Countering the Reappearance of Old-School Views on Product Design

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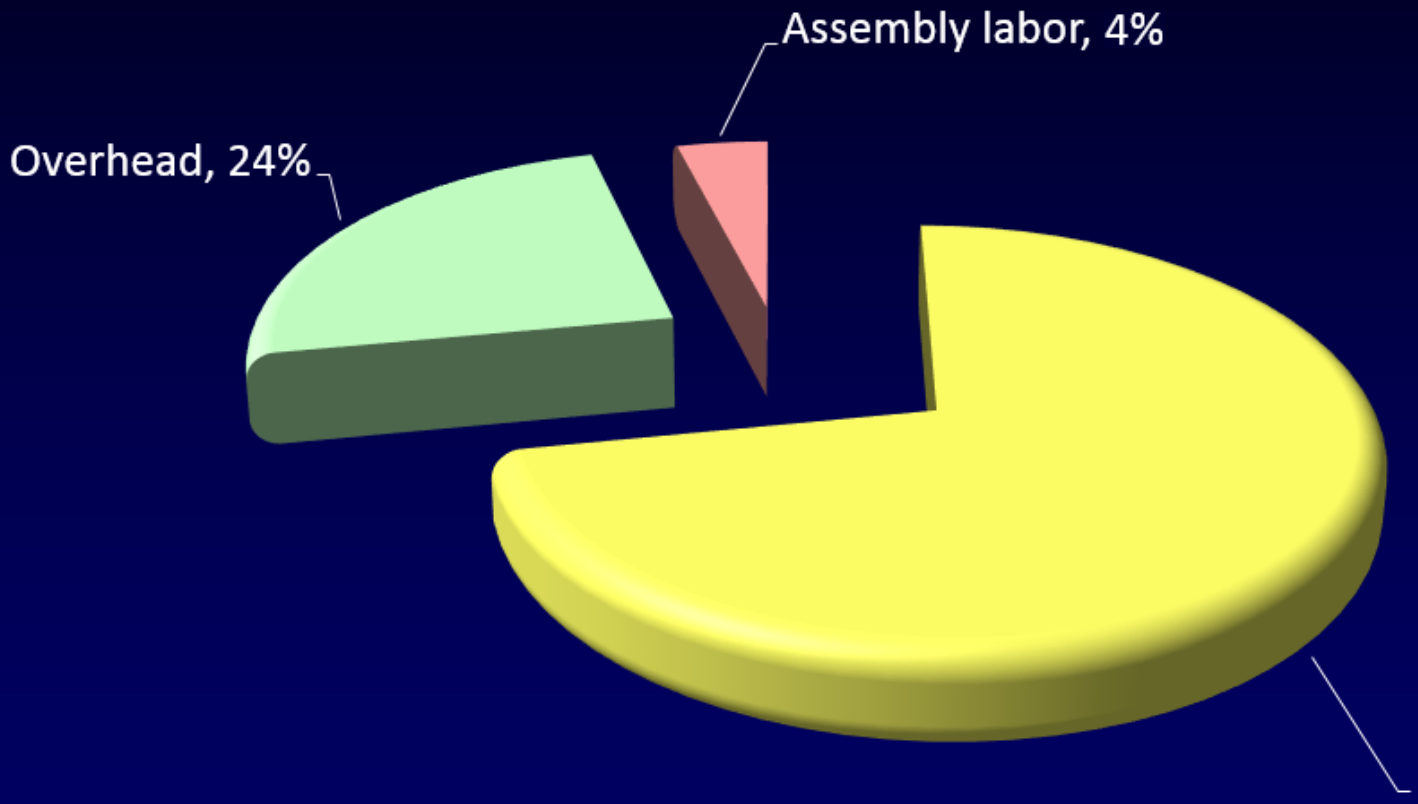
Typical product cost breakdown



