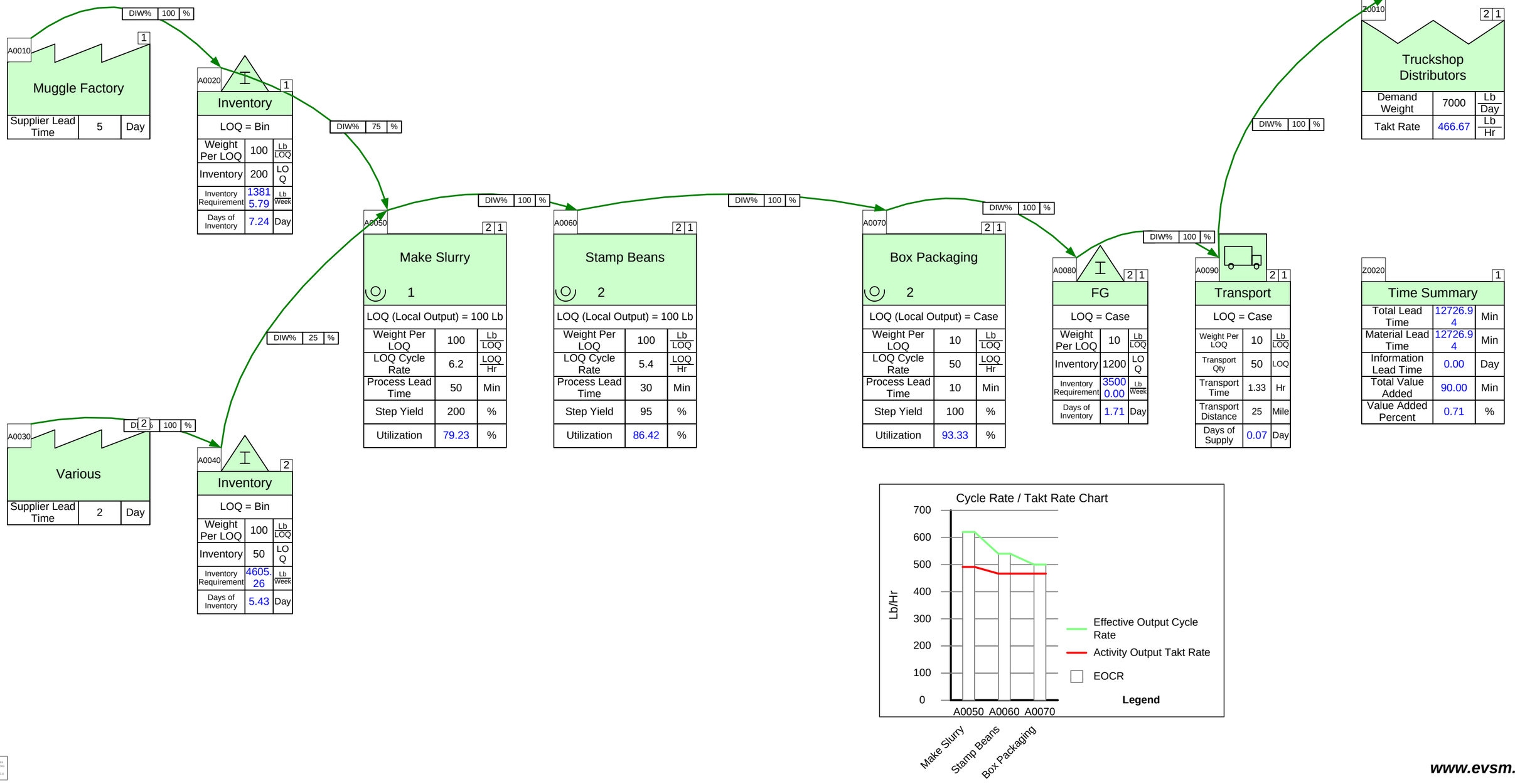
# Processing Problem: Increasing Capacity

