

(1)

1. (Air conditioning)

가.

, , , (), , , 가
가

.

1) (comfort air conditioning)

,

2) (industrial air conditioning)

2.

가.

1) (dry air) : kg'

21%, 78%, , , 가

2) (moist air) : kg

가 가

3) (saturated air)

() 가 가

가 ,

1) (dry-bulb temperature) : t

가 D.B

2) (wet-bulb temperature) : t'

(感溫球)

가

가

가 가

3) (dew point temperature) : t''

가

()

()

“A”

1) (specific humidity) : χ kg/kg'

1 kg' (kg)

2) (relative humidity) : ϕ R.H

1m³ () (kg)

1m³

$$R.H = \frac{1m^3}{1m^3} \frac{(kg)()}{(kg)()} \times 100$$

3) (saturation degree) : ϕ %

,

%

1) (sensible heat)

가 (, ,) (狀態變化)

(顯熱)

2) (latent heat)

,

가 ,

(潛熱)

3) (enthalpy)

,

(+)

가 () (,)

< >

0 : 597kcal/kg

20 : 586 kcal/kg

100 : 538.8 kcal/kg

3. (濕空氣線圖) (Psychrometric Chart)

가.

(760mmHg)

(比體積)

1) i-x (mollir chart)

“i”

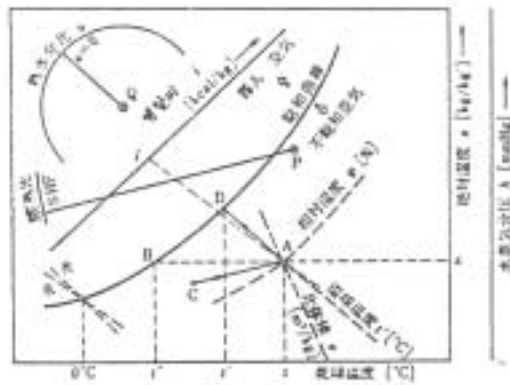
“x”

“u”

(enthalpy-

moisture ration)

u (+)



< 1> i-x

$$u = \frac{i_2 - i_1}{x_2 - x_1}$$

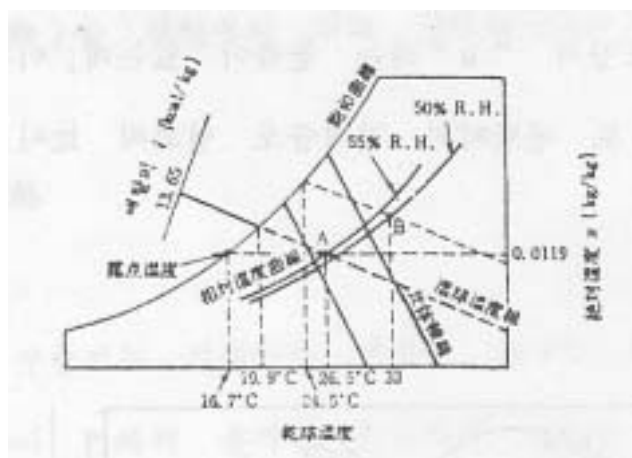
$i_1, i_2 :$ 1, 2 enthalpy

$x_1, x_2 :$ 1, 2

2) t-x (carrier chart)

가

가



< 2> t-x

(sensible heat factor)가

“u”가 “I-x”

