One Piece Flow

The Buggy Factory

The Buggy Factory Inc.

You own The Buggy Factory, and you want to compete vs Toyota

You have a factory with 3 operators.

The buggy car includes the driver and requires to be assembled.

You have two options to assembly the car: One-piece Flow or Batch production

Which manufacturing method should you implement?

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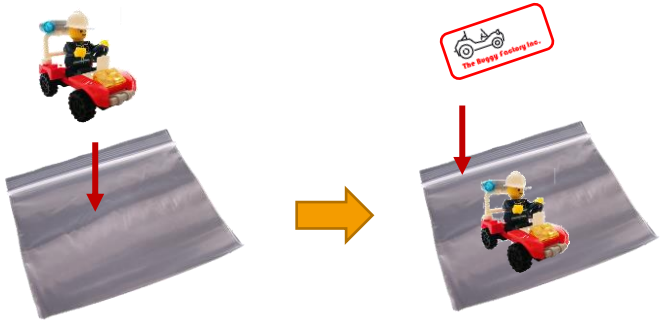
Production Line – Batch Production

1o units



WIP Storage

WIP Storage

FG Storage

One Buggy in Bag	Label bag	Make box	Put Buggy in	Close box,	Send to warehouse
1o units	1o units	1o units	1o units	1o units	1o units

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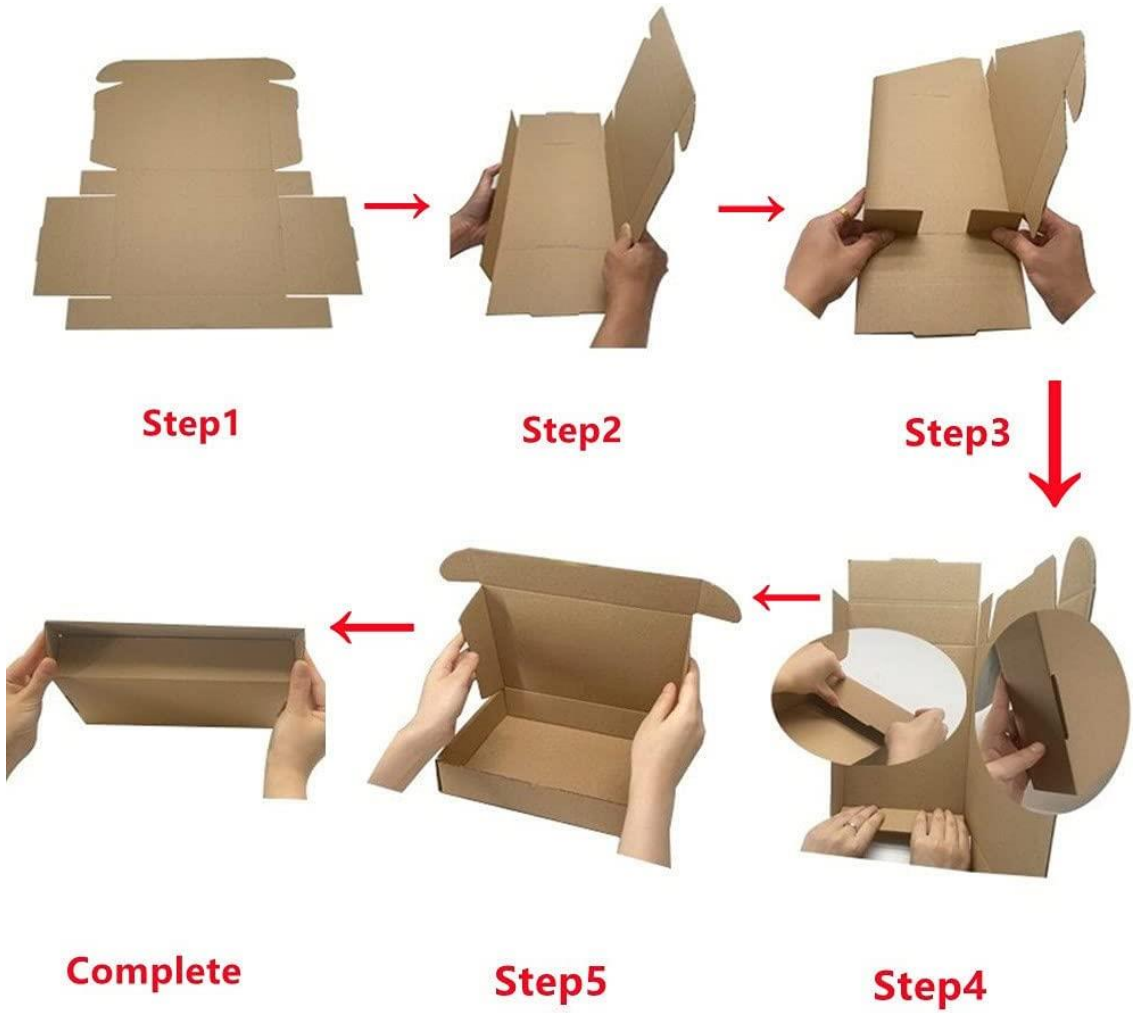

