

## **COST ESTIMATION:**

Glycerin plant size =100 T/day

Fixed capital investment for cost index of 130 = Rs  $10^8$

Cost index for 2002 = 402

Therefore present fixed capital investment =  $10^8 \times (402/130)$

=Rs 30,92,30,769

### **Estimation of total investment cost:**

#### **1) Direct cost:**

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

Assume 40% of FCI

=Rs 12,36,92,307

b) Installation cost:(35 – 45% of PC)

Assume 45%

=Rs 13,91,53,846

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

Assume 30% of PEC

=Rs 9,27,69,230

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

Assume 75%

=Rs.23,19,23,076

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

Assume 40% of PEC

=Rs 12,36,92,307

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

Assume 65%

=Rs 20,09,99,999

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

Assume 75%

=Rs 23,19,23,076

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

Assume 15%

=Rs 4,63,84,615

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

Assume 8%

=Rs 2,47,38,461

Therefore direct cost =Rs 1,21,52,76,917

## 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 36,45,83,075

a) Construction expenses:(10% of DC)

=Rs 12,15,27,691

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

Assume 7%

=Rs 8,50,69,584

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

Assume 10%

=Rs 12,15,27,691

Therefore total indirect cost =69,27,08,042

## 3) Fixed capital investment:

Fixed capital investment(FCI) = DC+IC

= Rs 1,90,79,84,959

## 4) Working capital investment:

10 –20% of FCI

Assume 15%

=Rs 28,61,97,743

## 5) Total capital investment:

= FCI + WC

=Rs 2,19,41,82,703

### **Estimation of total product cost(TPC):**

#### **Fixed charges:**

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

=Rs 2,19,41,827

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

Assume 3%

=Rs 6,58,25,481

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

Assume 1%

=Rs 2,19,41,827

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

Assume 9%

=Rs 4,57,97,372

Therefore total fixed charges =Rs 15,55,06,507

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

Assume 10%

Therefore Total product cost =155506507/0.1

=Rs 1,55,50,65,070

#### **Direct production:**

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

Assume 30%

=Rs 46,65,19,521

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

Assume 15%

=Rs 23,32,59,760

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

Assume 15%

=Rs 3,49,88,964

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

Assume 15%

=Rs 23,32,59,760

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

Assume 6%

=Rs 9,33,03,904

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

Assume 15%

=Rs 1,39,95,585

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

Assume 15%

=Rs 3,49,88,964

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

Assume 4%

=Rs 6,22,02,602

**Plant overhead cost:**

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

Assume 60%

=Rs 20,43,35,549

**General expenses:**

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

Assume 55%

=Rs 12,82,92,868

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

Assume 15%

=Rs 23,32,59,760

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

=Rs 4,66,51,952

Therefore general expenses(GE) =Rs 40,82,04,580

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

= Rs 1,91,49,07,126

**Total production cost:**

Total production cost =MC + GE

=Rs 2,32,31,11,706

**Gross earnings and rate of return:**

The plant is working for say 300 days a year

Selling price =Rs. 97/kg

Total income = $100 \times 300 \times 1000 \times 97$

=Rs 2,91,00,00,000

Gross income =Total income – total product cost(1555065070)

=Rs 1,35,49,34,930

Tax =50%

Net profit =Rs 67,74,67,465

Rate of return = net profit/total capital investment

=30.87%