

Problem 8-7

Goal: Determine best of 4 reactors to purchase

Given:

Minimum Acceptable Return	15.0%	MARR		
Design:	1	2	3	4
Fixed Capital Investment	\$10,000	\$12,000	\$14,000	\$16,000
Operating Costs	\$3,000	\$2,800	\$2,350	\$2,100

Approach: Incremental Investment paired comparison
 rank in order of increasing investment, calculate delta Investment
 calculate delta savings return, then delta ROI
 compare to MARR, accept one and discard other; repeat for next high cost investment

Alternate approach: Minimum Acceptable Return as an expense
 add 15% of each investment of costs and choose design with lowest cost

Calculations:

Design:	1	2	3	4
Fixed Capital Investment	\$10,000	\$12,000	\$14,000	\$16,000
Operating Costs	\$3,000	\$2,800	\$2,350	\$2,100
Incremental Cost Savings		Compare 1 & 2: \$200	Compare 1 & 3: \$650	Compare 3 & 4: \$250
Incremental Investment		\$2,000	\$4,000	\$2,000
Incremental ROI		10.00%	16.25%	12.50%
Decision 1 vs. 2:	keep	reject		
Decision 1 vs. 3:	reject		ACCEPT	
Decision 2 vs. 4:			keep	reject

Answer

Recommend Design #3

Alt. Calculations:

Design:	1	2	3	4
Fixed Capital Investment	\$10,000	\$12,000	\$14,000	\$16,000
Operating Costs	\$3,000	\$2,800	\$2,350	\$2,100
MARR expense	\$1,500	\$1,800	\$2,100	\$2,400
Venture Cost =	\$4,500	\$4,600	\$4,450	\$4,500

Accept Minimum Annual Venture Cost: \$4,450 = MIN(E46:H46)

highest lowest

Answer

Recommend Design #3

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