***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?***

| Day | Week |
|---|---|
| 15 | 5 |
| Hr | Day |



# Processing Solution: Increasing Capacity

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| Day | Week |
|---|---|
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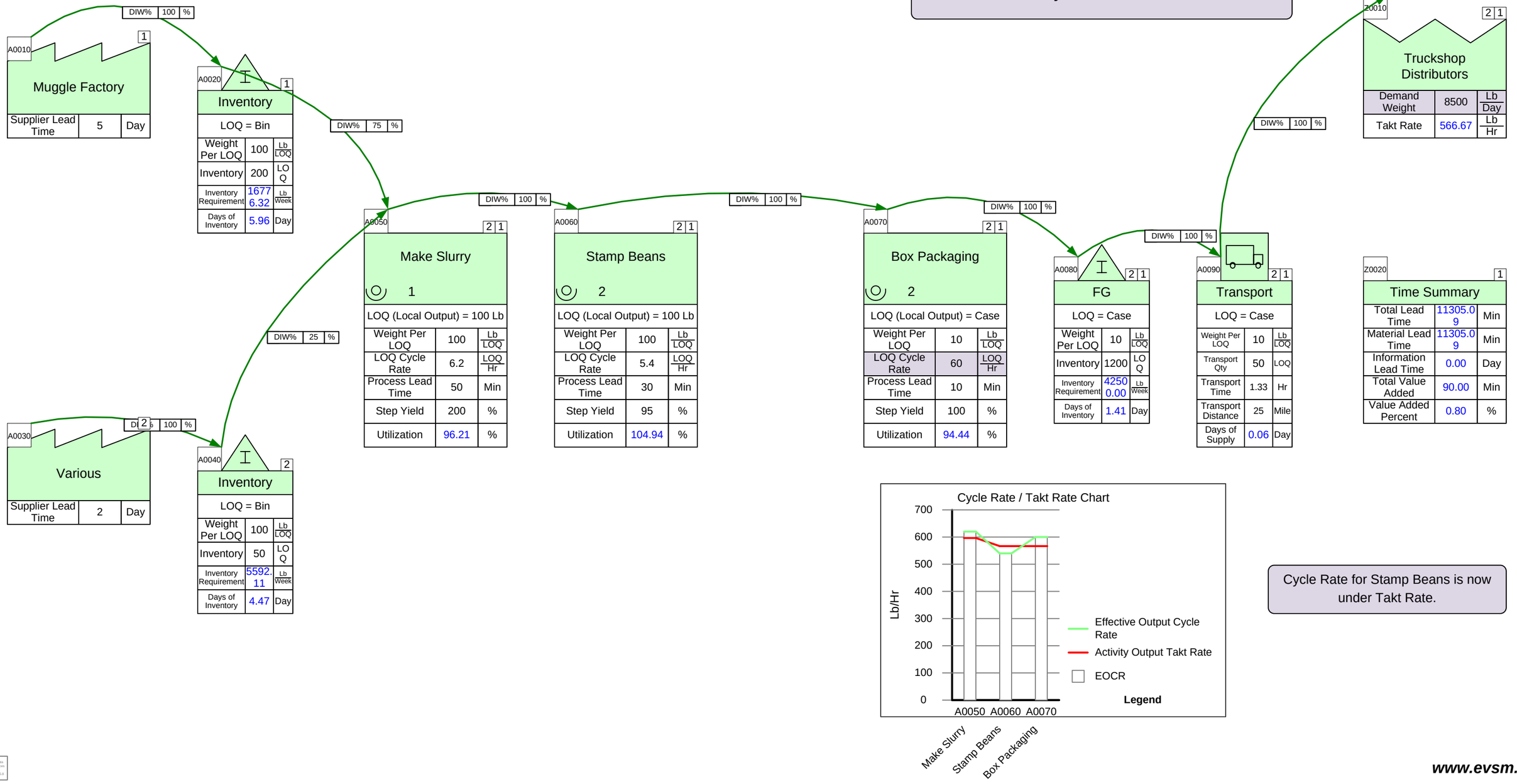
## Answer:

No, Stamp Beans becomes a bottleneck as shown on the Cycle Rate / Takt Rate chart.







