



BIBLIOGRAPHY

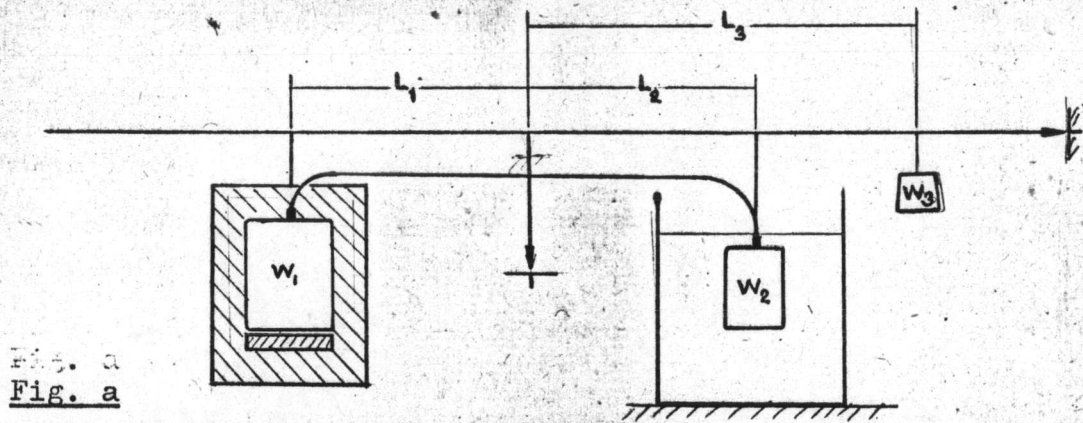
- Blytas, G.C. and Daniels, F.J. Am. Chem. Soc. 84, 1075 (1962).
- Ghinnappa, J.C.V. "Experimental Study of the Intermitting Vapour Absorption Refrigeration Cycle Employing the Refrigerant-Absorbent System of Ammonia-Water and Ammonia-Lithium Nitrate," J. Solar Energy Sci. and Eng. 5,1 (1961).
- Chung, R., and Duffie, J.A. "Cooling with Solar Energy," Paper S/82 presented at UN conference on new sources of energy, Rome (Rome) (1961).
- Eisenstadt, M., Flannigan, F.M., and Farber, E.A. "Solar airconditioning with an NH₃-water absorption refrigeration system." Engineering Progress at University of Florida, Technical Progress Report, 14, No. 2 22-28 (1960).
- Farber, A. "Solar Energy. Its conversion and utilization" Solar Energy, 14, P. 243-252 (1973).
- Sargent, S.L. and Beckman, W.A. "Theoretical performance of an ammonia sodium thiocyanate intermittent absorption refrigeration cycle." Solar Energy 12, 137-146 (1968).
- Swartman, R.K., Ha, V. and Swaminathan, C. "Comparison of ammonia-water and ammonia-sodium thiocyanate", J. Solar Energy, 17, P. 123-127 (1975).

Trombe, F. and Foex, M. "Economic Balance Sheet of Ice Manufacture with an absorption machine utilizing the sun as the heat source" Paper S/109 present at UN conference of New Sources of Energy, Rome (1961).

Williams, D.A., Chung, R., Lof, G.O.G., Fester, D.A., and Duffie J.A. Refrigerating Engineering, 66, 33 (Nov. 1958).