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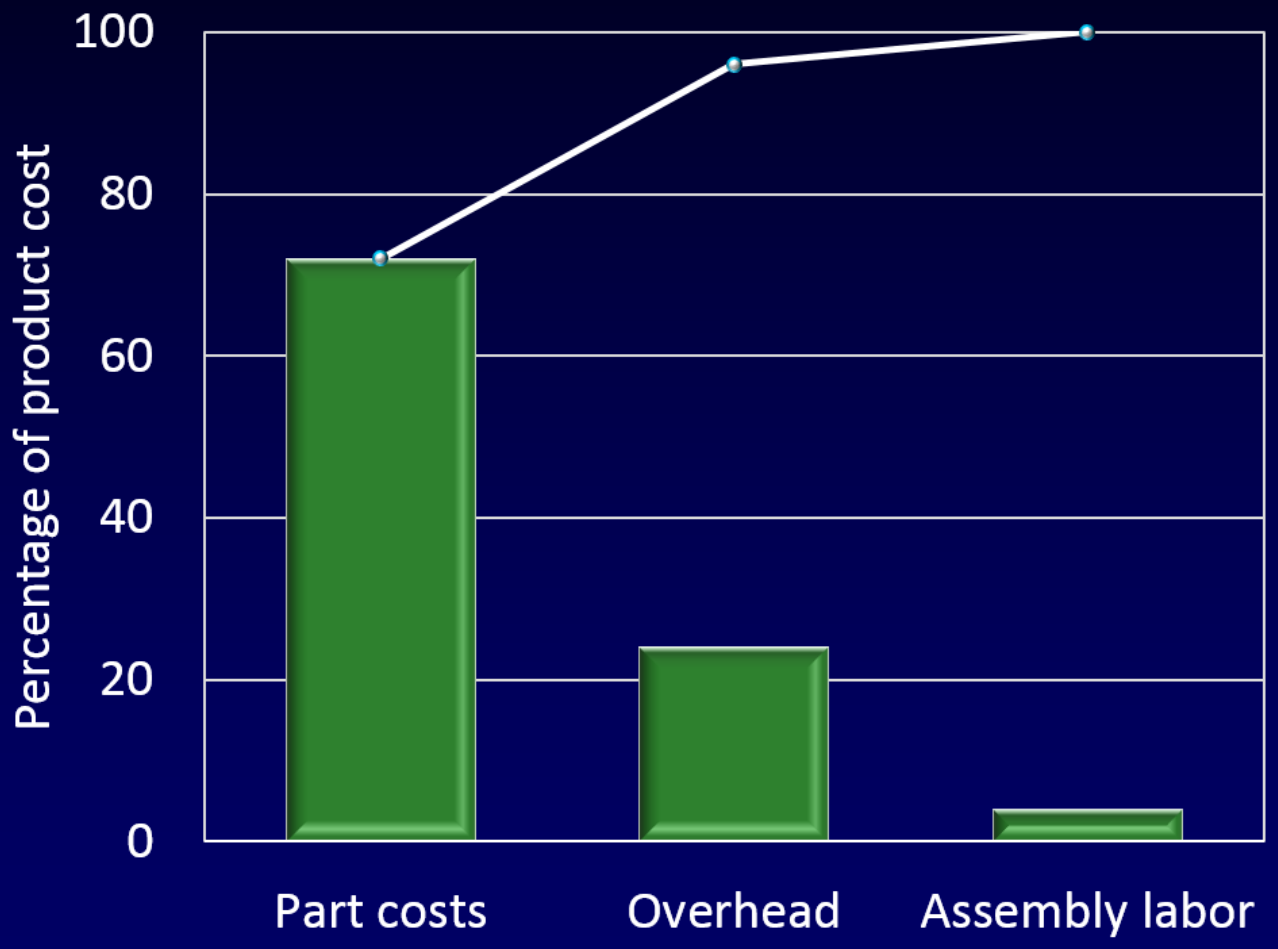