Cycle Rate for Stamp Beans is now under Takt Rate.

# Processing Problem: Relieving Bottlenecks

***Can we relieve the bottleneck at Stamp Beans if we can run the station an extra 4 hours per day?***

| Day | Week |
|---|---|
| 15 | 5 |
| Hr | Day |

A0010 — Muggle Factory — 1

| Supplier Lead Time | 5 | Day |
|---|---|---|

DIW% 100 %

A0020 — Inventory — 1

| LOQ = Bin | | |
|---|---|---|
| Weight Per LOQ | 100 | Lb / LOQ |
| Inventory | 200 | LOQ |
| Inventory Requirement | 1677 6.32 | Lb / Week |
| Days of Inventory | 5.96 | Day |

DIW% 75 %

A0050 — Make Slurry — 2 1

| LOQ (Local Output) = 100 Lb | | |
|---|---|---|
| Weight Per LOQ | 100 | Lb / LOQ |
| LOQ Cycle Rate | 6.2 | LOQ / Hr |
| Process Lead Time | 50 | Min |
| Step Yield | 200 | % |
| Utilization | 96.21 | % |

DIW% 100 %

A0060 — Stamp Beans — 2 1

| LOQ (Local Output) = 100 Lb | | |
|---|---|---|
| Weight Per LOQ | 100 | Lb / LOQ |
| LOQ Cycle Rate | 5.4 | LOQ / Hr |
| Process Lead Time | 30 | Min |
| Step Yield | 95 | % |
| Utilization | 104.94 | % |

DIW% 100 %

A0070 — Box Packaging — 2 1

| LOQ (Local Output) = Case | | |
|---|---|---|
| Weight Per LOQ | 10 | Lb / LOQ |
| LOQ Cycle Rate | 60 | LOQ / Hr |
| Process Lead Time | 10 | Min |
| Step Yield | 100 | % |
| Utilization | 94.44 | % |

DIW% 100 %

A0080 — FG — 2 1

| LOQ = Case | | |
|---|---|---|
| Weight Per LOQ | 10 | Lb / LOQ |
| Inventory | 1200 | LOQ |
| Inventory Requirement | 4250 0.00 | Lb / Week |
| Days of Inventory | 1.41 | Day |

DIW% 100 %

A0090 — Transport — 2 1

| LOQ = Case | | |
|---|---|---|
| Weight Per LOQ | 10 | Lb / LOQ |
| Transport Qty | 50 | LOQ |
| Transport Time | 1.33 | Hr |
| Transport Distance | 25 | Mile |
| Days of Supply | 0.06 | Day |

DIW% 100 %

Z0010 — Truckshop Distributors — 2 1

| Demand Weight | 8500 | Lb / Day |
|---|---|---|
| Takt Rate | 566.67 | Lb / Hr |

Z0020 — Time Summary — 1

| Time Summary | | |
|---|---|---|
| Total Lead Time | 11305.09 | Min |
| Material Lead Time | 11305.09 | Min |
| Information Lead Time | 0.00 | Day |
| Total Value Added | 90.00 | Min |
| Value Added Percent | 0.80 | % |

DIW% 25 %

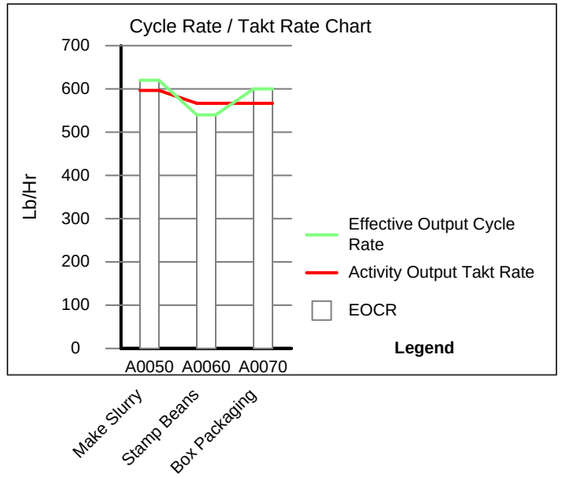
A0030 — Various — 2

| Supplier Lead Time | 2 | Day |
|---|---|---|

DIW% 100 %

A0040 — Inventory — 2

| LOQ = Bin | | |
|---|---|---|
| Weight Per LOQ | 100 | Lb / LOQ |
| Inventory | 50 | LOQ |
| Inventory Requirement | 5592.11 | Lb / Week |
| Days of Inventory | 4.47 | Day |