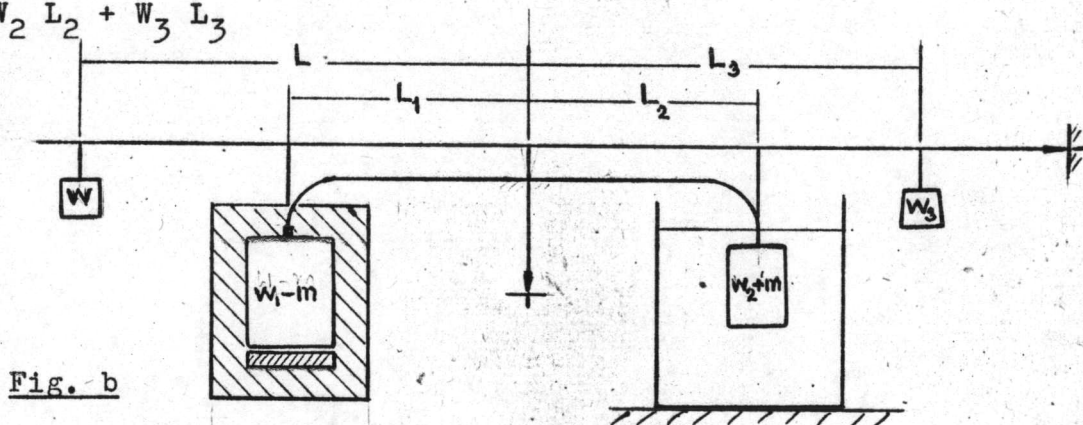
Appendix I

Calculation of Ammonia mass transfer



From Fig. a, for equilibrium

$$w_1 L_1 = w_2 L_2 + w_3 L_3$$



From Fig. b, for equilibrium

$$wL + (w_1 - m)L_1 = L_2(w_2 + m) + w_3 L_3$$

$$wL = (w_2 L_2 + w_3 L_3) + mL_2 - (w_1 L_1) + mL_1$$

$$w_1 L_1 = w_2 L_2 + w_3 L_3$$

$$wL = m(L_2 + L_1)$$

$$m = wL / (L_1 + L_2)$$

in this test $L_1 + L_2 = 95$ cm

$$m = \frac{WL}{95} \text{ gm}$$

W = Balance Weight (gm)

L = a distance from falcum (cm)

Calculation of COP (cycle cop)

$$\text{COP} = \frac{Q_c}{Q_s}$$

Q_s = Heat from electric heater-heat loss

Heat from electric heater = Voltage \times Current \times time

from table 1 Voltage = 241 Volt, Current = 1.37 Amp.

time = 2 hr.,

Heat from electric heater = $241 \times 1.37 \times 2$ kw-hr

$$= 241 \times 1.37 \times 2 \times 860.1 \text{ cal}$$

$$= 567958.43 \text{ cal}$$

heat loss to surrounding = $\frac{k \times \text{Area} \times T \times \text{time (hr)}}{\text{thickness (in)}}$

from Table 1 T mean = 182.7°C , Area = 4.872 ft^2

time = 2 hr, thickness = 1.75 inch

room temp = 87.8°F

from figure 13

at Tmean 182.7°F K vermiculits = $0.53 \text{ Btu in/ft}^2\text{h}^\circ\text{F}$

heat loss to surrounding = $\frac{0.53 \times 4.872 \times (182.7 - 87.5) \times 2}{1.75}$

$$= 280.939 \text{ Btu}$$

$$= 70796.6 \text{ cal.}$$

Heat absorbed by materials = Mass x Specific heat x Δt

$$\text{Specific heat of steel} = 0.115 \text{ Kcal/kg}^\circ\text{C}$$

$$\text{Specific heat of vermiculite} = 0.2 \text{ Kcal/kg}^\circ\text{C}$$

$$\text{initial temp. of vermiculite} = 31^\circ\text{C}$$

$$\text{final temp. of vermiculite} = 95^\circ\text{C}$$

$$\begin{aligned} \text{Heat absorbed by steel} &= 6.72 \times 0.115 \times 10^3 \times 96.5 \text{ cal.} \\ &= 74575.2 \text{ cal.} \end{aligned}$$

$$\begin{aligned} \text{Heat absorbed by vermiculite} &= 3.0 \times 0.2 \times 64 \times 10^3 \text{ cal.} \\ &= 38400 \text{ cal.} \end{aligned}$$

$$\begin{aligned} Q_s &= 567958.43 - 70796.6 - 74575.2 - 38400 \\ &= 384186.63 \text{ cal.} \end{aligned}$$

Effective cooling (Q_c) : from data recorded during experiments where cooling water 3000 gm was cooled from 51°C to 1°C

$$Q_c = 3000 \times (51 - 1) = 150000 \text{ cal.}$$

condenser tank 2.35 kg cool from 31°C to 1°C

vermiculite 1.8 kg cool from 31°C to 11°C

$$Q_{\text{condenser}} = 2.35 \times 0.115 \times 10^3 \times 30 = 8110 \text{ cal.}$$

$$Q_{\text{vermiculite}} = 1.8 \times 0.2 \times 20 \times 10^3 = 7200 \text{ cal.}$$

$$Q_c \text{ total} = 150000 + 8110 + 7200 = 165310 \text{ cal.}$$

$$\text{Cycle COP} = \frac{165310}{384186.63} = 0.43$$

$$\text{Machine COP} = \frac{\text{cooling load}}{\text{heat from electric heater}}$$