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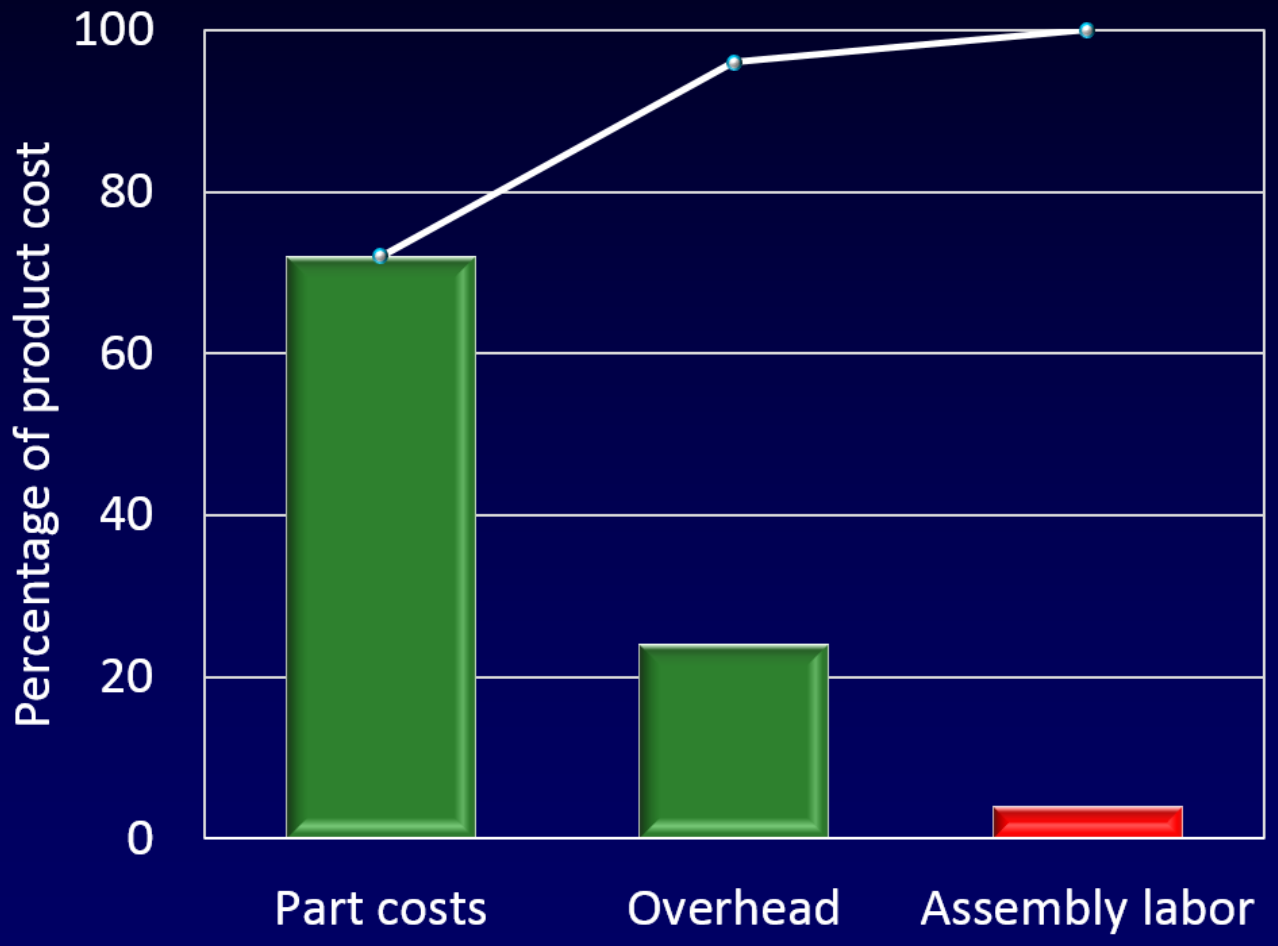

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Timeline

- 1950s - 1970s – Design methods focus on cost of parts
- 1980s - Present – Design for Assembly method focuses on assembly labor
- Present – Reappearance of design methods that focus on cost of parts

