

P := 1000 ph := 550 T := 1000 J := 778.169262266 r := 15.99007

feed := ST_ptdata(14.696, 180, 1, 1) Feed water 1 ATM and 180F

P1 := ST_ptdata(P, T, 1, 1)

$$p2 := \frac{P}{r^{1.26}} \quad v2 := P1_2 \cdot r$$

$$p2 := \text{root}\left(\text{ST_ptdata}(p2, v2, 2, 1)_5 - P1_5, p2\right)$$

P2 := ST_ptdata(p2, v2, 2, 1)

H1 := P1₄ - feed₄

$$W1 := P1_4 - P2_4 + (P2_0 - 14.696) \cdot P2_2 \cdot \frac{144}{J}$$

W1 = 411.85326 per pound

	0
0	1000
1	1000
2	0.82954
3	1351.93682
4	1505.44366
5	1.65305
6	1
7	0.5659
8	0.42229
9	0.00105
10	0.00082
11	2216.1166

P1 =

$$P2 = \begin{pmatrix} 30 \\ 250.33536 \\ 13.26446 \\ 1057.51781 \\ 1131.15536 \\ 1.65305 \\ 0.96509 \end{pmatrix}$$

T3 := ST_ptdata(ph, P1₄, 4, 1)₁

P3 := ST_ptdata(ph, T3, 1, 1)

$$p4 := \frac{ph}{r^{1.26}} \quad v4 := P3_2 \cdot r$$

$$p4 := \text{root}\left(\text{ST_ptdata}(p4, v4, 2, 1)_5 - P3_5, p4\right)$$

P4 := ST_ptdata(p4, v4, 2, 1)

H2 := P3₄ - feed₄

$$W2 := P3_4 - P4_4 + (P4_0 - 14.696) \cdot P4_2 \cdot \frac{144}{J}$$

W2 = 381.75329 per pound

	0
0	550
1	975.22158
2	1.51217
3	1351.53906
4	1505.44366
5	1.71659
6	1
7	0.54082
8	0.41226
9	0.00187
10	0.00077
11	2217.67322

P3 =

$$P4 = \begin{pmatrix} 15.99532 \\ 216.30301 \\ 24.1797 \\ 1057.93392 \\ 1129.50412 \\ 1.71659 \\ 0.97668 \end{pmatrix}$$

$$\frac{W1}{H1} = 30.34073 \%$$

$$\frac{W2}{H2} = 30.53956 \%$$

$$\text{TurnDown} := \frac{\left(\frac{W1}{P2_2}\right)}{\left(\frac{W2}{P4_2}\right)}$$

TurnDown = 1.96662

$$\sqrt{\text{TurnDown}} = 1.40236$$

$$P := 2500 \quad ph := 550 \quad T := ST_pdata(P, P1_4, 4, 1)_1$$

$$P1 := ST_pdata(P, T, 1, 1)$$

$$p2 := \frac{P}{r^{1.26}} \quad v2 := P1_2 \cdot r$$

$$p2 := \text{root}(ST_pdata(p2, v2, 2, 1)_5 - P1_5, p2)$$

$$P2 := ST_pdata(p2, v2, 2, 1)$$

$$H1 := P1_4 - \text{feed}_4$$

$$W1 := P1_4 - P2_4 + (P2_0 - 14.696) \cdot P2_2 \cdot \frac{144}{J}$$

$$W1 = 433.9554 \quad \text{per pound}$$

	0
0	2500
1	1072.75992
2	0.33047
3	1352.56141
4	1505.44366
5	1.55895
6	1
7	0.64591
8	0.45229
9	0.00044
10	0.00096
11	2221.83859

P1 =

$$P2 = \begin{pmatrix} 78.24388 \\ 310.50917 \\ 5.2842 \\ 1057.11793 \\ 1133.62786 \\ 1.55895 \\ 0.94565 \end{pmatrix}$$

$$T3 := ST_pdata(ph, P1_4, 4, 1)_1$$

$$P3 := ST_pdata(ph, T3, 1, 1)$$

$$p4 := \frac{ph}{r^{1.26}} \quad v4 := P3_2 \cdot r$$

$$p4 := \text{root}(ST_pdata(p4, v4, 2, 1)_5 - P3_5, p4)$$

$$P4 := ST_pdata(p4, v4, 2, 1)$$

$$H2 := P3_4 - \text{feed}_4$$

$$W2 := P3_4 - P4_4 + (P4_0 - 14.696) \cdot P4_2 \cdot \frac{144}{J}$$

$$W2 = 381.75328 \quad \text{per pound}$$

	0
0	550
1	975.22158
2	1.51217
3	1351.53906
4	1505.44366
5	1.71659
6	1
7	0.54082
8	0.41226
9	0.00187
10	0.00077
11	2217.67322

P3 =

$$P4 = \begin{pmatrix} 15.99532 \\ 216.30301 \\ 24.1797 \\ 1057.93391 \\ 1129.50412 \\ 1.71659 \\ 0.97668 \end{pmatrix}$$

$$\frac{W1}{H1} = 31.96896\%$$

$$\frac{W2}{H2} = 28.1233\%$$

$$\text{TurnDown} := \frac{\left(\frac{W1}{P2_2}\right)}{\left(\frac{W2}{P4_2}\right)}$$

$$\text{TurnDown} = 5.20157$$

$$\sqrt{\text{TurnDown}} = 2.28069$$