가 S.H.F t-x

$$\text{S.H.F} = \frac{Q_s}{Q_s + Q_L}$$

3) t-I

t

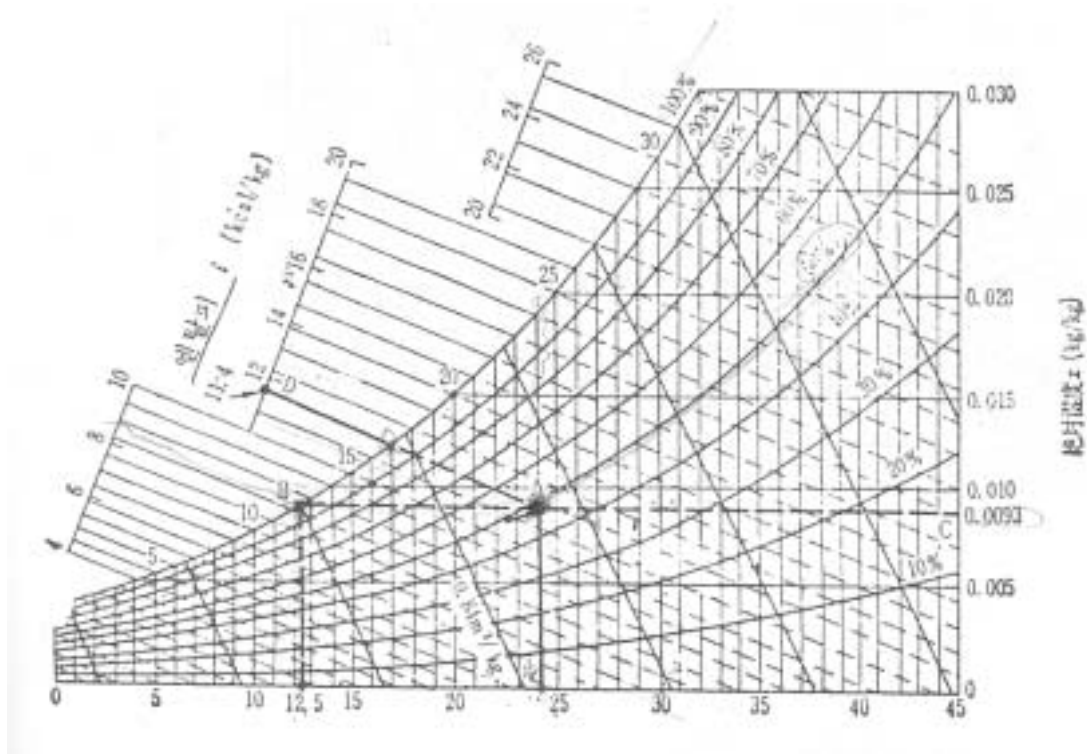
i

가

(1)

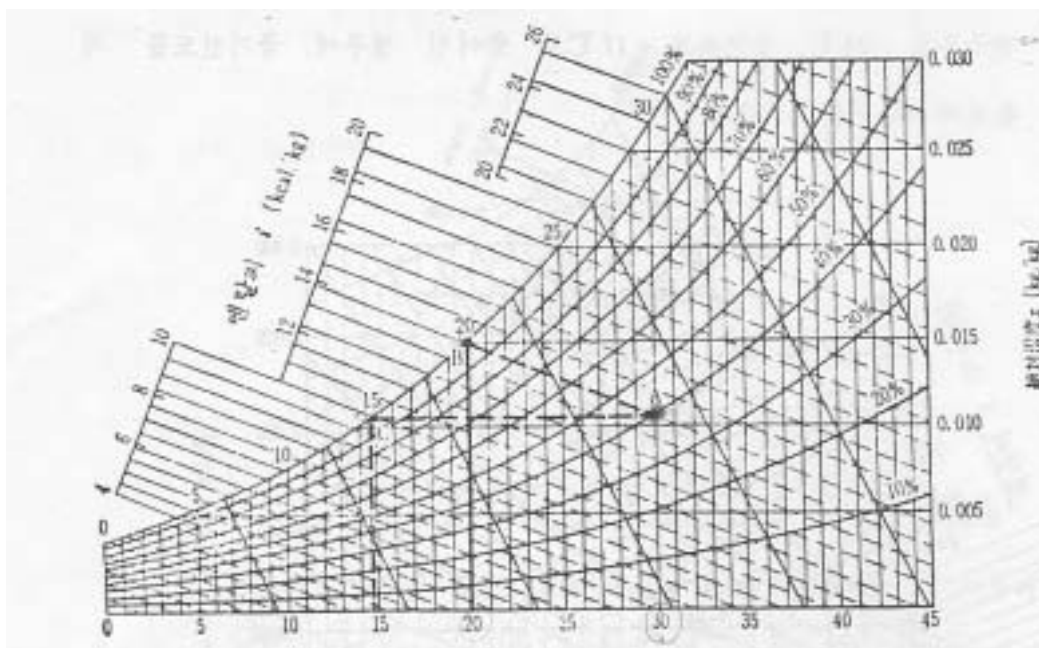
24 ,

17 ,



- a) (RH) : 50%
- b) (t'') : 12.5
- c) ($\text{kg/kg}'$) : 0.0093 $\text{kg/kg}'$
- d) ($\text{kcal/kg}'$) : 11.4 $\text{kcal/kg}'$
- e) (m^3/kg') : 0.856 m^3/kg'

