

Case 39

Uncertain Demand at WM³

The production manager and manufacturing engineer in the assembly department of Western Muskegon Machining and Manufacturing (WM³) have designed a new assembly fixture. The fixture will reduce the assembly time from 33 minutes to 27 minutes, saving \$1.92 per unit in direct labor. The assembly department is seeing steadily increasing demands and will soon be looking at overtime or adding more part-time workers.

The fixture will cost \$18,000 to fabricate and can be ready in one month. This will place the fixture in service in the middle of the current fiscal year. The fixture will have a ten-year life if properly maintained. Its salvage value will be negligible, as its general usefulness is limited. The fixture is not in the current budget, but both the production manager and the manufacturing engineer believe that the project should be considered for funding out of the budget for contingencies. With wages currently projected to increase at a rate of 4.5% per year over the next six years due to a tight labor market, the project supports the company's goal of reducing the labor content of products as much as is feasible.

In figuring the cost savings, the production manager points out that \$88 of overhead is charged for each hour of direct labor. The manufacturing engineer points out that in this overhead charge are the fringe benefits and other payroll-related costs of 38.5%, which are incurred for each hour of direct labor, and that this rate is expected to increase by 1.5% per year.

The new operation will require an additional 100 square feet of floor space, and currently the department pays \$18 annually per square foot in overhead charges. The space is available

in an adjacent department, which recently reduced its requirements when it did a similar project. Overhead costs are expected to increase at the rate of general inflation (2.5%).

The product has a demand of 2000 units this year (spread equally over the year). There is some uncertainty on the demand over the next five years. Marketing believes that there is a 45% chance that demand will fall off at the rate of 200 units per year until demand ceases after five more years. There is a 25% chance that demand will remain constant until it ceases after 5 more years. There is a 30% chance that demand will be 1000 units for the next two years and 750 for the next three, when demand will then cease.

WM³ has a real after-tax MARR of 12% with a marginal combined tax rate of 41.3%. Should this project be considered, if budget funds can be made available?