# Processing Solution: Relieving Bottlenecks

***Can we relieve the bottleneck at Stamp Beans if we can run the station an extra 4 hours per day?***

| Day | Week |
|---|---|
| 15 | 5 |
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A0010 — Muggle Factory

| Supplier Lead Time | 5 | Day |
|---|---|---|

DIW% 100 %

A0020 — Inventory

LOQ = Bin

| | | |
|---|---|---|
| Weight Per LOQ | 100 | Lb / LOQ |
| Inventory | 200 | LOQ |
| Inventory Requirement | 1677<br>6.32 | Lb / Week |
| Days of Inventory | 5.96 | Day |

DIW% 75 %

A0030 — Various

| Supplier Lead Time | 2 | Day |
|---|---|---|

DIW% 100 %

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LOQ = Bin

| | | |
|---|---|---|
| Weight Per LOQ | 100 | Lb / LOQ |
| Inventory | 50 | LOQ |
| Inventory Requirement | 5592.11 | Lb / Week |
| Days of Inventory | 4.47 | Day |

DIW% 25 %

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LOQ (Local Output) = 100 Lb

| | | |
|---|---|---|
| Weight Per LOQ | 100 | Lb / LOQ |
| LOQ Cycle Rate | 6.2 | LOQ / Hr |
| Process Lead Time | 50 | Min |
| Step Yield | 200 | % |
| Utilization | 96.21 | % |

DIW% 100 %

A0060 — Stamp Beans — 2

LOQ (Local Output) = 100 Lb

| | | |
|---|---|---|
| Weight Per LOQ | 100 | Lb / LOQ |
| LOQ Cycle Rate | 5.4 | LOQ / Hr |
| Process Lead Time | 30 | Min |
| Step Yield | 95 | % |
| Utilization | 82.85 | % |
| Available Time | 19 | Hr / Day |

DIW% 100 %

A0070 — Box Packaging — 2

LOQ (Local Output) = Case

| | | |
|---|---|---|
| Weight Per LOQ | 10 | Lb / LOQ |
| LOQ Cycle Rate | 60 | LOQ / Hr |
| Process Lead Time | 10 | Min |
| Step Yield | 100 | % |
| Utilization | 94.44 | % |

DIW% 100 %

A0080 — FG

LOQ = Case

| | | |
|---|---|---|
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DIW% 100 %

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DIW% 100 %

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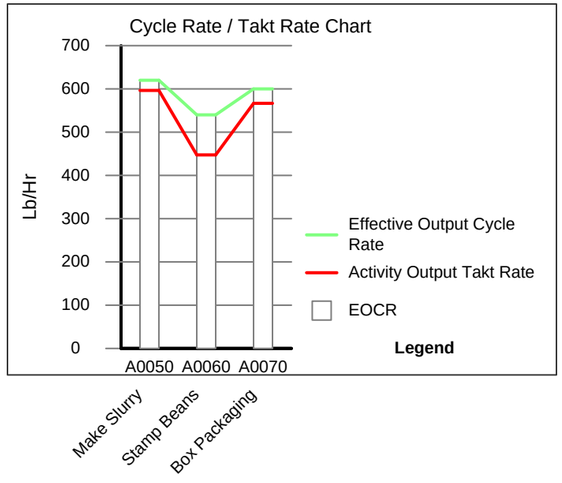
| Material Lead Time | 11305.09 | Min |
| Information Lead Time | 0.00 | Day |
| Total Value Added | 90.00 | Min |
| Value Added Percent | 0.80 | % |

