (洗淨室)(spray chamber)
(後部) (eliminator)

< 12>

	1.20mm(18) (亞鉛鍍鋼板) 1.60mm(16) // * 0.60mm(24) //
	≤ 2.70m : 30 x 30 x 3 < 2.70m : 40 x 40 x 3
	400~500mm 350~400mm 1 l = 1.80m 2 l = 2.40m 3 l = 2.70~3.00m
	30~40mm, 45~60cm 6 (折)
	200~250mm, 0.07~0.08m ² 1 60~80mm
	1B~1 ¹ / ₄ B (白)가 , 400~600mm
	1 (白)가

* 3.0~4.0mm (厚鋼板)

(噴霧水量)

< 13>

(噴霧水量) [l/h]

(B)	(mm)	(噴霧壓力)(atg)						
		0.5	0.75	1.0	1.5	2.0	2.5	3.0
3/8	3.0	L=100l/h	120	140	180	210	8230	250
3/8	4.5	220	270	310	390	450	510	570
				(250)	(280)	(330)		
1/2	6.0	390	480	560	700	830	940	1100
3/4	7.5	1100	1300	1300	2000	2300	2600	2800
1	12.5	1900	2400	2400	3400	4000	4500	5100

() (噴霧水量)

(噴霧水量)

· () ·

가 ϕ 3mm
 , 2atg (噴霧) (水滴)
 , (減濕時) 4.5mm ϕ 1.5~2.0atg
 (噴霧水量) . ϕ 3mm ϕ 4.5mm
 < 12> X 10~20% .
 (減濕時) ϕ 3.0mm . <
 13> (噴霧水量) , < 14> L/G .
 가 2

$$L/G = 0.8 \sim 1.2 (16 \sim 26 \text{ l/min} // 1000 \text{ m}^3/\text{h})$$

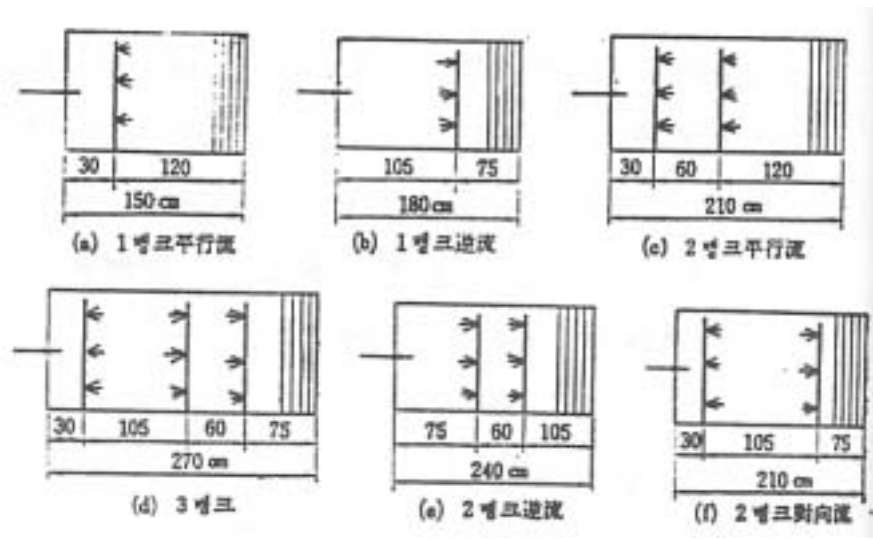
·

< 14> (噴霧水量)

	L/G		l/min//1000m ³ /h	
	1	2	1	2
가 (加 濕)	0.2~0.6	0.4~1.2	5~14	9~26
(冷却減濕)	0.4~1.0	0.8~2.2	7~21	16~43



< 12>



< 13>

1965

5~8m/s

< 12>

(合

成樹脂製)

(噴霧水滴)

3.0~4.5mm

1.5~2.0atg

< 13(d) (e))

(冷却減濕用)

(正方形)

가

가

(減濕冷却用)

1

2

, L/G가

1.5 3 .

