

COST ESTIMATION:

Carbon disulfide plant size =50 T/day

Fixed capital investment for cost index of 130 = Rs 4.5×10^7

Cost index for 2002 = 402

Therefore present fixed capital investment = $4.5 \times 10^7 \times (402/130)$
=Rs 13,91,53,846

Estimation of total investment cost:

1) Direct cost:

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

Assume 40% of FCI

=Rs 5,56,61,538

b) Installation cost:(35 – 45% of PC)

Assume 45%

=Rs 2,50,47,692

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

Assume 30% of PEC

=Rs 1,66,98,461

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

Assume 75%

=Rs.41,74,615

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

Assume 40% of PEC

=Rs 2,22,64,615

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

Assume 65%

=Rs 3,61,80,000

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

Assume 75%

=Rs 4,17,46,153

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

Assume 15%

=Rs 83,49,230

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

Assume 8%

=Rs 44,52,923

Therefore direct cost =Rs 21,45,75,227

2) 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 30%

=Rs 6,43,72,568

a) Construction expenses:(10% of DC)

=Rs 2,14,57,522

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

Assume 7%

=Rs 1,50,20,265

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

Assume 20%

=Rs 4,29,15,045

Therefore total indirect cost = Rs 14,37,65,400

3) Fixed capital investment:

Fixed capital investment(FCI) = DC+IC

= Rs 35,83,40,677

4) Working capital investment:

10 –20% of FCI

Assume 15%

=Rs 5,37,51,101

5) Total capital investment:

= FCI + WC

=Rs 41,20,91,778

Estimation of total product cost(TPC):

Fixed charges:

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

=Rs 3,58,34,067

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

Assume 4%

=Rs 1,43,33,627

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

Assume 1%

=Rs 35,83,406

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

Assume 12%

=Rs 4,30,00,881

Therefore total fixed charges =Rs 9,67,51,981

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

Assume 10%

Therefore Total product cost =1,13,69,295/0.1

=Rs 96,75,19,812

Direct production:

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

Assume 30%

=Rs 48,37,59,906

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

Assume 15%

=Rs 14,51,27,971

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

Assume 15%

=Rs 2,17,69,195

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

Assume 15%

=Rs 14,51,27,971

e) Maintenance:(2-10% of FCI)

Assume 6%

=Rs 2,15,00,440

e) Operating supplies (OS):(10-20% of maintenance)

Assume 15%

=Rs 32,25,066

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

Assume 15%

=Rs 2,17,69,195

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

Assume 4%

=Rs 3,87,00,792

Plant overhead cost:

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

Assume 60%

=Rs 10,19,12,086

General expenses:

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

Assume 55%

=Rs 7,98,20,384

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

Assume 15%

=Rs 14,51,27,971

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

=Rs 2,90,25,594

Therefore general expenses(GE) =Rs 25,39,73,949

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

= Rs 1,16,61,83,879

Total production cost:

Total production cost =MC + GE

=Rs 1,42,01,57,828

Gross earnings and rate of return:

The plant is working for say 350 days a year

Selling price =Rs. 60/kg

Total income = $50 \times 320 \times 1000 \times 60$

=Rs 1,05,00,00,000

Gross income =Total income – total product cost

=Rs 8,24,80,187

Tax =50%

Net profit =Rs 4,12,40,093

Rate of return = net profit/total capital investment

=10 %