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Evidence of a reappearance

1950s thinking

- Idea promoted by consulting and S/W companies
- University level DFM coursework
- Potential DFMA users - want to reduce cost of parts
- Current users - projects focus on parts cost

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Design for Assembly is not to reduce the cost of assembly labor

- Assembly labor is guide to more cost effective product
- Reduce assembly labor by combining together single function parts
- Fewer parts means lower cost
- Each part works hard by serving multiple functions
- No lazy parts in a cost effective product

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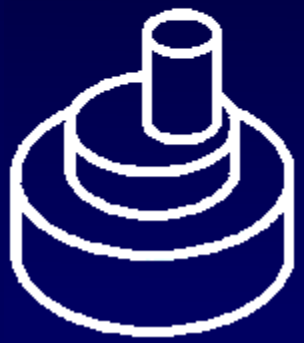
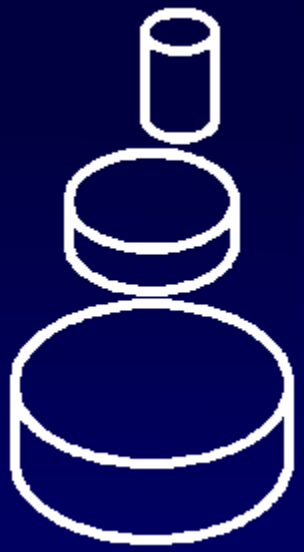
2 for 1 Part Design

The substitution of a small number of simple shapes to provide a function rather than a single complex shape.



Single Piece



Multiple Pieces

Source: GE Manufacturing Producibility Handbook - 1960

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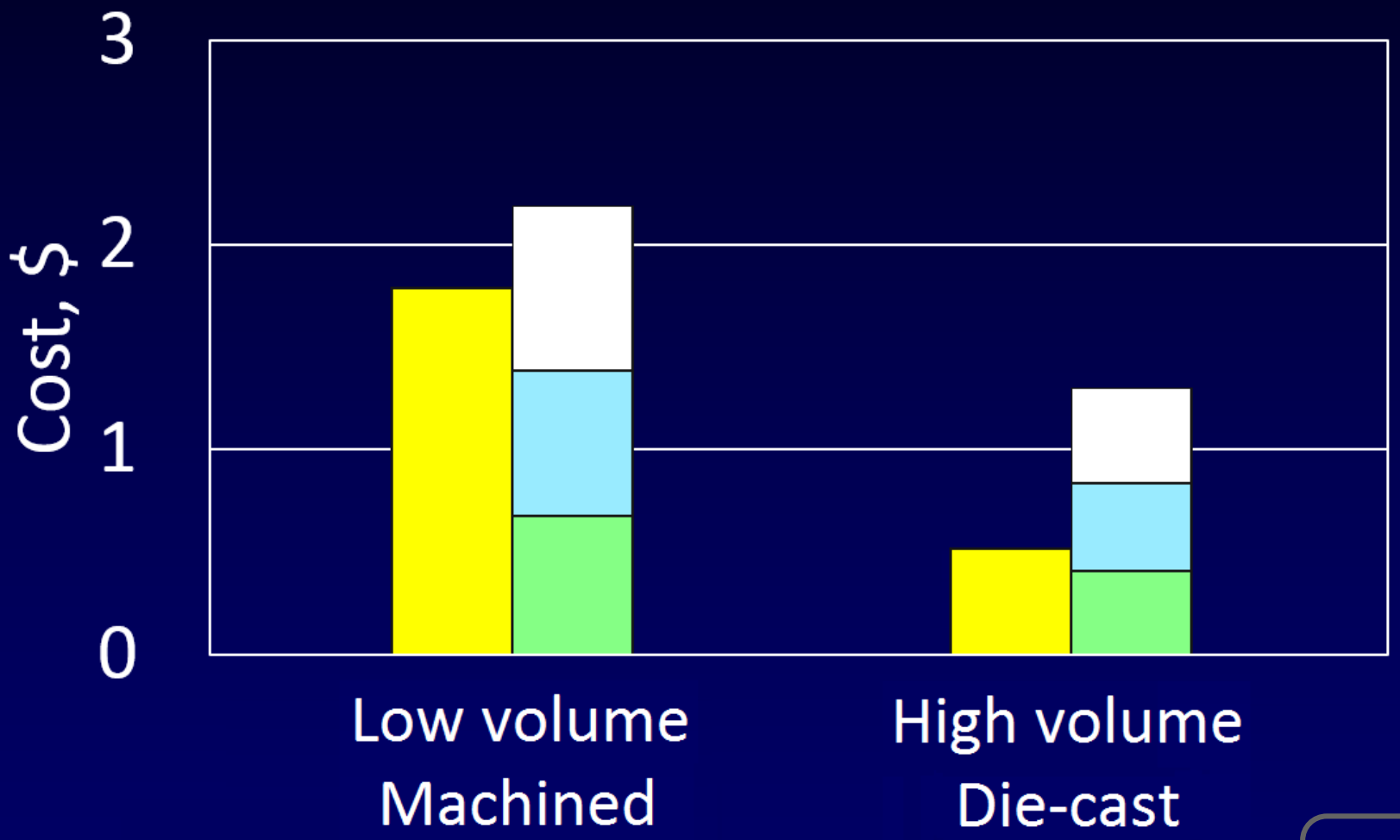
Part manufacturing cost