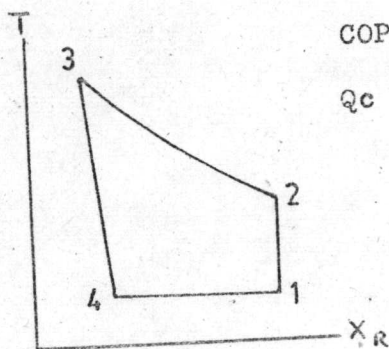
$$= 150000 / 567958$$

$$= 0.264$$

Appendix II

Coefficient of Performance

When enthalpy of vapour, solution, and refrigerant may be obtained from appropriate tables and charts, William have state the following expression for the COP of the constant temperature absorption cycle



$$\text{COP} = Q_c / Q_s$$

Q_c = Weight of refrigerant at point 4 x mean latent heat of liquid ammonia

$$= W_4 \times L_m$$

Heat supplied during regeneration = Heat to solution before actual distillation commence + Heat to solution only during distillation + Heat to vapour only during distillation

$$Q_s = W_3 H_3 - W_1 H_1 + \int_{W_3}^{W_1} H v d v$$

$$\text{COP} = W_4 \times L_m / (W_3 H_3 - W_1 H_1 + \int_{W_3}^{W_4} H v d v) \quad (a)$$

E_q (a) cannot be applied where values of enthalpy for vapour and solution are not directly available, as is the case for the NH_3 -NaSCN system for which Blytas and Daniel has presented the data in different form. Blytas and Daniel compiled P-t-X chart and also obtained a curve for the variation of the specific

heat of NH_3 -NaSCN solution with concentration. The expression for Q_s , the heat supplied to the solution during regeneration, has therefore been modified to make it possible to use the data present in the charts.

In the modified form for k equal changes of δW in the weight of solution during actual distillation process (2-3) such that

$$\delta W_1 = \delta W_2 = \dots \delta W_n = \delta W_k = \delta W$$

The corresponding change in the temperature of the solution during the change δW_n in the weight of solution was δt_n , while the mean specific heat during this change was C_{m_n} .

Hence heat to solution during temp rise δt_k

$$= \frac{1}{2} (W_4 + W_4 + \delta W_k) C_{m_k} \delta t_k$$

heat to solution during temp rise δt_{k-1}

$$= \frac{1}{2} (W_4 + \delta W_k + W_4 + \delta W_k + \delta W_{k-1}) C_{m_{(k-1)}} \delta t_{(k-1)}$$

heat to solution during temp rise δt_n

$$= \frac{1}{2} (W_4 + \delta W_x + \dots \delta W_{n+1} + W_4 + \delta W_p + \dots \delta W_n) C_{m_n} \delta t_n$$

heat to solution during temp rise δt_1

$$= \frac{1}{2} (W_4 + \delta W_k + \dots \delta W_2 + W_4 + \delta W_k + \dots \delta W) C_{m_1} \delta t_1$$

heat to solution during distillation only = $(W_4 + \delta W_k / 2) C_{m_k} \delta t_k +$

$$(W_4 + \delta W_k + \delta W_{k-1} / 2) C_{m_{k-1}} \delta t_{k-1} + \dots + (W_4 + \delta W_k + \delta W_{k-1} + \dots + \delta W_n / 2)$$

$$C_{m_n} \delta t_n + (W_4 + \delta W_k + \delta W_{k-1} + \dots + \delta W_n + \delta W_{1/2}) C_{m_1} \delta t_1$$

$$= (W_4 + \delta W / 2) \sum_{n=1}^{n=k} C_{m_n} \delta t_n + \delta W \sum_{r=1}^{r=k-1} \sum_{n=r}^{n=r} C_{m_n} \delta t_n$$

Therefore for the constant temperature absorption cycle

$$Q_s = W_3 C_3 (t_3 - t_2) + (W_4 + \delta W / 2) \sum_{n=1}^{n=k} C_{m_n} \delta t_n + \delta W \sum_{r=1}^{r=k-1} \sum_{n=r}^{n=r} C_{m_n} \delta t_n + \sum_{n=1}^{n=k} L d_{m_n} \delta W_n$$

When using the expression for the calculation of Q_s in an actual test, it is generally more convenient to divide the change in weight of which (k-1) change are all equal while the final change in weight (δW_k) is less, ie

$$\delta W_1 = \delta W_2 = \dots = \delta W_n = \dots = \delta W_{k-1} \gg \delta W_k$$