.

(louver)

.

< 13> .

v_f 2.0~3.0m/s

가 ,

v_f 2.5m/s

.

L/G <

14> .

< 14>

A_f L/G

(傳熱效率) X .

X

$(h_1 - h_2)$

h_{w1}

.

$$h_{w1} = h_1 - (h_1 - h_2)/X \quad (3.18)$$

h_{w1}

.

t_1', t_2', t_{w1}

h_1', h_2', h_{w1} ,

X

. X

A

<

14>

L/G

. G

L

.

q_T

t_{w2}

.

$$q_T = G(h_1 - h_2) \quad (3.19)$$

$$q_T = L(t_{w2} - t_{w1}) \quad (3.20)$$

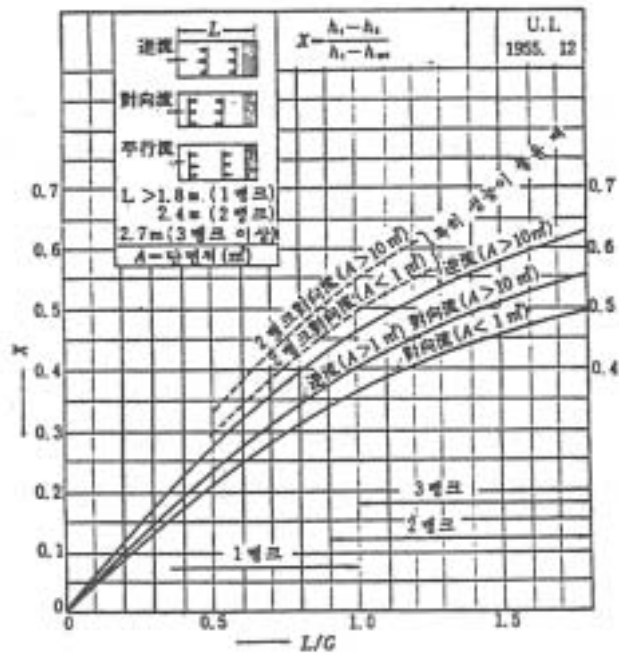
, G : (kg/h)

h_1, h_2 :

t_{w1}, t_{w2} :

(

)



< 14> X

< 14> 1 (nN) .

() .

$$G = 22,800\text{kg/h}, Q = 19,500\text{m}^3/\text{h}$$

< 15>

	t_1	t_1'	h_1'	t_2'	h_2	
(冷房時)	29.5	23.5	16.65	15.0	10.0	152,000
(暖房時)	$= 0.83$					

() t_{w1} .

$$5 \quad h_{w1} \quad 4.44$$

$$X = \frac{h_1 - h_2}{h_1 - h_{w1}} = \frac{16.65 - 10}{16.65 - 4.44} = \frac{6.65}{12.21} = 0.545$$

$$v = 2.5\text{m/s} \quad ,$$

$$A = 19,500/(2.5 \times 3600) = 2.17\text{m}^2 \quad 1.5 \times 1.5$$

$$A > 10\text{m}^2 \quad A < 1\text{m}^2 \quad A =$$

$$2.2\text{m}^2 \quad , \quad X = 0.545 \quad L/G = 1.6$$

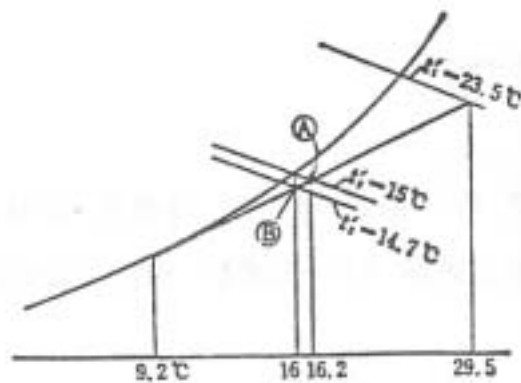
$$L = 1.6G = 1.6 \times 22,800 = 36,500\text{kg/h}$$

