APPENDIX I

Profit, Pay back period calculation sample for the vapor absorption TIC technique

1. Installation cost details:

Cost of installation = 11.7 crores per unit
(This value is based on an estimate of 0.26 lakhs/TR and 4500 TR requirement)
Cost of filter, cooling coil, pumping system = 3.0 crores
Cost for one unit = 14.7 crores
Cost for 2 units = 29.4 crores
O&M costs (taken as 5% of total cost) = 1.47 crores
Total cost = 30.87 crores

2. Savings details from TIC

a) Savings from efficiency gain:

Plant load factor = 0.85
Base case efficiency = 48.64%
Efficiency with TIC = 50.04%
Total capacity = 392.19 MW
Calorific Value of Naphtha = 10500 kcal/kg
Price of Naphtha = Rs.36/kg
Fuel savings due to increased efficiency = 0.513 kg/s
Savings per month = 4.0689 crores/month

\( (0.513 \times 3600 \times 24 \times 30 \times 0.85 \times 36) \)

b) Profits from additional installed MW

Additional capacity by way of TIC implementation = 35.55 MW
Profit per kWh from fixed charge recovery
(as per CERC rule) = Rs.0.1
Profit per month = 0.2176 crores/month

\( (35.55 \times 1000 \times 24 \times 30 \times 0.85 \times 0.1) \)

Total savings (Rs) = 4.286 crores/month

Hence pay back period (30.87/4.286) = 7.2 months