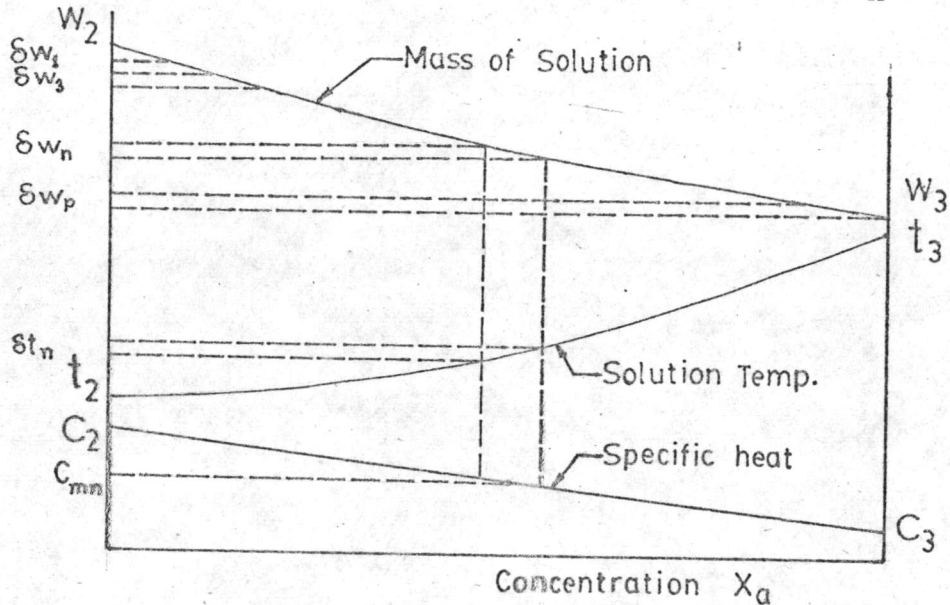


Fig 11 Calculation of Q_s in an actual test.

Eq. (b) becomes

$$Q_s = (W_3 C_3 (t_3 - t_2)) + ((W_4 + \delta W_k / 2) C_{m,k} \delta t_k + (W_4 + \delta W_4 + \delta W / 2) \sum_{n=1}^{n=k-1} C_{m,n} \delta t_n + \delta W \sum_{r=1}^{r=k-2} \sum_{n=1}^{n=t} C_{m,n} \delta t_n) + (\sum_{n=1}^{n=k-1} L_{d,m,n} \delta W_n + L_{d,m,k} \delta W_k)$$

The second and third terms on the right hand side representing respectively, the heat to solution and to vapour during distillation only, can be evaluated with facility by means of a table constructed from data read off from a plot similar to Fig (11)

The coefficient of performance (COP) of a solar cooling device involves two coefficient of performance, one for the cooler:

$$(\text{COP})_c = \frac{\text{heat absorbed by the vaporizing coolant}}{\text{heat supplied to the generator}}$$

and one for solar collector:

$$(\text{COP})_H = \frac{\text{heat supplied to the generator}}{\text{solar heat incident on collector}}$$

The product of these two $(\text{COP})_S$ gives the overall coefficient of performance:

$$(\text{COP}) = \frac{\text{heat absorbed by the vaporizing coolant}}{\text{solar heat incident on collector}}$$

Appendix III

The concentration for a paraboloid of revolution having a circular target.

$$\text{The concentration is } C = \frac{A_{nm}}{A_t} = \frac{\pi D^2/4}{\pi d^2/4}$$

$$C = \frac{D^2}{d^2} \dots\dots\dots (1)$$

$$D = nf \dots\dots\dots (2)$$

(The definition of relative aperture (n) is $n = \frac{D}{f}$,

$$\text{From Fig 12. } \sin \frac{\alpha}{2} = \frac{d/2}{l_m} = \frac{d}{2l_m} \dots\dots(3)$$

$$D = l_m (2 \sin \frac{\alpha}{2}) \dots(4)$$

$$\text{From Fig. 12 } l_m = \sqrt{(f-y_m)^2 + x_m^2} \dots(5)$$

The equation of the parabola with vortex at the origin

$$y = \frac{x^2}{4f} \text{ or } x^2 = 4fy \dots\dots\dots(6)$$

$$\text{At the max position this become } x_m^2 = 4fy_m \dots\dots(7)$$

Substitute in Eq (5) yield

$$l_m = \sqrt{(f-y_m)^2 + 4fy_m} = \sqrt{(f+y_m)^2}$$

$$l_m = f+y_m \dots\dots\dots(8)$$

$$l_m = f(1+\frac{y_m}{f}) \dots\dots\dots(9)$$

but from (7) $y_m = \frac{x_m^2}{4f} \dots\dots\dots(10)$

and $n = \frac{D}{f} = \frac{2x_m}{f}$

or $x_m = \frac{nf}{2}$

10 beco $y_m = \frac{n^2 f^2}{16} = \frac{n^2 f}{16}$

9 bec $l_m = f(1+\frac{n^2}{16}) \dots\dots(11)$

Substitute (3), (4) and (11) into (1) obtained

$$c = \frac{D^2}{d^2} = \frac{(nf)^2}{(f(1+\frac{n^2}{16}))(2 \sin \frac{\alpha}{2})^2} \dots\dots(12)$$