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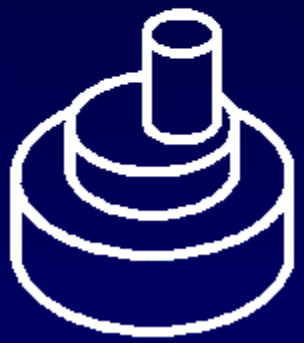

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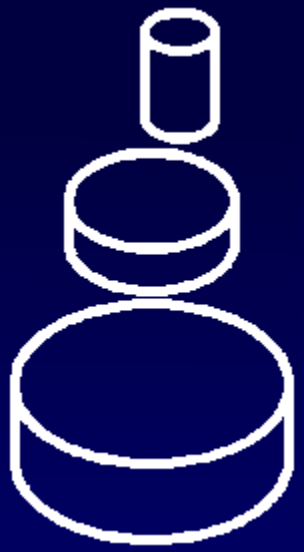

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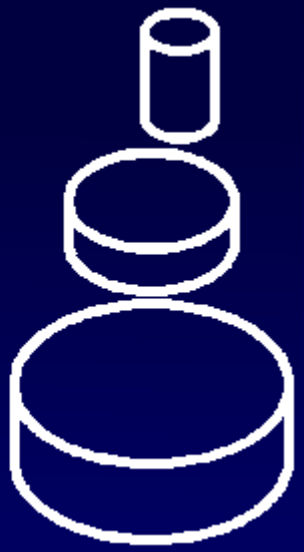

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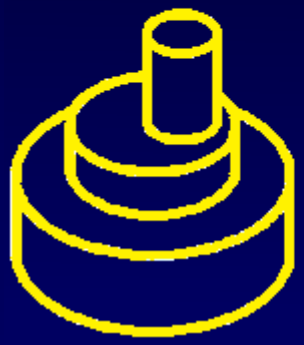

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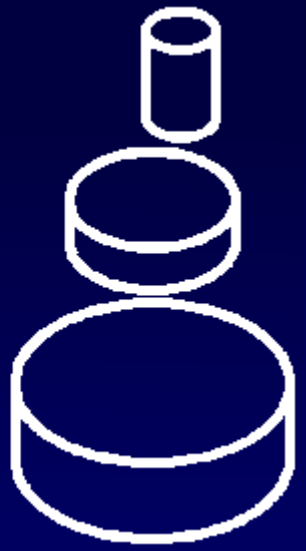