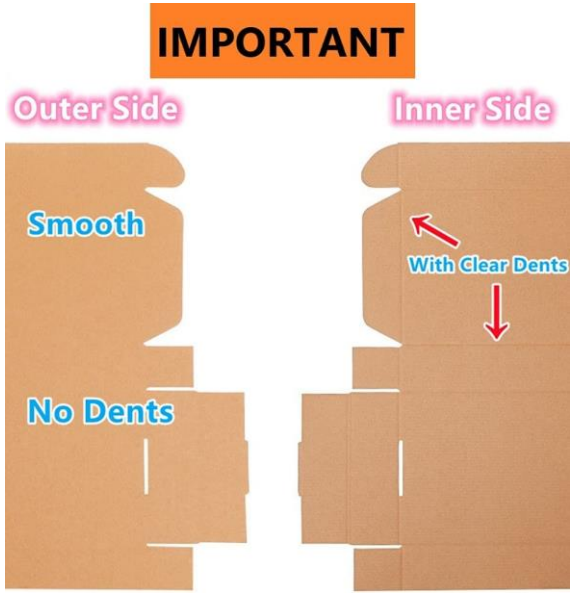

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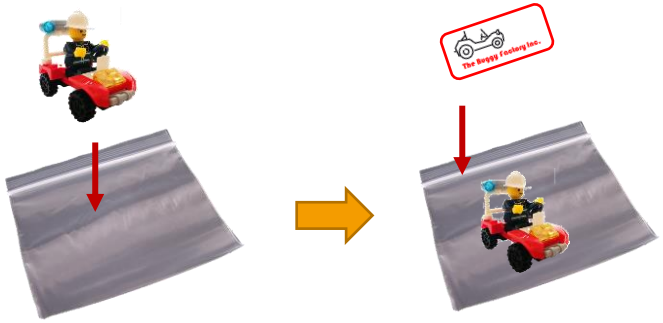
Production Line – One-Piece Flow

1o units



One Buggy in Bag
1 unit

Label bag
1 unit

Make box
1 unit

Put Buggy in
1 unit

Close box,
1 unit

Send to warehouse
1 unit

FG
Storage

The Buggy Factory Inc.

The Buggy Factory Inc.

Batch Production or One-piece Flow ?

- Which production line was more productive ?
- Why ?
- What are the advantages ?
- What may be the disadvantages ?
- Which line could be “the best” operation ?