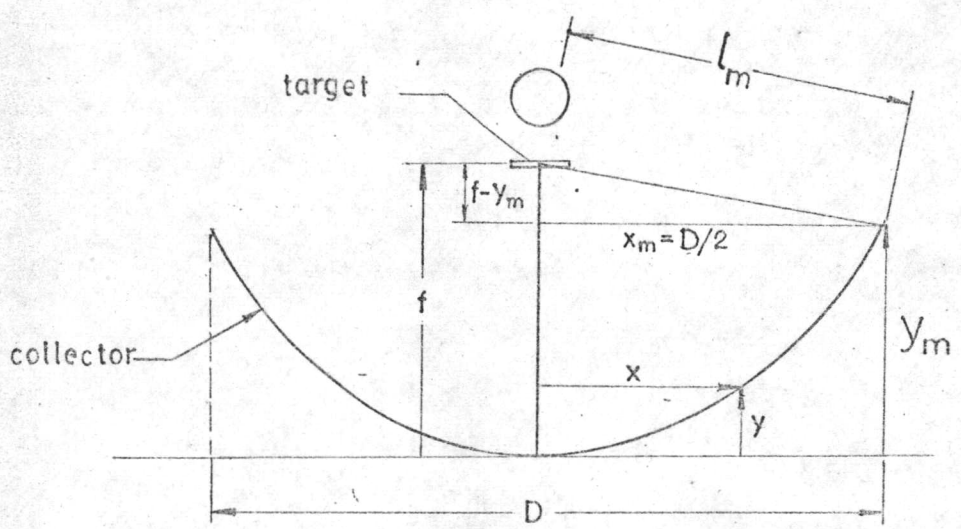


Fig.12 Paraboloid collector with circular plate target

from 12 $C = \frac{n^2}{(1+\frac{n^2}{16})^2 (2 \sin \frac{\alpha}{2})^2} \dots\dots\dots(13)$

Maximum concentration at $\frac{dc}{dn} = 0$

$$\frac{dc}{dn} = 0 = \frac{1}{(2 \sin \frac{\alpha}{2})^2} \left(\frac{2n}{(1+\frac{n^2}{16})^2} + \frac{(-2)n^2(2n)}{(1+\frac{n^2}{16})^3} \right)$$

$$0 = 2n \frac{(1+\frac{n^2}{16}) - \frac{4n^3}{16}}{(1+\frac{n^2}{16})^3}$$

$$2n^3 = 32n$$

$$n = -4$$

-4 is no meaning $\therefore n = 4$

$$C_{max} = \frac{4^2}{(1+\frac{4^2}{16})^2 (2 \sin \frac{\alpha}{2})^2} = \frac{1}{\sin^2 \frac{\alpha}{2}} \approx 46,200$$

For obtained maximum concentration use $n = 4$

$$f_{design} = \frac{D}{n} = \frac{D}{4}$$

substitute into Eq. (6) obtained $x^2 = 4 \times \frac{D}{4} \times y = Dy$

the parabola curve, $x^2 = Dy$ is give a maximum concentration.