$$t_{w2} = (q_T/L) + t_{w1} = (152,000/36,500) + 5 = 9.2$$

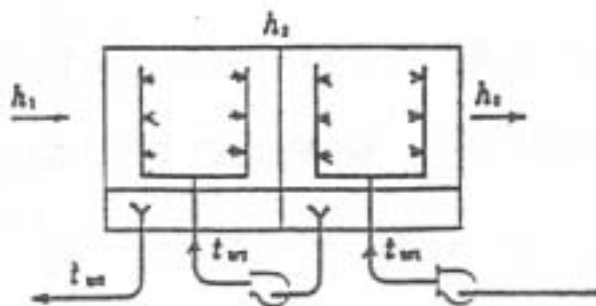
$$< \quad 15> \quad (\text{乾球溫度}) \quad t_2 \quad (\text{入口條$$

$$\text{件})(t_1, t_1') \quad t_{w2} = 9.2$$

$$t_2' = 15.0 \quad A \quad t_2 = 16.2 \quad \text{가} \quad .$$



$$< \quad 15>$$



$$< \quad 16> 2 \quad (\text{段式})$$

t_2 (略解法) , $t-h$ (線圖)

Mick-ley .

$\phi 4.5\text{mm}$ 2atg , < 13> 1

$= 450\text{l/h} = 450\text{kg/h}$

(總教) $= 36,500/450$ 81

3 1 27 , 1

$2.25 \div 27 = 0.083\text{m}^2/$

< 12> .

3 (本) , 1 8 < 11>

.

2

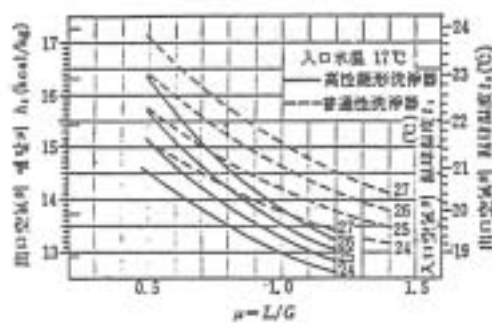
2 < 16> 2 (段)()

, 1 (段)()

2 (段式) (2stage air washer) .

, (同水量) (差)($h_1 - h_2$)

. < 17> 2 .



< 17> 2 (段式)

2 (段式) 3 (段式) t-h (線圖)
가 .

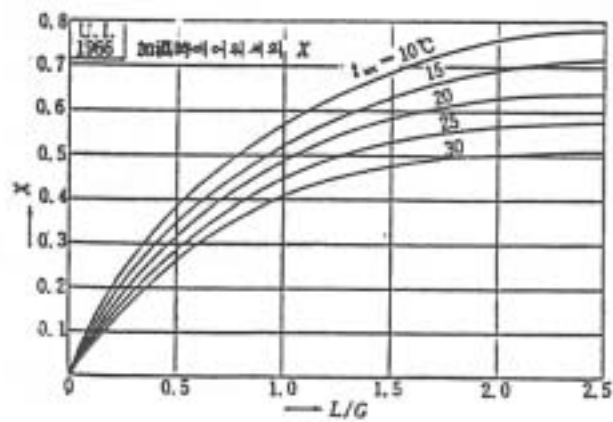
. 가 (加濕用)
가

, 가 , η_s
, < 16> .

