

COST ESTIMATION

Monochlorobenzene plant size = 62.5 T/day

Taking cost indices of (1134 in 1997) and (100 in 1926)

Fixed capital investment in 1926 = Rs 12.82 crores

Fixed capital investment = Rs 170 crores

Estimation of total investment cost:

1) Direct cost:

a) Purchased equipment cost:(15 – 40% of FCI)

Assume 30% of FCI

=Rs 51 crores

b) Installation cost:(35 – 45% of PEC)

Assume 35%

=Rs 17.85 crores

c) Instrument and control installed:(6 –30% of PEC)

Assume 25% of PEC

=Rs 12.75 crores

d) Piping installation cost:(10 –80% of PEC)

Assume 60%

=Rs. 30.6 crores

e) Electrical installation cost:(10 – 40% of PEC)

Assume 35% of PEC

=Rs 17.85 crores

f) Building process and auxilliary:(10-70% of PEC)

Assume 60%

=Rs 30.6 crores

g) Service facilities:(30-80% of PEC)

Assume 50%

=Rs 25.5 crores

h) Yard improvement:(10-15% of PEC)

Assume 10%

=Rs 5.1 crores

i) Land:(4-8% of PEC)

Assume 6%

=Rs 3.06 crores

Therefore direct cost =Rs 194.31 crores

Indirect cost:

Expenses which are not directly involved with material and labour of actual installation or complete facility

a) Engineering and supervision:(5-30% of DC)

Assume 25%

=Rs 48.57 crores

b)Construction expenses:(10% of DC)

=Rs 19.431 crores

c)Contractors fee:(2-7% of DC)

Assume 6%

=Rs 11.65 crores

d)Contingency:(8-20% of DC)

Assume 12%

=Rs 23.31 crores

Therefore total indirect cost =Rs 102.96 crores

Fixed capital investment:

Fixed capital investment(FCI) = DC+IC

$$= 102.96 + 194.31 = \text{Rs } 297.27 \text{ crores}$$

Working capital investment:

10 -20% of FCI

Assume 16%

=Rs 47.56 crores

1)Total capital investment:

= FCI + WC

=Rs 345.53 crores

Estimation of total product cost(TPC):

Fixed charges:

a) Depreciation:(10% of FCI for machinery)

=Rs 29.727 crores

b) Local taxes:(3-4% of FCI)

Assume 3%

=Rs 8.9181 crores

c) Insurances:(0.4-1% of FCI)

Assume 0.7%

=Rs 2.080 crores

d)Rent:(8-12% of FCI)

Assume 10%

=Rs 29.727 crores

Therefore total fixed charges =Rs 70.45 crores

But, Fixed charges = (10-20% of TPC)

Assume 15%

Therefore Total product cost = Rs 469.66 crores

Direct production:

a) Raw material:(10-50% of TPC)

Assume 40%

=Rs 187.86 crores

b)Operating labour(OL):(10-20% of TPC)

Assume 15%

=Rs 70.449 crores

c)Direct supervisory and electric labour:(10-25% of OL)

Assume 20%

=Rs 14.08 crores

b) Utilities:(10-20% of TPC)

Assume 15%

=Rs 70.449 crores

Maintainence:(2-10% of FCI)

Assume 8%

=Rs 23.381 crores

c) Operating supplies (OS):(10-20% of maintainence)

Assume 15%

=Rs 3.50 crores

d) Laboratory charges:(10-20% of OL)

Assume 12%

=Rs 8.45 crores

e) Patent and royalties:(2-6% of TPC)

Assume 4%

=Rs 18.78 crores

Plant overhead cost:

50-70% of (OL+OS+M)

Assume 65%

=Rs 63.40 crores

General expenses:

a) Administration cost:(40-60% of OL)

Assume 50%

=Rs 35.22 crores

b) Distribution and selling price:(2-30% of TPC)

Assume 20%

=Rs 93.932 crores

c) Research and development cost:(3% of TPC)

=Rs 14.0898 crores

Therefore general expenses(GE) =Rs 143.24 crores

Therefore manufacturing cost(MC)= Product cost+fixed chages+Plant overhead expenses

=Rs 603.51 crores

Total production cost:

Total production cost =MC + GE

=Rs 746.75 crores

Gross earnings and rate of return:

The plant is working for say 320 days a year

Selling price =Rs. 25 /kg

Total income = $62.5 \times 320 \times 1000 \times 25$

=Rs 500 crores

Gross income =Total income – total product cost

=Rs 30.34 crores

Tax =50%

Net profit =Rs 15.17 crores

Rate of return =net profit/total capital investment

= 4.41 %