In the case $D = 4.5$ ft

$$x^2 = 4.5 y \text{ ft}^2 (\text{for } D = 4.5 \text{ ft})$$

$$x^2 = 137.16 y \text{ cm}^2 \approx 140y \text{ cm}^2$$

$$\text{use } x^2 = 140y \text{ cm}^2 (\text{for } D = 4.5 \text{ ft})$$

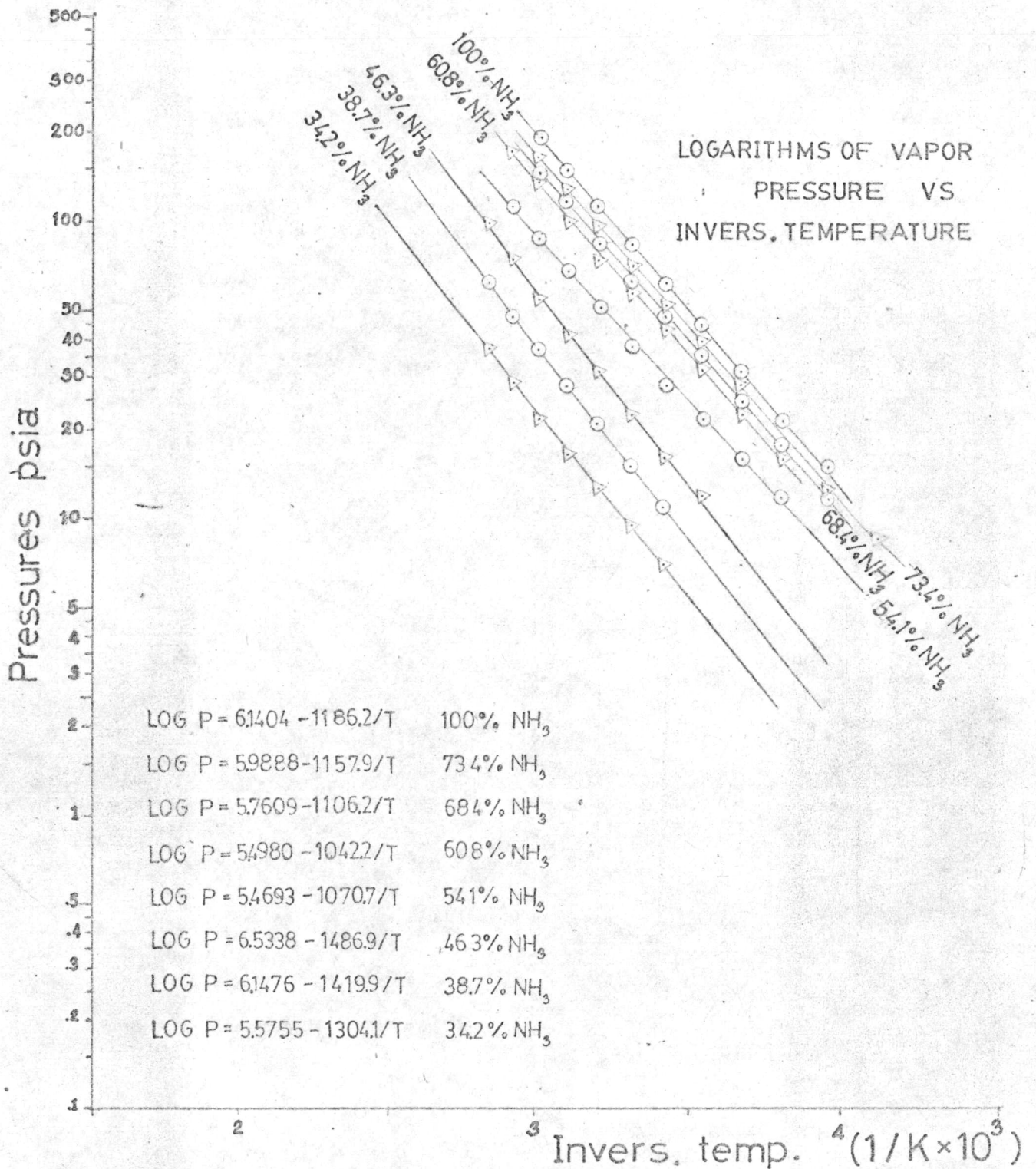


Fig.13 Dühring's rule or Othmer plots.

Table 1. Results of tests for NH_3 - NaSCN at ammonia concentration
50% by weight

Initial Weight of Solution = 2000 gm
 NaSCN = 1000 gm
 NH_3 = 1000 gm
 room temp = 31°C
 Volt = 241 Volt
 Amp = 1.37 Amp

Time (min)	Sol.Temp. ($^\circ\text{C}$)	Sol.Press (psia)	Ammonia con- densed (gm)	X_R (%)	T cooling water ($^\circ\text{C}$)
0	31.0	73.7	-	50	29.5
5	32	74.2	-	50	29.5
10	34	77.7	-	50	29.5
15	38	88.7	-	50	29.5
20	44.5	101.7	-	50	29.5
25	51.2	122.7	-	50	29.5
30	56.0	147.2	-	50	29.5
35	62.8	172.2	-	50	29.5
40	68.1	189.2	31.6	49	29.6
45	72.1	197.7	57.9	48.5	29.8
50	74.2	201.7	92.5	47.5	30
55	77.7	205.2	130.0	46.5	30.2
60	81.0	205.7	160.0	45.6	30.2
65	83.9	207.7	198.5	44.5	30.3

Time (min)	Sol.Temp. (°C)	Sol.Press (psia)	Ammonia con- densed (gm)	X_R (%)	T cooling water (°C)
70	86.7	208.7	225.0	43.6	30.5
75	89.4	208.7	255	42.6	30.5
80	92.7	209.7	289.5	41.5	31
85	96.5	209.7	316	40.6	31
90	99.2	211.7	350	39.4	31.0
95	105	212.2	382.5	38.2	30.8
100	109.5	212.7	409.0	37.19	30.8
105	114	212.7	437.5	35.9	30.5
110	116.1	212.7	465	34.9	30.2
115	123	214.7	490	33.7	30.0
120	127.5	214.7	518	32.5	30.0

Table. 2 Results of test for NH_3 -NaSCN at ammoniam concentra-
tion 54.5% by weight