## 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?***

| Day | Week |
|---|---|
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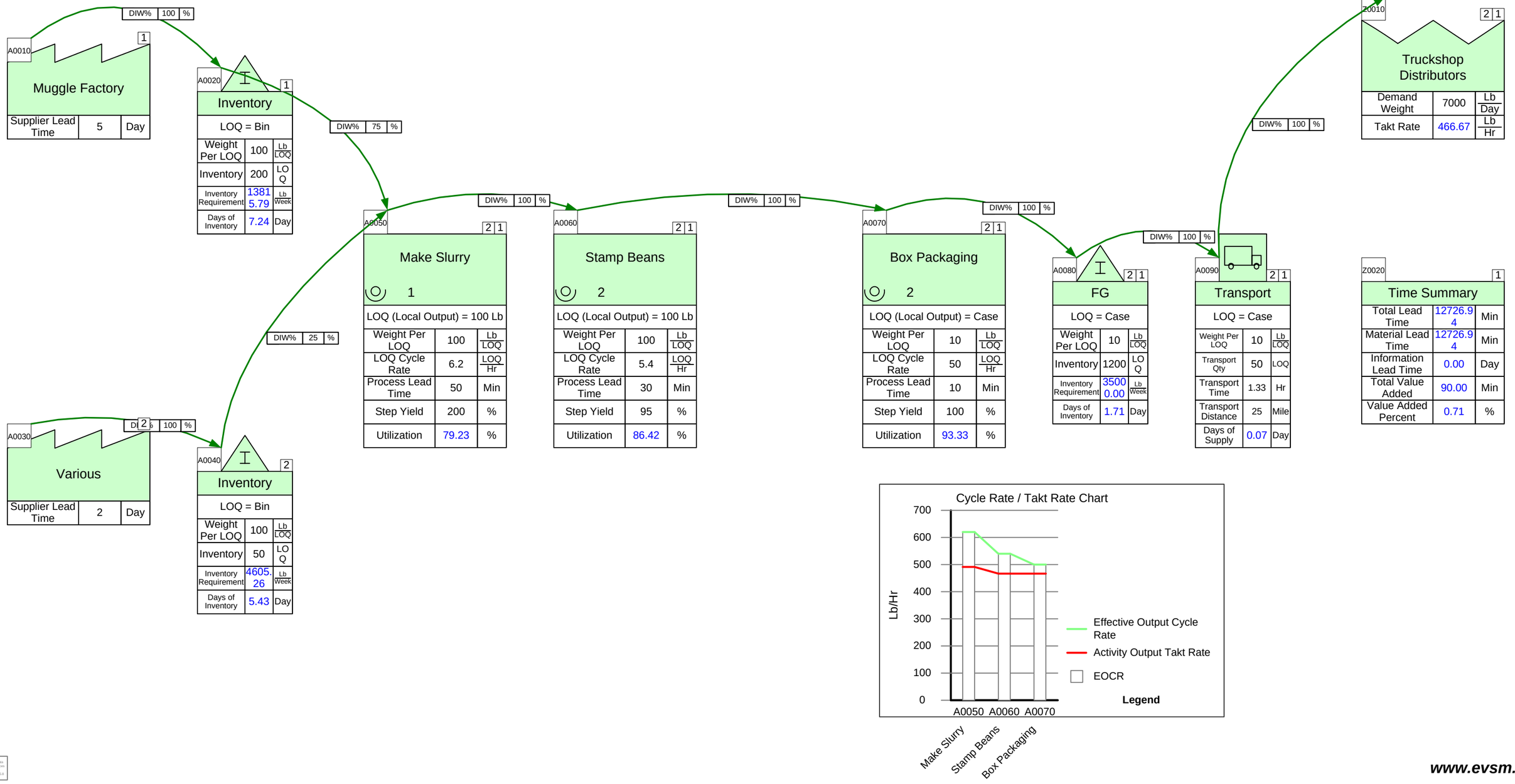

