A: Which is a better measure of the economics of welding, the way welds are currently charged or Amy Miller's proposed method?

b. What assumption is Amy Miller building into her proposed method?

c. Would Amy Miller's proposal increase the company's income, or would it only decrease the stated cost per frame?

Assume that all welds are of the same length and depth, requiring the same amount of welding time each.

The following statement illustrates the computation of the charge per weld:

Charge per weld, current Year

|  |  |  |  |
| --- | --- | --- | --- |
|  | Variable costs (72 million welds) | Fixed Costs | Total Costs |
| Depreciation |  | $6,400,000 | $6,400,000 |
| Welding rods | $ 700,000 |  | 700,000 |
| Engineering services | 300,000 | 200,000 | 500,000 |
| Electricity | 180,000 |  | 180,000 |
| Factory overhead | 85,000 | 55,000 | 140,000 |
| Total | $1,265,000 | $6,655,000 | $7920,000 |
| ÷Expected number of welds | 72,000,000 | 72,000,000 | 72,000,000 |
| Cost per weld | $0.0176 | $0.0924 | $0.1100 |

Depreciation per year=4 robots\* $8 million per robot /5-year life.

Scope: The frame- welding department of a large automotive company welds car frames as they pass down the assembly line. Four computer controlled robots make the weld each frame simultaneously. When installed last year, each robot was expected to have a five-year useful life before becoming obsolete and replaced by newer , faster models with more advanced electronics. Over its life, each robot is expected to make 100 millions welds. The robot cost $8M a piece and have no salvage value at the end of their useful lives after the cost of dismantling and removing them is take into consideration.

The firm has a traditional absorption costing system that costs each frame. The accounting system supports decision making and control. Straight line depreciation is used for both internal and external reporting and accelerated depreciation is used for taxes. As frames moves through the welding stations, they are charged based on the number of welds made on each frames. Different car frames require different numbers of welds, with some frame models requiring up to 1000 welds. Welds cos $0.11 each. This charge is set at the beginning of the year by estimating the fixed and variable costs in the welding department. Accounting determines the expected number of welds projected for the year by taking the projected welding costs to the expected number of welds. Seventy two million welds were projected for the current year.

This is the remark from Amy Miller, the manager of the body fabricating division (which includes welding department)

“I know we use straight line depreciation to calculate the depreciation component of the cost per weld now. But it would seem to make a lot of sense to compute robot depreciation using units-of –production depreciation. Each robot cost $8M and was expected to perform 100million welds over its useful life. That comes to 8 cents per weld. Thus, we should charge each weld at 8 cents plus the remaining fixed and variable costs as calculated on this statement. If I back out the $6.4 million depreciation from the above figures and recomputed the fixed costs per weld at 72 million welds. I get $255,000 divided by 72 million, or $0.00354. Add this to the variable cost per weld of $0.0176 plus the 8 cent depreciation and our cost per weld is $0.1011 per weld, not the 11 cent now. This reduces our costs on our complicated frames by as much as $10.

The real advantage of using units – of production depreciation, in my opinion is that depreciation becomes a variable cost. This has real advantages because when you lower your fixed costs, your breakeven point is lower. Operating leverage is lower, and thus the company’s overall risk is reduced. I think we should go to the plant controller and see if we can convince him to use a more realistic basis for calculating the depreciation costs of the robots.