Initial Weight of Solution: 2200 gm

NaSCN : 1000 gm

NH_3 : 1200 gm

room temp : 28.9°C

Volt : 240 Volt

Amp : 1.41

Time (min)	Sol.Temp (°C)	Sol.Press (psia)	NH ₃ con- densed (gm)	X _R (%)	T cooling water (°C)
0	28.86	85.7	-	54.5	27.75
5	29	86.0	-	54.5	27.75
10	33.3	90.7	-	54.5	27.75
15	37.52	100.7	-	54.5	27.75
20	42.85	114.7	-	54.5	27.75
25	48.06	137.2	-	54.5	27.75
30	54.39	164.7	22.1	54.08	27.8
35	57.44	146.7	36.8	53.77	27.8
40	62	187.2	55.8	53.36	27.8
45	63.9	194.7	84.2	52.74	27.9
50	66.6	197.2	117.89	51.97	27.9
55	68.9	200.7	154.73	51.11	28.0
60	71.6	204.2	184.21	50.39	28.0
65	73.9	204.9	229.47	49.25	28.0
70	76.1	206.7	263.15	48.37	28.1
75	78.9	207.7	297.36	47.44	28.2
80	81.6	209.2	335.26	46.37	28.3
85	85	209.7	370.26	45.35	28.3
90	88.3	211.2	405.26	44.28	28.5
95	90.5	212.2	421.57	43.77	28.5
100	94.5	213.7	468.90	42.23	28.8
105	97.7	214.7	502.11	41.10	28.8

Time (min)	Sol.Temp (°C)	Sol.Press (psia)	NH ₃ conden sed (gm)	X _R (%)	T cooling water °C
110	98.3	214.7	536.21	39.89	28.8
115	105.0	214.7	563.16	38.94	28.5
120	108.23	214.7	594.74	37.70	28.5

Table 3 Result^s of Test for NH₅ NaSCN System at ammonia concentration 56%

Initial Weight of Solution : 2270 gm
 NaSCN : 1000 gm
 NH₃ : 1270 gm
 room temp : 31.8°C
 Volt : 240 Volt
 Amp : 1.34 Amp

Time (min)	Sol. Temp. (°C)	Sol. Press. (psig)	NH ₃ con- (gm)	X _R (%)	T con (°C)
0	31.8	90.2	-	56	28.9
5	32	90.7	-	56	28.9
10	34.6	94.2	-	56	28.9
15	37.8	104	-	56	28.9
20	42	123	-	56	28.9
25	46	142.2	-	56	28.9
30	51.2	163.9	-	56	29.0

Time (min)	Sol. Temp. (°C)	Sol. Press. (psig)	NH ₃ con (gm)	X _R (%)	T cooling water (°C)
35	56.8	180	43	55.03	29.0
40	59.1	193.2	80	54.33	29.0
45	61.7	197	111.7	53.66	29.2
50	63.3	200.5	140	53.1	29.2
55	65.1	202.5	183.9	52.2	29.2
60	67.8	205	222	51.3	29.5
65	70.3	206.2	270	50.0	29.5
70	72.7	208.7	310	48.98	29.5
75	75	209.7	347	47.9	29.8
80	77.8	210.7	391	46.78	29.8
85	80.5	211.2	430	45.65	29.8
90	83.6	211.7	460	44.7	30.0
95	86.7	213.2	481	44.1	30
100	89.0	214.2	493	43.32	30.5
105	91.7	214.5	525	42.69	30.5
110	95.1	214.7	561	41.48	30
115	98.6	216	589.9	40.48	30
120	10.1	216	610	59.75	30

Table 4 Result of test for NH₃-NaSCN at ammonia concentration 58.5%

Initial Weight of Solution : 2410 gm, NaSCN : 1000 gm

NH₃ : 1410 gm, room temp: 36.5°C

Volt : 242 Volt Amp. : 1.37 Amp

Time (min)	Sol. Temp. (°C)	Sol. Press. (psia)	NH ₃ Condensed (gm)	X _R (%)	T cooling water (°C)
0	36.6	124.7	-		30
5	36.6	124.7	-		30
10	38.2	132.2	-		30
15	42.1	145.2	-		30
20	46.6	164.7	-		30
25	51.6	183.7	-		30
30	55	194.7	75.9	57.1	30.2
35	57.2	201.7	105.2	56.7	30.2
40	58.9	206.2	147.3	55.9	30.4
45	61.6	209.7	177	55.1	30.4
50	62.8	211.7	223	54.3	30.5
55	65.5	214.7	268.5	53.4	30.6
60	67.1	215.2	310	52.3	30.6
65	69.3	216.7	345	51.6	30.6
70	71.6	217.2	391	50.4	30.8
75	74.4	218.2	423	49.6	30.9
80	76.7	218.7	458	48.7	31.0
85	79.3	219.5	497.5	47.7	31.0
90	81.6	219.0	533	46.8	31.5
95	84.0	221.2	563	45.8	31.5
100	87.1	221.7	600	44.7	31.6
105	90.2	223.7	629	43.9	31.5