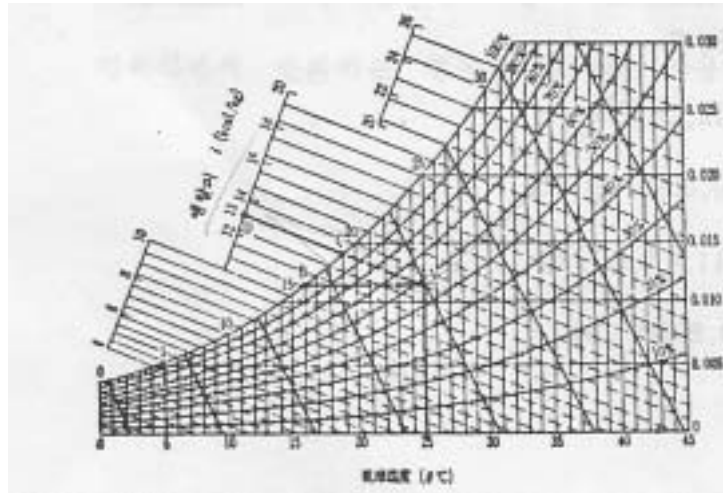
(2) 30 , 40%



< 4>

- a) : 20
- b) : 14.8

(3) 25 , 16 가

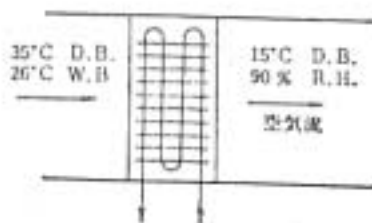


< 5 >

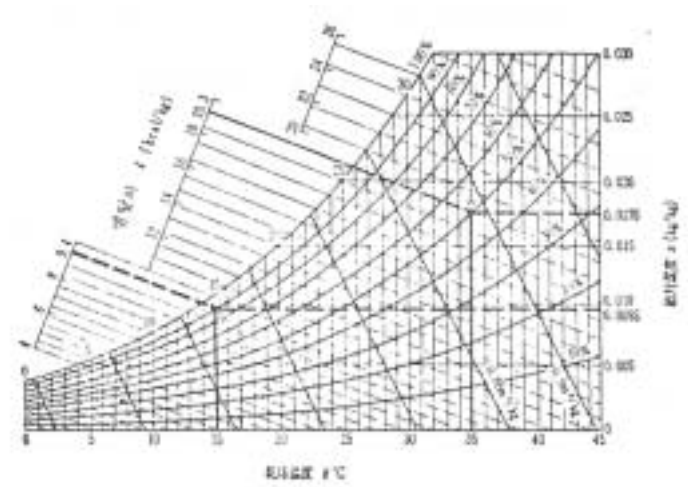
- a) : 58%
- b) : 19
- c) : 13kcal/kg

(4) 35 , 26 , 1,000m³/min
15 , 90%

(, 760mmHg .)



< 6 >



< 7 >

()

1) ()

$$\frac{1,000m^3/min}{0.897m^3/kg'} = 1,115kg'/min$$

2)

$$1,115kg'/min \times (19.3-9.4)kcal/kg' = 11,038kcal/min$$

3)

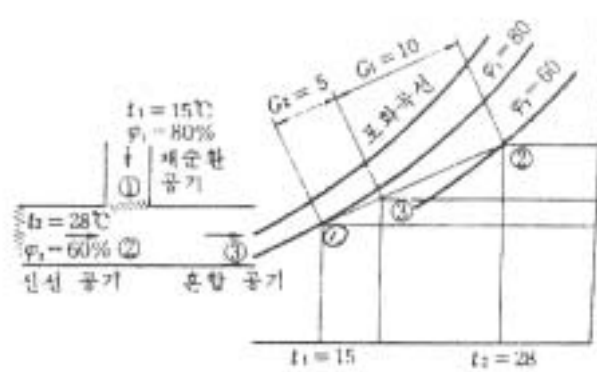
$$1,115kg'/min \times (0.0176-0.0095)kg/kg' = 9.03kg/min$$

1) (mixing)

(空調運轉上)

(1) 10kg/min 5kg/min

· (, t_1 , D.B 15 , RH 80%, t_2 , D.B
28 , RH 60%)