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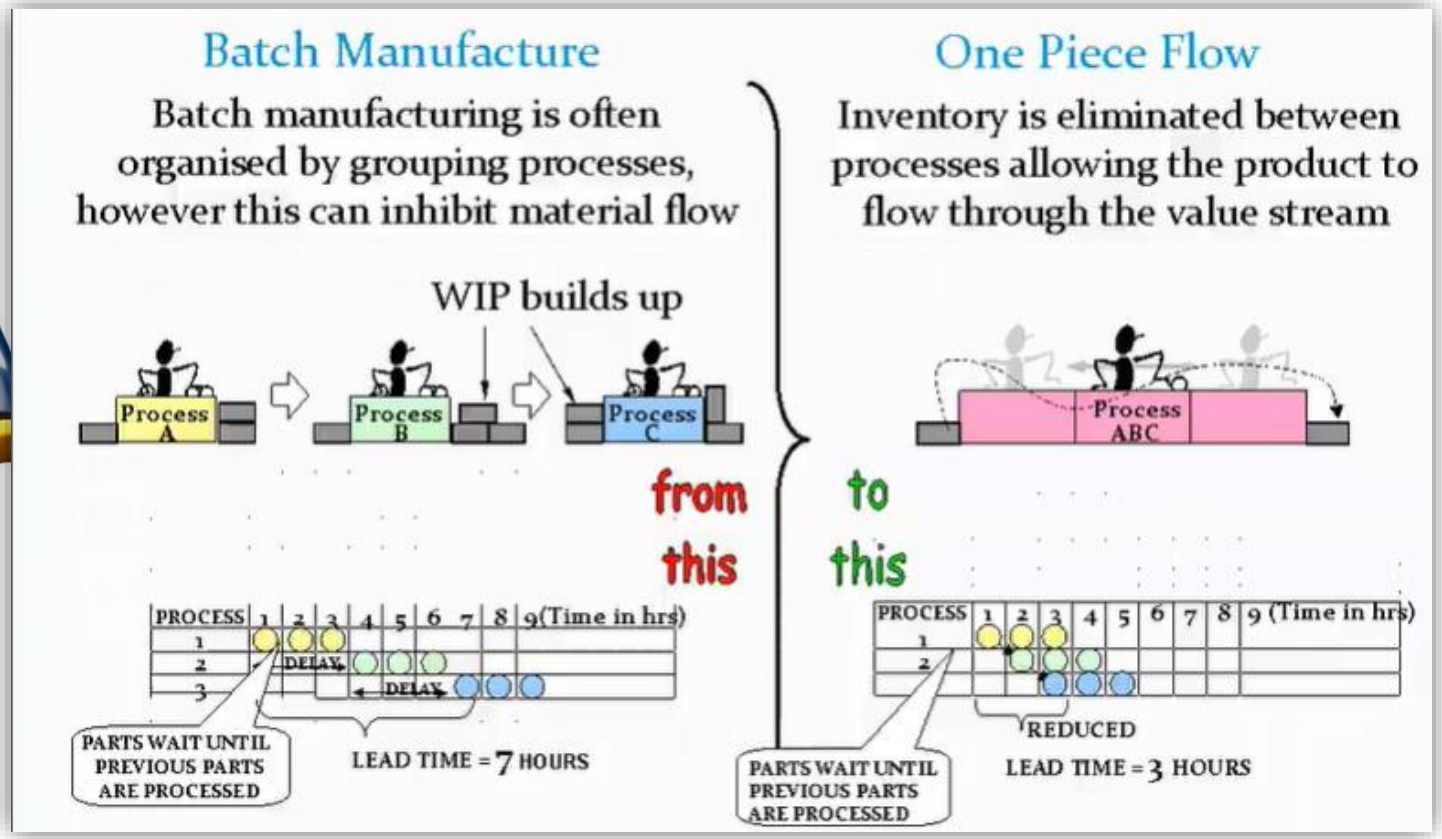
Batch Production or One-piece Flow ?



Batch Process

Method of production that builds one batch at a time (regardless of batch size) in each build location before it can move on to the next

Pros

- **Attention To Detail**. Employees are skilled at their workstation, and mastery of their skill produces a quality product.
- **Better visibility** of the product in every work location, allowing for more accurate scheduling and forecasting.

Cons

- **Time consuming process**. Because every batch must be fully completed before being passed to the next stage.
- Requires **space** for inventory (WIP), it becomes difficult to complete those orders on time.
- Quality control at every stage creates **downtime.**
- Errors with the batch incur in **larger amount of rework.**

One Piece Flow Process

Method of production that moves product along the stages of manufacturing once a single piece is complete, regardless of that piece's relation to a batch or not.

Pros

- **Quick and efficient**. Each piece of the manufacturing line is worked on, and then moves along the process with no wait time.
- **Maintains the momentum** since the product constantly moves through the manufacturing chains. No waiting for batches to complete before working in their stage of production.
- Errors in the process incur in **minimal amount of rework**

Cons

- With **repetitive work,** employees seem to see less incentive in doing meticulous labour.
- **Less inspection** throughout the production process leads to a decrease in the quality inspection.
- **Less visibility** of the process.