Time (min)	Sol. Temp. (°C)	Sol. Press. (psia)	NH ₃ Condensed (gm)	X _R (%)	T c.w. (°C)
110	93.2	224.4	662	42.8	31.3
115	96.2	225.2	690	41.5	31.2
120	100	226.2	716	41.0	31.2

Table 5 Results of test for absorption process at ammonia concentration 53.8%

Time (min)	Sol. Temp. °C	Sol. Press. psia	Actual X _R (%)	Apparent X _R (%)	n
0	102.5	219.7	40.5	40.5	
10	100.0	204.7	40.6	40.6	
20	94.5	185.0	40.8	40.8	
30	85.0	161.7		41.0	
41	77.8	159.7		43.3	
50	69.3	155.0		46.2	
68	61.1	151.7		49.5	
73	56.2	148.7		51.4	
96	47.2	143.2		55.3	
105	45.0	140.7		57.6	

Time (min)	Sol. Temp. °C	Sol. Press psia	Actual X_R (%)	Apparent X_R (%)
119	43.3	139.7		57.8
127	42.1	138.7		58.0
shaking the absorber 10 times				
133	66	120.2	43.6	43.6
139	63	119.7		45.0
144	59	119.2		47.0
160	48	118.2		51.0
164	43	117.8		54.9
168	38	117.2		57.2
173	34	116.7		58.5
shaking the absorber 10 times				
183	52.7	109.7		48.0
201	47.4	115.2		50.2
205	39.0	115.2		55.0
209	38.0	114.9		56.0
shaking the absorber 10 times				
250	48.5	90.7	46.5	46.5
255	44.0	90.7		48.5
260	41.0	90.4		50.1
265	38.0	90.2		52.0

Time (min)	Sol. Temp. °C	Sol. Press psia	Actual X_R (%)	Apparent X_R (%)
280	30.0	90.2		57.0
shaking the absorber 10 times				
295	36.0	77.2	50.0	50.0
300	34.0	77.0		51.2
310	31.0	76.7		52.3

Table 6 Results of test for $\text{NH}_3\text{-N}_a\text{SCN}$ (ammonia concentration 0.535) at various rate of heat.

Test No.	Rate of heat input (Kcal/min)	Total heat input K cal	Initial Temp °C	Initial Press psia	Final Temp °C	Final Press psia	Ammonia Condensed gm.
1	1.57	568.1	31.1	89.7	65	192.2	521.0
2	3.5	568.1	31.1	89.7	109.4	199.2	555.0
3	4.25	568.1	31.1	89.7	111.2	215.7	578.1
4	5.30	568.1	31.1	89.7	113.3	229.7	587.7

Table 7 Result of test at $X_R = 0.50$ for various temp of condenser cooling water

Test No.	Temperature of condensed cooling water temp. °C	Total heat input k cal	Initial T °C	Initial P psia	Final T °C	Final P psia	Ammonia condensed gm.
1	27	567.95	31	73.7	115.0	205.2	530
2	29.5	567.95	31	73.7	127.5	214.7	518
3	30.0	567.95	31	73.7	128.8	214.7	515

Table 8 Results of test for NH_3 -NaSCN at various concentration.

Tast No.	1	2	3	4	5
Initial Weight(gm.)	2000	2200	2270	2410	2150
Initial X_r	0.500	0.545	0.560	0.585	0.535
Max. Sol. Temp. ($^{\circ}\text{C}$)	129	110	103	100	65
Max. Sol. Press.(psia.)	214.7	214.7	216.0	226.2	192.2
Final X_r	0.325	0.377	0.3975	0.410	0.386
Temp. of Condenser ($^{\circ}\text{C}$)	29.5-31	27.5-29	29-30.5	30-31.6	29.4-30.5
Weight of distill(gm.)	518	594	610	716	521
Weight of distillatn.per gm. of Sol. (gm./gm.)	0.259	0.270	0.268	0.297	0.242
Heat from electric heater(Kcal.)	567.958	582.11	553.22	570.3	561.82
Heat to Sol.(Kcal.)	384.18	397.01	369.21	387.1	374.3
Effective cooling load(Kcal.)	150.0	172.1	178.05	203.5	151.1
Total cooling load(Kcal.)	165.31	186.5	193.45	212.1	165.8
Effective cooling per gm. of Sol. (cal./gm.)	75.0	78.2	78.4	84.4	70.3
Cycle COP	0.43	0.47	0.524	0.548	0.442
Machine COP	0.264	0.296	0.322	0.357	0.269
Absorption time(hr.)	13	18	20	25	14
Regeneration time(hr.)	2	2	2	2	6

VITA

Name : Mr. Anant Poopisut

Degree : B,Sc. (Mechanical Engineering),
Prince of Songkla University, 1972.