< 8>

()

$$t = \frac{(15 \times 10) + (28 \times 5)}{10 + 5} = 19.33$$

$$RH = \frac{(80 \times 10) + (60 \times 5)}{10 + 5} = 73.33\%$$

$$x = \frac{(0.00854 \times 10) + (0.01421 \times 5)}{10 + 5} = 0.01043 \text{ (kg/kg')}$$

$$I = \frac{(8.78 \times 10) + (15.42 \times 5)}{10 + 5} = 10.99 \text{ (kcal/kg')}$$

2) 가 (heating)

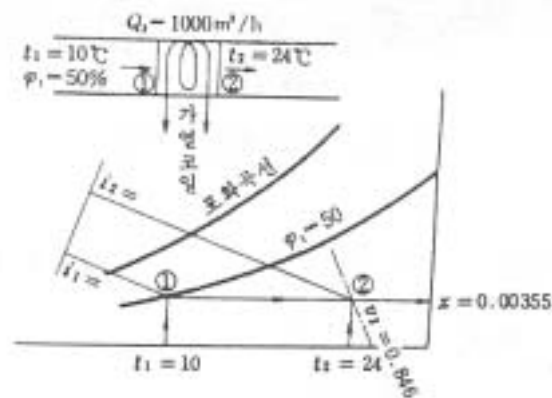
가 ,

가

$$t_2 = 24 \quad 1,000 \text{ m}^3/\text{h}$$
$$q = G(i_2 - i_1) = \frac{Q}{V} \times C_p \times (t_2 - t_1)$$

$$q = \frac{1,000}{0.846} \times 0.24(24 - 10)$$

$$= 3,972 \text{ (kcal/H)}$$

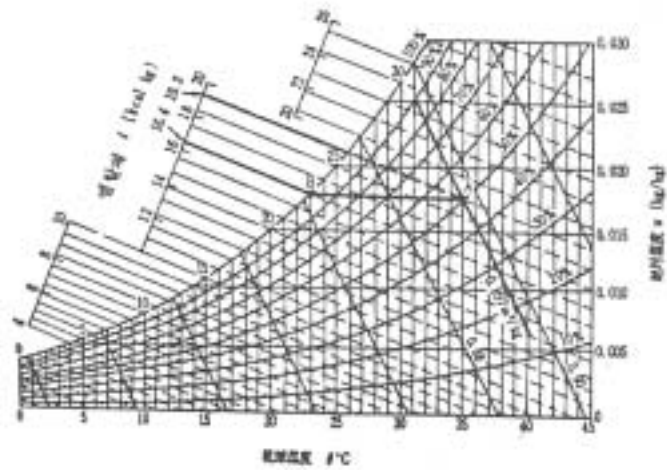


< 9> 가 , ()

3) ()

(3) 35 , 50% 1,000m³/min

(減濕) 100%



< 10> 0

()

$$q = G(i_2 - i_1)$$

$$q = \frac{1,000}{0.897} \times (19.3 - 16.4)$$

$$= 3,233 \text{ kcal/min}$$

(가)

$$q = \frac{Q}{V} \times 0.24 \times (t_2 - t_1)$$

$$= \frac{1,000}{0.897} \times 0.24 \times (35 - 23)$$

$$= 3,210 \text{ kcal/min}$$

4) (冷却減濕)

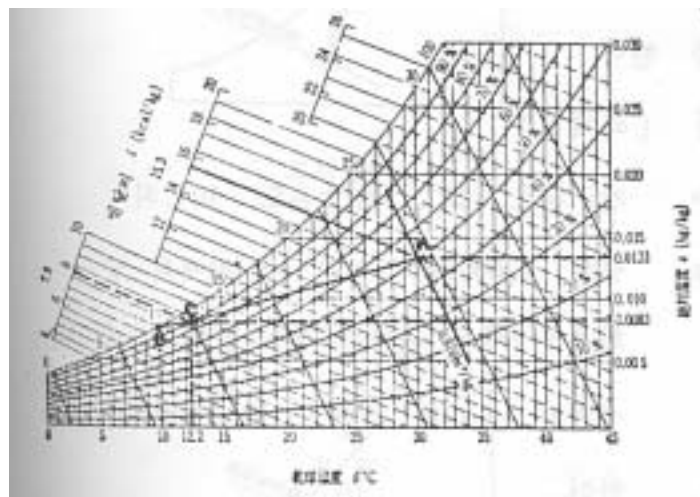
,

(4) 30 , 50% 1,000m³/min
가 10
90%

()

$$q = \frac{1,000}{0.876} \times (15.3 - 7.8) = 8,561 \text{ kcal/min}$$

$$\Delta x = G(x_2 - x_1) = \frac{1,000}{0.876} \times (0.0133 - 0.0083) = 5.7 \text{ kg/min}$$