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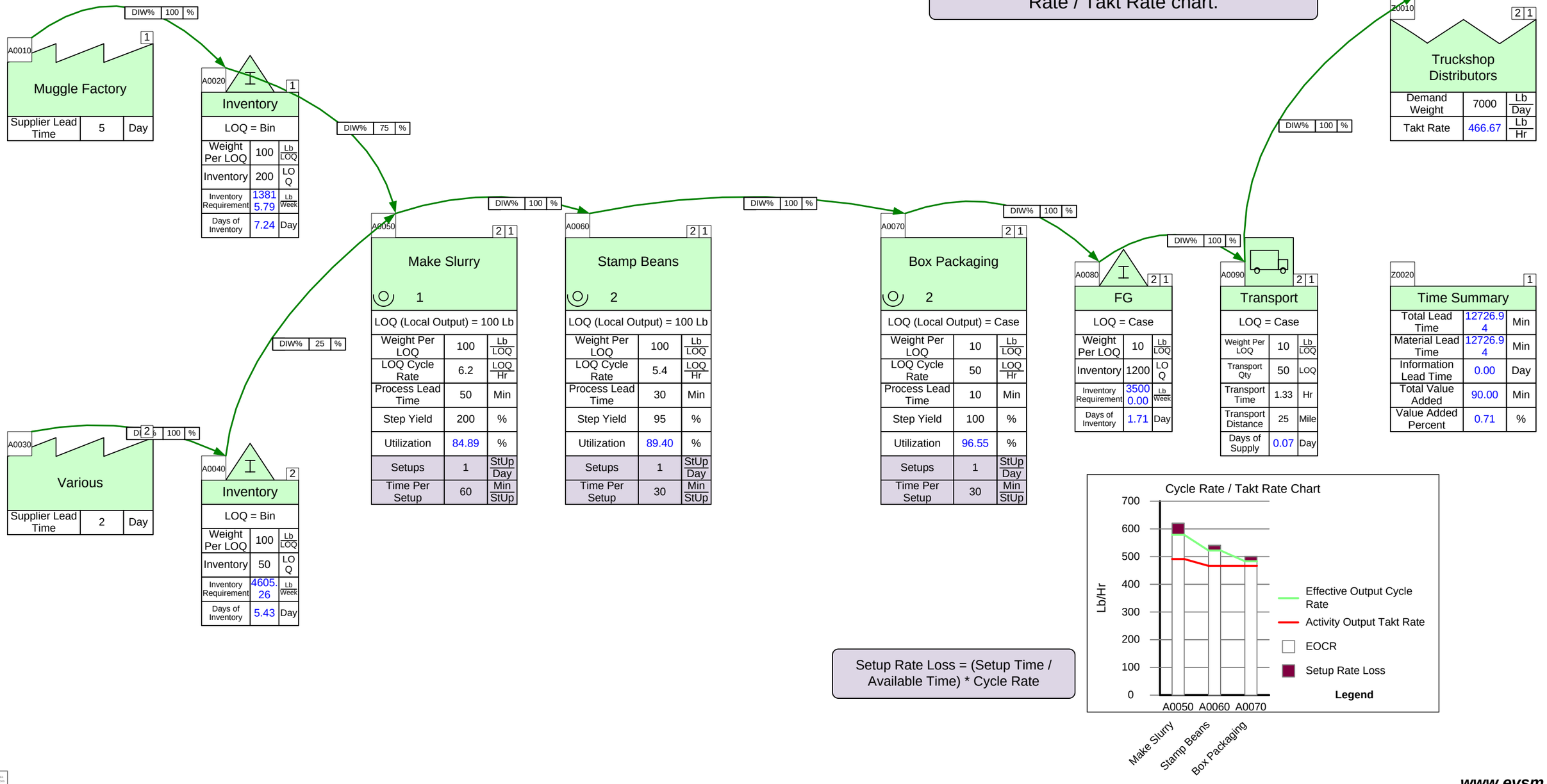
|---|---|
| 15 | 5 |
| Hr | Day |




