

## *Case 34*

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# *R&D Device at EBP*

Two years ago East Beach Products (EBP) designed and built in-house an R&D device to measure a critical parameter in evaluating new designs. Based on lessons learned, the testing engineers have found a generic device which can be modified to measure the critical parameter and which eliminates most of the operating problems inherent in the existing design. You have been tasked with evaluating the device's replacement in a time of tight capital and operating budgets.

The old device was built for \$100,000 and currently has a book value of \$48,000. The useful life of the device was estimated at 8 years. The device has no market value but can be scrapped and cannibalized for parts/computers/controls valued at \$40,000 today and \$5000 less in any succeeding year. Currently, the device costs \$32,000 per year to operate (labor and material usage) and another \$15,000 per year to maintain. Operating costs are increasing at the rate of \$3200 per year (mostly in higher material usage rates) while maintenance costs are increasing at \$2300 per year.

The new device will cost \$125,000 after modification by the supplier. The new device is also projected to have a useful life of 10 years. The device is expected to have an operating cost of \$26,000 for the first year which increases by 10% each year. The maintenance costs for the device are estimated at \$8000 per year and are expected to increase at the rate of \$1500 per year. The salvage value is estimated at \$98,000 at the end of the first year and \$8,000 less each year thereafter.

What is the economic life of each device? What is your recommendation if the device will be needed for a long but indefinite period into the future?

EBP uses a before-tax MARR of 10%.

**Options:**

1. What is your recommendation if the device is only used on an R&D project, which should terminate in 6 more years?
2. What is your recommendation if the after-tax MARR is 6%, and the after-tax rate is 40%?