< 11 >

5)

가

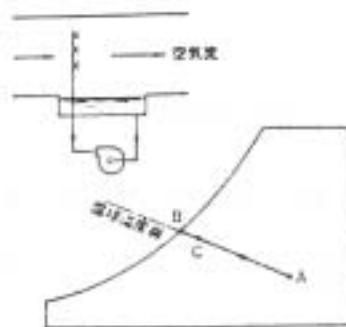
,

(濕球溫度) 가

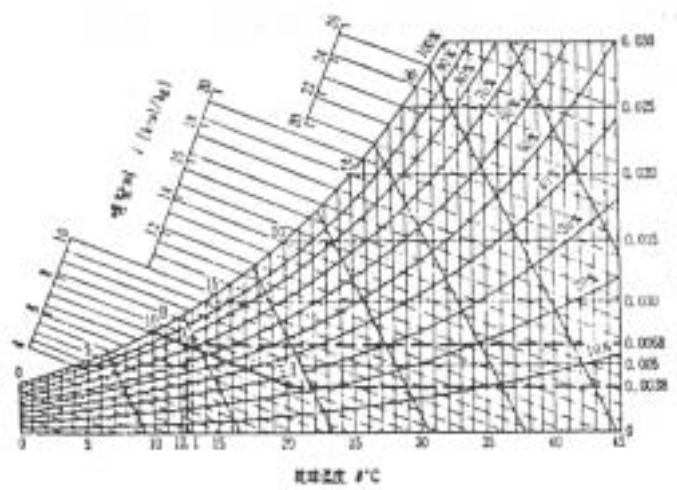
가

가

가 가



< 12 >



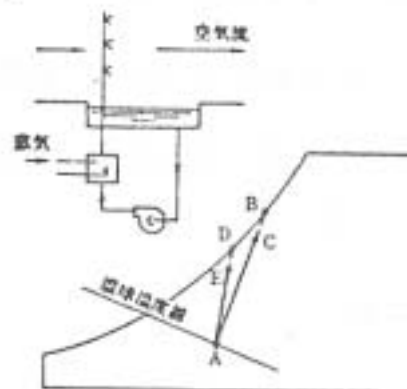
< 13 >

(5) 20 , 10 1,000m³/min
가

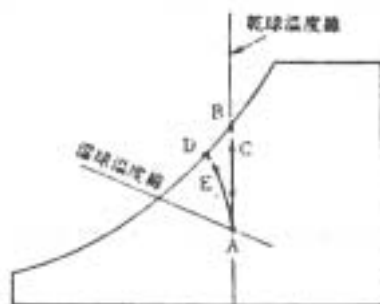
80%
()

$$\Delta_x = \frac{1,000}{0.835} \times (0.0068 - 0.0036) = 3.8 \text{ (kg/min)}$$

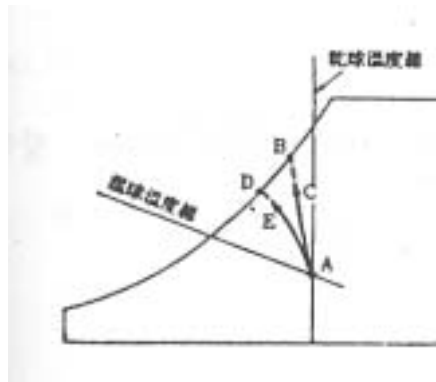
6)



< 14>

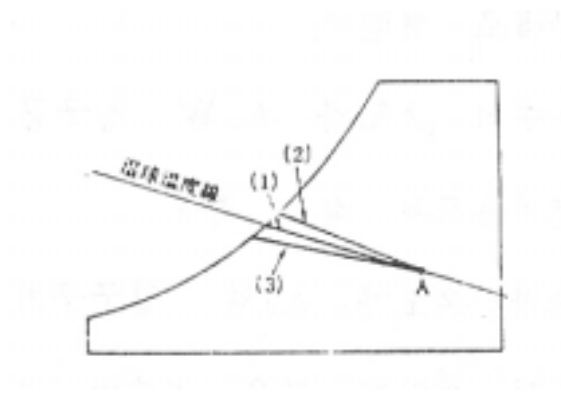


< 15>



< 16 >

가 A/W A/W
 가 . 가
 A/W ,
 < 14 > .
 가 A/W 가
 A/W 가 .
 가 A/W
 가 .
 7) 가 ,
 , 가 .
 , 가 가
 가 .
 8) (atomixing)