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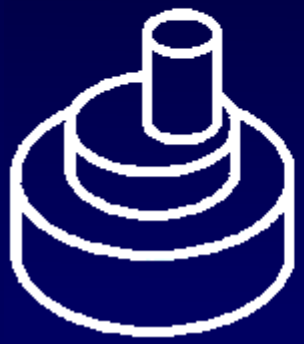

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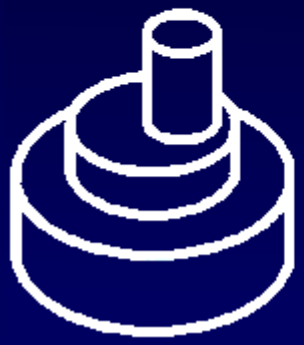

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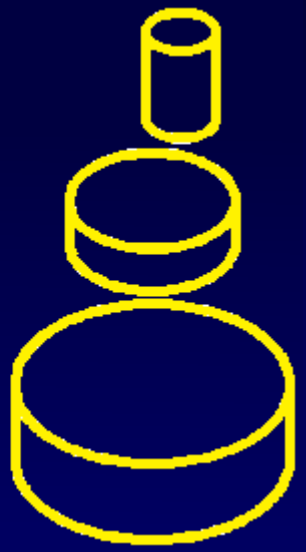

Multiple Pieces

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Rear lamp for heavy equipment

Original design

Total cost approximately 88 dollars

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Rear lamp for heavy equipment

Cost reduced redesign

Total cost approximately 42 dollars

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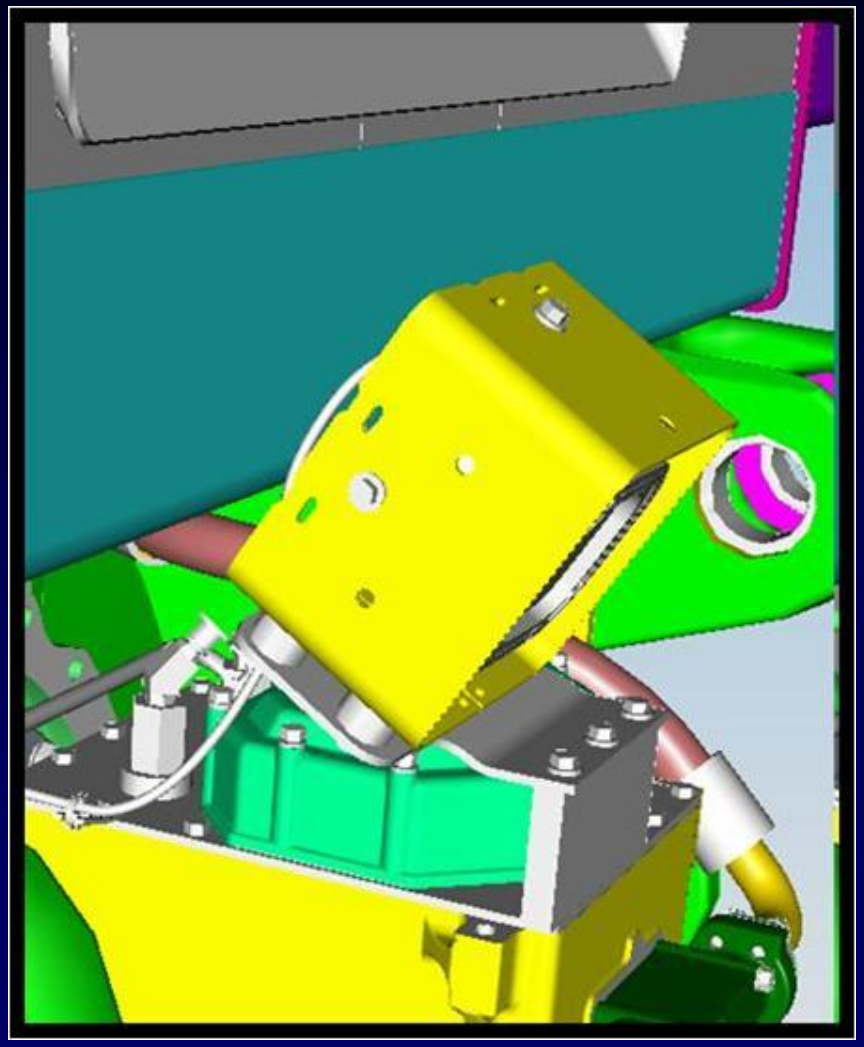
Location of lamp on equipment



