Processing Problem: Increasing Capacity

To meet an increase in demand from 7000 to 8500 lbs a day, we can increase the Cycle Rate of Box Packaging to 60 LOQ/Hr with a small capital investment in the machinery. Will we be able to meet the new demand?
Answer:

No, Stamp Beans becomes a bottleneck as shown on the Cycle Rate / Takt Rate chart.
Can we relieve the bottleneck at Stamp Beans if we can run the station an extra 4 hours per day?
Can we relieve the bottleneck at Stamp Beans if we can run the station an extra 4 hours per day?

Answer

Yes, it would relieve the bottleneck. A slightly reduced time would also work.

Running Stamp Beans for an additional half shift reduces the Takt Rate for the activity.
### Processing Problem: Setup Time

At the beginning of each production day, each process step undergoes a certain amount of Setup Time (consisting of cleaning, sanitization, preventive maintenance, etc.). The setup times are as follows: Make Slurry = 1 hour, Stamp Beans = 30 min., Box Packaging = 30 min.

How does this affect Capacity?

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### Time Summary

<table>
<thead>
<tr>
<th>Units</th>
<th>Week</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 day</td>
<td>15 day</td>
</tr>
</tbody>
</table>

### Muggle Factory

**Inventory**
- Supplier Lead Time: 5 Day
- LOQ = Bin
- Weight Per LOQ: 20.61 Lb
- Inventory: 200 Lb
- Inventory Requirement: 65 Lb
- Days of Inventory: 7.53 Day

**Make Slurry**
- LOQ (Local Output) = 100 Lb
- Weight Per LOQ: 20.61 Lb
- LOQ Cycle Rate: 6.2 LOQ/hr
- Process Lead Time: 50 Min
- Step Yield: 200 %
- Utilization: 79.24 %
- Stations: 1 Bin

**Stamp Beans**
- LOQ (Local Output) = 100 Lb
- Weight Per LOQ: 20.61 Lb
- LOQ Cycle Rate: 5.4 LOQ/hr
- Process Lead Time: 30 Min
- Step Yield: 95 %
- Utilization: 86.43 %
- Stations: 1 Bin

**Box Packaging**
- LOQ (Local Output) = Case
- Weight Per LOQ: 2.06 Lb
- LOQ Cycle Rate: 50 LOQ/hr
- Process Lead Time: 10 Min
- Step Yield: 100 %
- Utilization: 93.39 %
- Stations: 1 Bin

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### Truckshop Distributors

**Demand Weight**
- 1442.81 Lb

**Takt Rate**
- 96.19 Min

### Supplier Lead Time

- Make Slurry: 5 Day
- Stamp Beans: 30 min
- Box Packaging: 30 min

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### Value Added

- **LOQ Cycle Rate**
  - Make Slurry: 949 Lb/hour
  - Stamp Beans: 20 Kg/hr
  - Box Packaging: 200 Kg/hr

- **Inventory**
  - Make Slurry: 200 Lb
  - Stamp Beans: 200 Lb
  - Box Packaging: 1 Bin

- **Materials Lead Time**
  - Make Slurry: 2.06 Min
  - Stamp Beans: 50 Min
  - Box Packaging: 50 Min

- **Cycle Rate / Takt Rate Chart**
  - Effective Output Cycle Rate
  - Activity Output Takt Rate
  - EOCR

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**Legend**

- FG = Case
- LOQ = Bin
- LOQ = Case

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Processing Solution: Setup Time

At the beginning of each production day, each process step undergoes a certain amount of Setup Time (consisting of cleaning, sanitization, preventive maintenance, etc.). The setup times are as follows: Make Slurry = 1 hour, Stamp Beans = 30 min., Box Packaging = 30 min.

How does this affect Capacity?

**Answer**

Setup time reduces the Effective Output Cycle Rate. This is shown on the Cycle Rate / Takt Rate chart.

Setup Rate Loss = (Setup Time / Available Time) * Cycle Rate
Processing Problem: Scrap and Giveaway

Stamp Beans has a Scrap Rate of 10% and Box Packaging has a Giveaway Rate of 3%. Is the process still capable of meeting demand? How much additional Slurry will be needed per day?

Amount of Slurry needed is about 7400 pounds a day (Required Output Weight for Make Slurry)

Make Slurry

- LOQ (Local Output) = 100 Lb
- Weight Per LOQ: 20.61 Lb
- LOQ Cycle Time: 50 Min
- Process Lead Time: 50 Min
- Step Yield: 200 %
- Utilization: 79.24 %
- Stations: 1 Sln

Stamp Beans

- LOQ (Local Output) = 100 Lb
- Weight Per LOQ: 20.61 Lb
- LOQ Cycle Time: 54 Min
- Process Lead Time: 30 Min
- Step Yield: 95 %
- Utilization: 86.43 %
- Stations: 1 Sln

Box Packaging

- LOQ (Local Output) = Case
- Weight Per LOQ: 2.06 Kg
- LOQ Cycle Time: 50 Min
- Process Lead Time: 10 Min
- Step Yield: 100 %
- Utilization: 93.39 %
- Stations: 1 Sln

Capacity Chart (By weight)

Cycle Rate / Takt Rate Chart

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Processing Solution: Scrap and Giveaway

Stamp Beans has a Scrap Rate of 10% and Box Packaging has a Giveaway Rate of 3%. Is the process still capable of meeting demand? How much additional Slurry will be needed per day?

Answer

Yes, but just barely. Should there be any unplanned downtime, demand will likely not be met. Approximately 1000 additional pounds of Slurry will be needed a day (8400 – 7400 lbs).

Amount of Slurry needed is now about 8400 pounds a day (Required Output Weight for Make Slurry)

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