< 17>

가

A/W

< 17> (1)

가 <

17> (2)

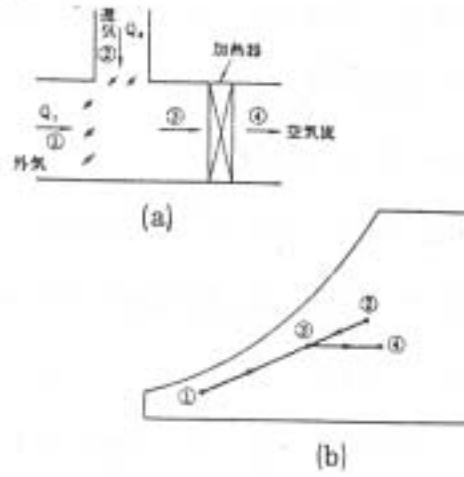
0

< 17> (3)

1) → 가

가

$$t_3 = \frac{t_1 G_1 + t_2 G_2}{G_1 + G_2}$$



< 18 >

가

2) → 가 () → 가 ((by pass))

t_A

, t_A A

A/W

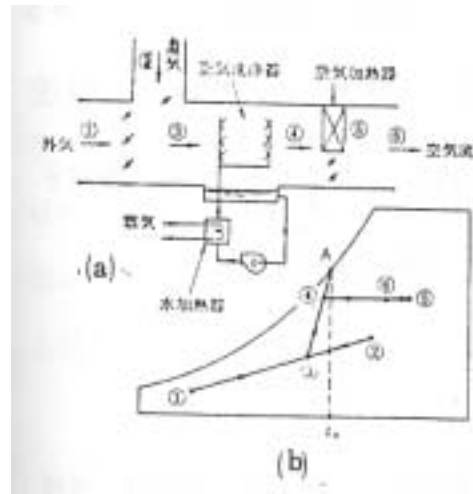
가

가 , 가

가 가

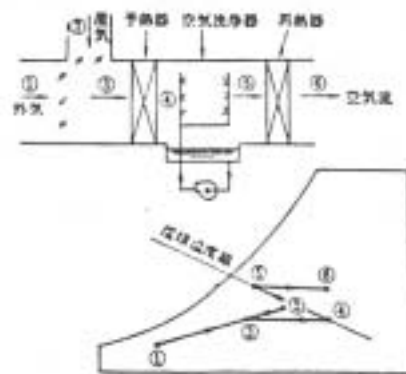
가

가



< 19 >

3) → → →



< 20 >

가

A/W

A/W

가

가

가 .

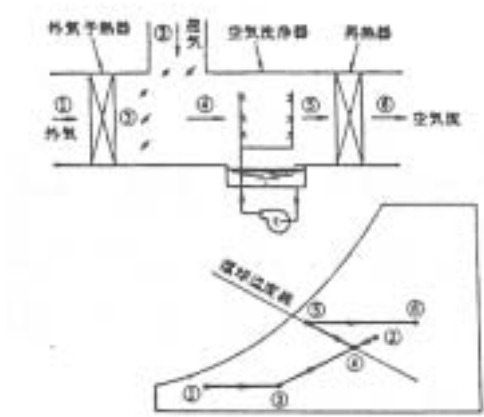
가 A/W

, A/W 가 .

가

가

4) → → →



< 21>

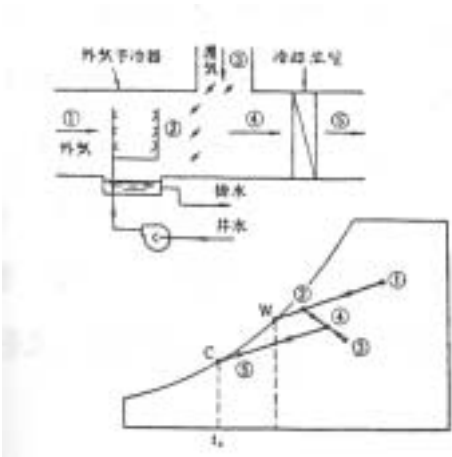
가 ,

가 .

가 .

가

5) → →



< 22>

W

A/W

가

t_c

- c c

c