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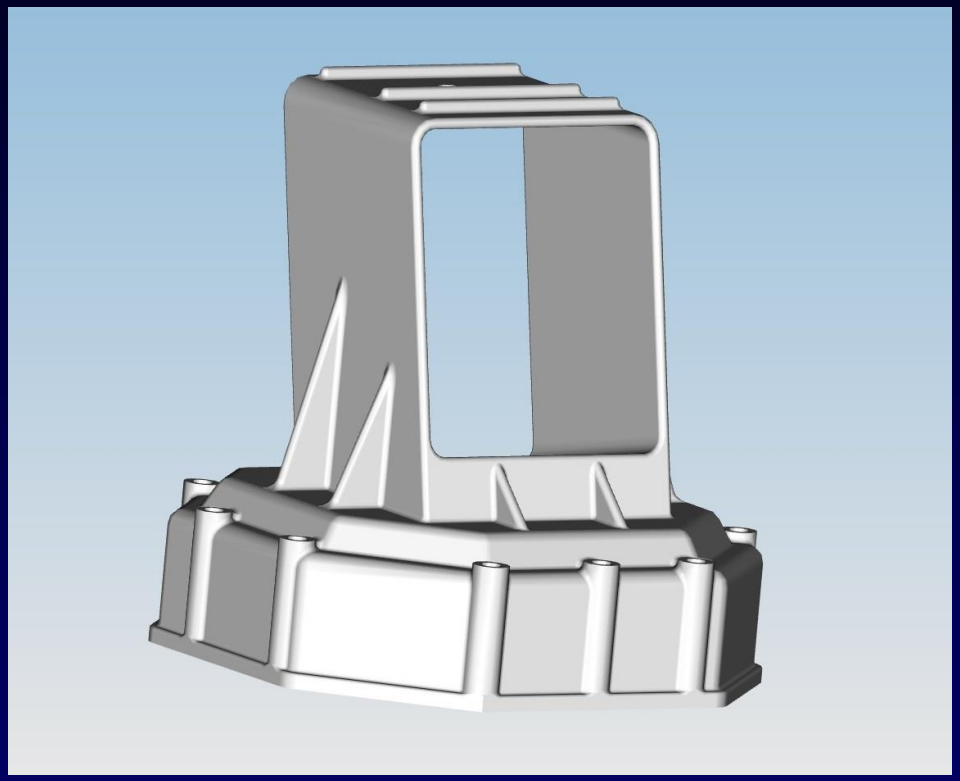
Rear lamp for heavy equipment