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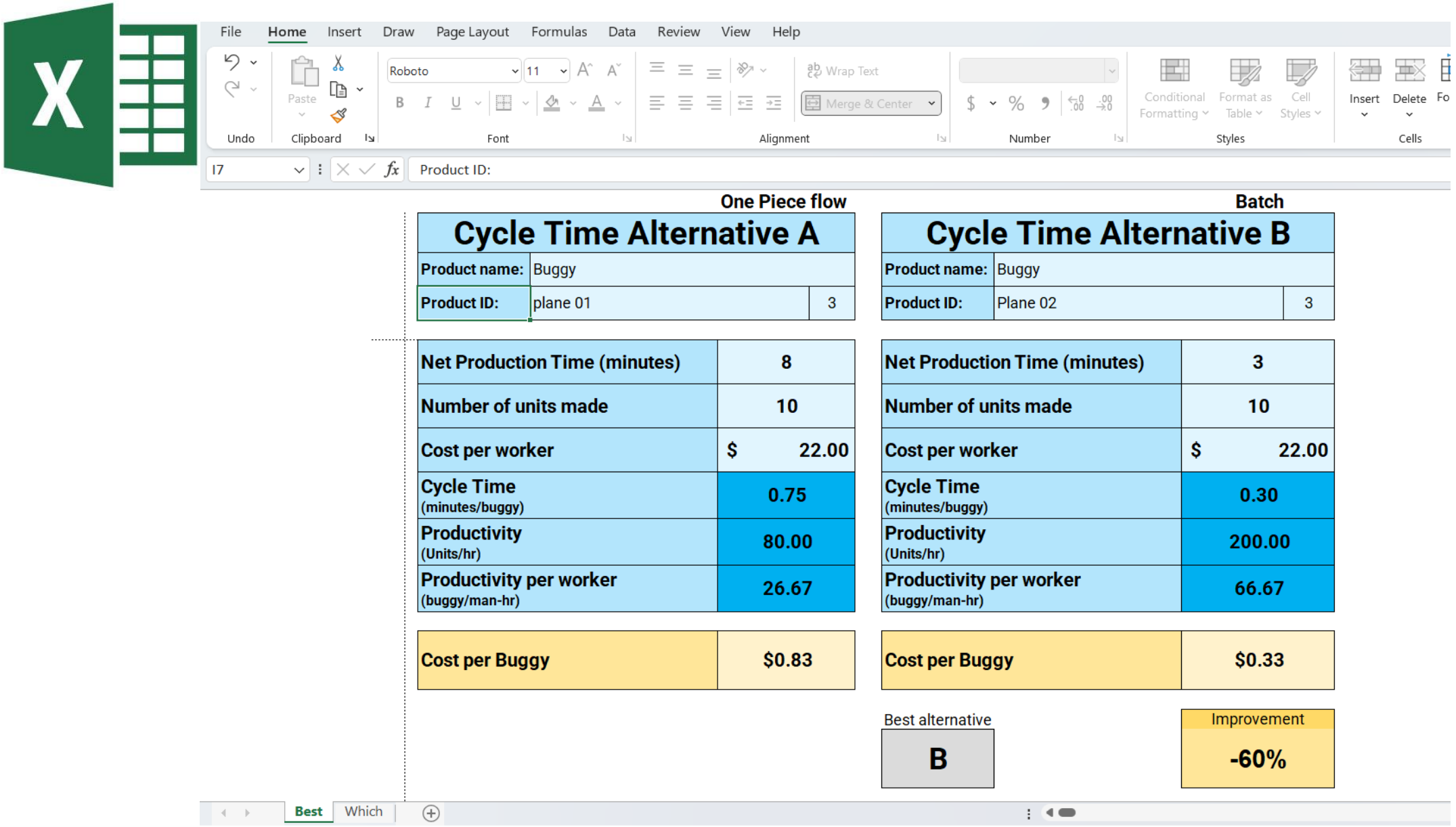
Batch Production or One-piece Flow ?

Instructions:

From the presentation question, first gather the responses from participants, keep them and compare if they changed their mind at the end of the exercise.

- One team with 4 people (operators)
- Another team with 4 more people (operators)
- Use the WIP and FG to keep all parts organized and represent the Inventory Waste
- Provide 10 buggies to each team
- Each operator assembles as per instructions (Standard Work Instructions)
- Time with chronometer: the total lead time (stop when **last** car is placed on “warehouse” (Squared cardboard provided)

1. Run the first scenario, then the next team runs the second scenario
2. Calculate how many buggies per hour were produced by the two methods
3. Discuss results. Use Workbook to illustrate results.
4. Present Batch vs One-Piece Flow concepts
5. Advantages, disadvantages
6. Discuss real applications on the production floor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Undo Clipboard Font Alignment Number Styles Cells
Roboto 11 Wrap Text Merge & Center
Conditional Formatting Format as Table Cell Styles Insert Delete
I7 Product ID:
One Piece flow
Cycle Time Alternative A
Product name: Buggy
Product ID: plane 01 3
Net Production Time (minutes) 8
Number of units made 10
Cost per worker $ 22.00
Cycle Time (minutes/buggy) 0.75
Productivity (Units/hr) 80.00
Productivity per worker (buggy/man-hr) 26.67
Cost per Buggy $0.83
Batch
Cycle Time Alternative B
Product name: Buggy
Product ID: Plane 02 3
Net Production Time (minutes) 3
Number of units made 10
Cost per worker $ 22.00
Cycle Time (minutes/buggy) 0.30
Productivity (Units/hr) 200.00
Productivity per worker (buggy/man-hr) 66.67
Cost per Buggy $0.33
Best alternative
B
Improvement
-60%
Best
Which