< 16>

(bank)	1	1	1	2	2	2
	(平行流)	(平行流)		(平行流)	(對向流)	
l(m)	1.2	1.8	1.8	2.4~3.0	2.4~3.0	2.4~3.0
η_s	50~60	60~67	65~80	80~90	85~95	90~98

(溫水噴霧)



< 18> 가 (傳熱效率) X

(傳熱效率) X (18) (減濕用)

. < 18> X 4.5mm 가

. t_{w1} .

$$X = (h_1 - h_1)/(h_{w1} - h_1) \tag{3.20}$$

$$G = (h_1 - h_1) = L(t_{w1} - t_{w1}) \tag{3.21}$$

$$t_{w2} - t_{w1} - (G/L)(h_2 - h_1) \tag{3.22}$$

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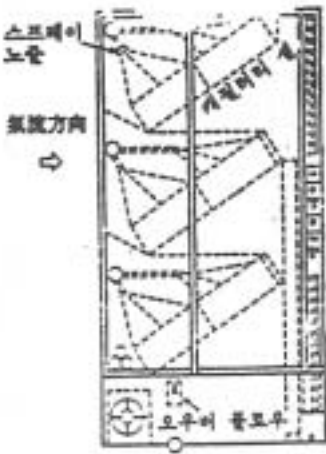
< 19> (器內) wet cell

, .

가 .

1 wet cell < 17> . 1 cell

31m³/min , cell 가 .



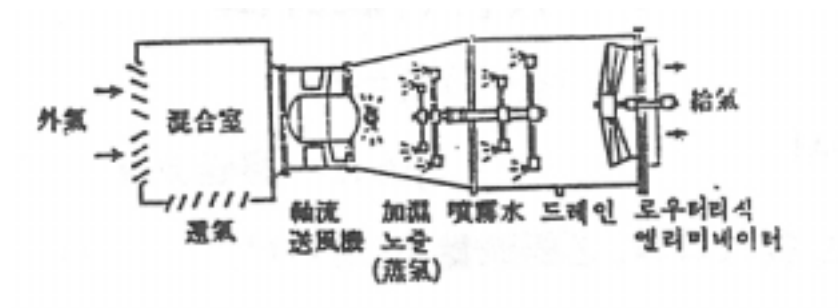
< 19>

< 17>

wet cell 1

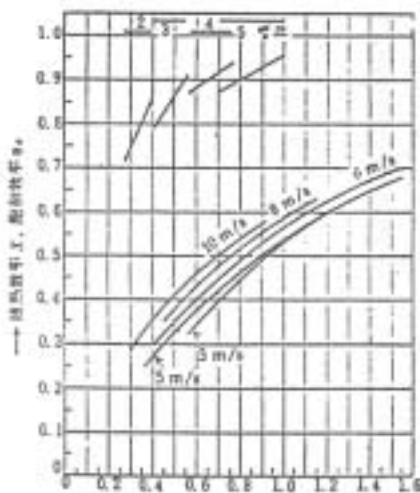
((阿部貞市))

	510 x 510 x 215mmH, 280 μ m 230mm, 67,000 (本), 11.6m ²
,	(Q') = 17~31m ³ /min (L') = 12~34l/min(2~6mAq)
(Q' = 31m ³ /min)	L' = 34l/min 11.4mAq L' = 12l/min $\eta_s = 97\%$ L' = 34l/min, $t_{w1} = 10\sim 15$ X = 0.5~0.53



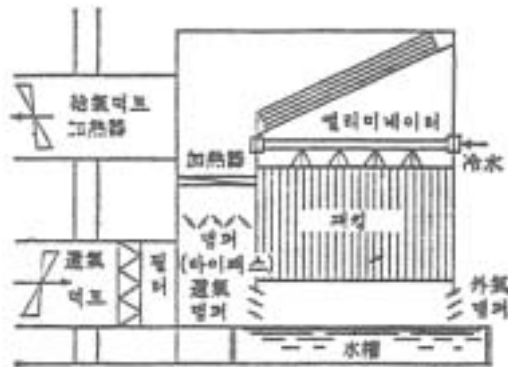
< 20>

AW



< 21>

AW



< 22> AW

Carrier Co. < 20> ,

8~10m/s .

. 가

. 가 .

17,000~76,000m³/h (噴霧水壓) 2~3atg, L/G 1.0

. < 21> + o ,

, 2~3atg .

< 22> ,

. G/A, L/A가 8000~10,000kg/h Ka 5000~7000kg/m³ h

.