DFA redesign



Total cost approximately 48 dollars

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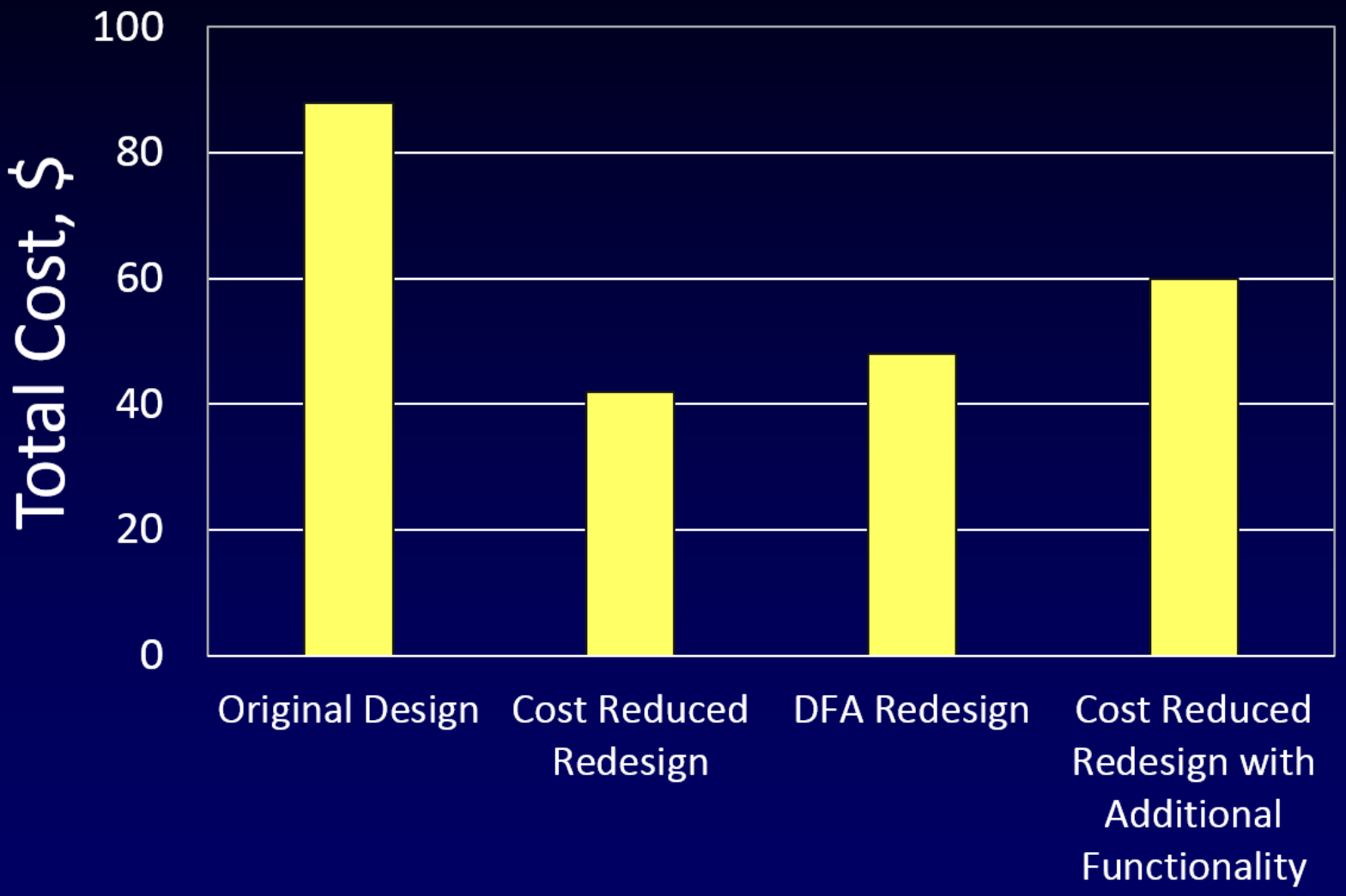
DFA redesign presented to company

- Lighting designer reluctant to change because cost of casting
- Lighting designer thought it was less expensive to add additional functionality to cost reduced redesign
- After disclosure of cost estimates, manager interested in DFA redesign

Total cost for each design



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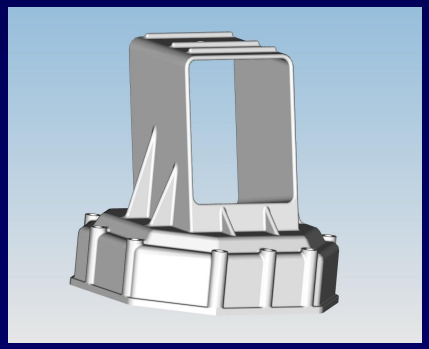
Where you focus affects what you get

Individual part costs

Assembly labor



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