## Answer

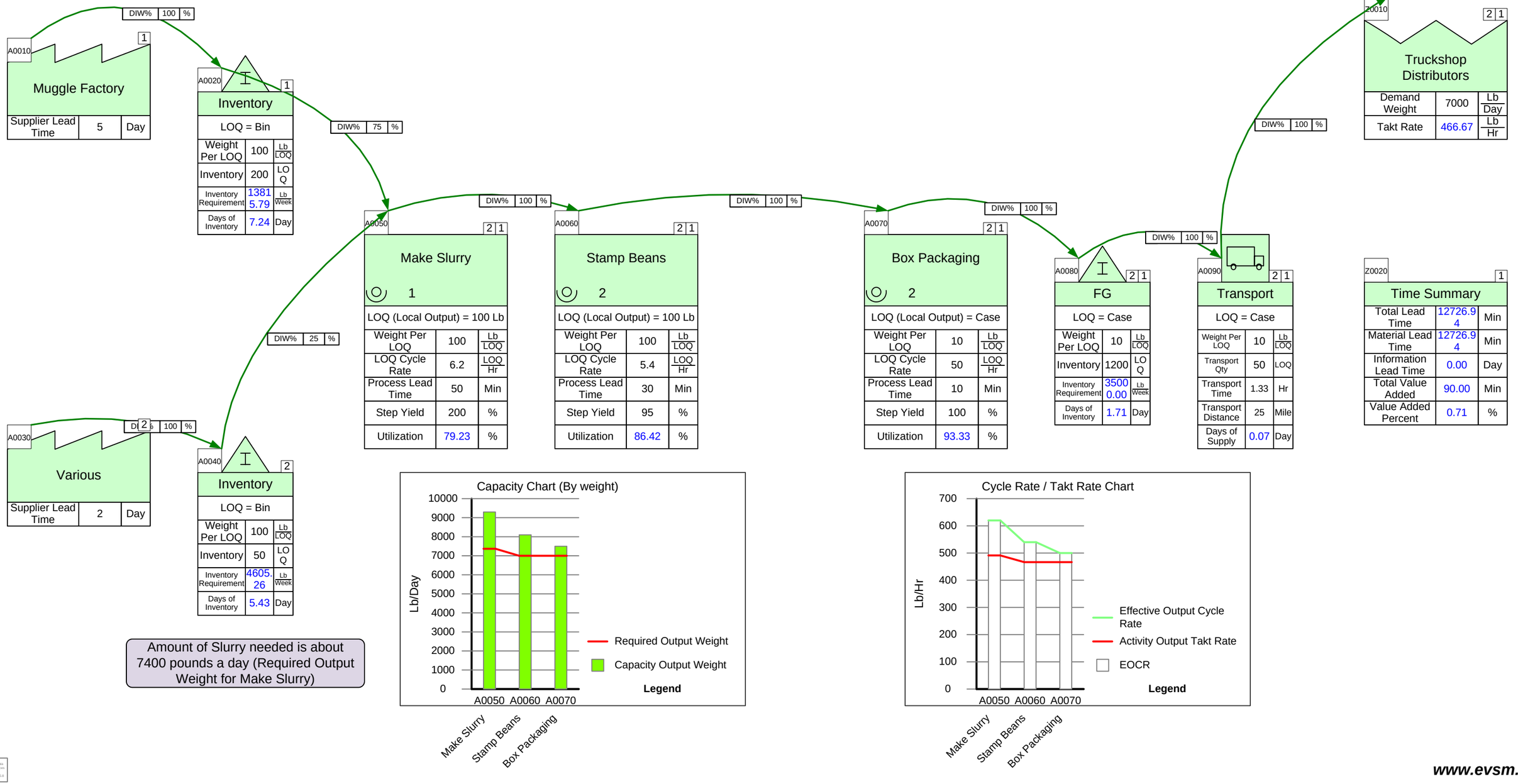
Setup time reduces the Effective Output Cycle Rate. This is shown on the Cycle Rate / Takt Rate chart.

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?***

| Day | Week |
|---|---|
| 15 | 5 |
| Hr | Day |




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

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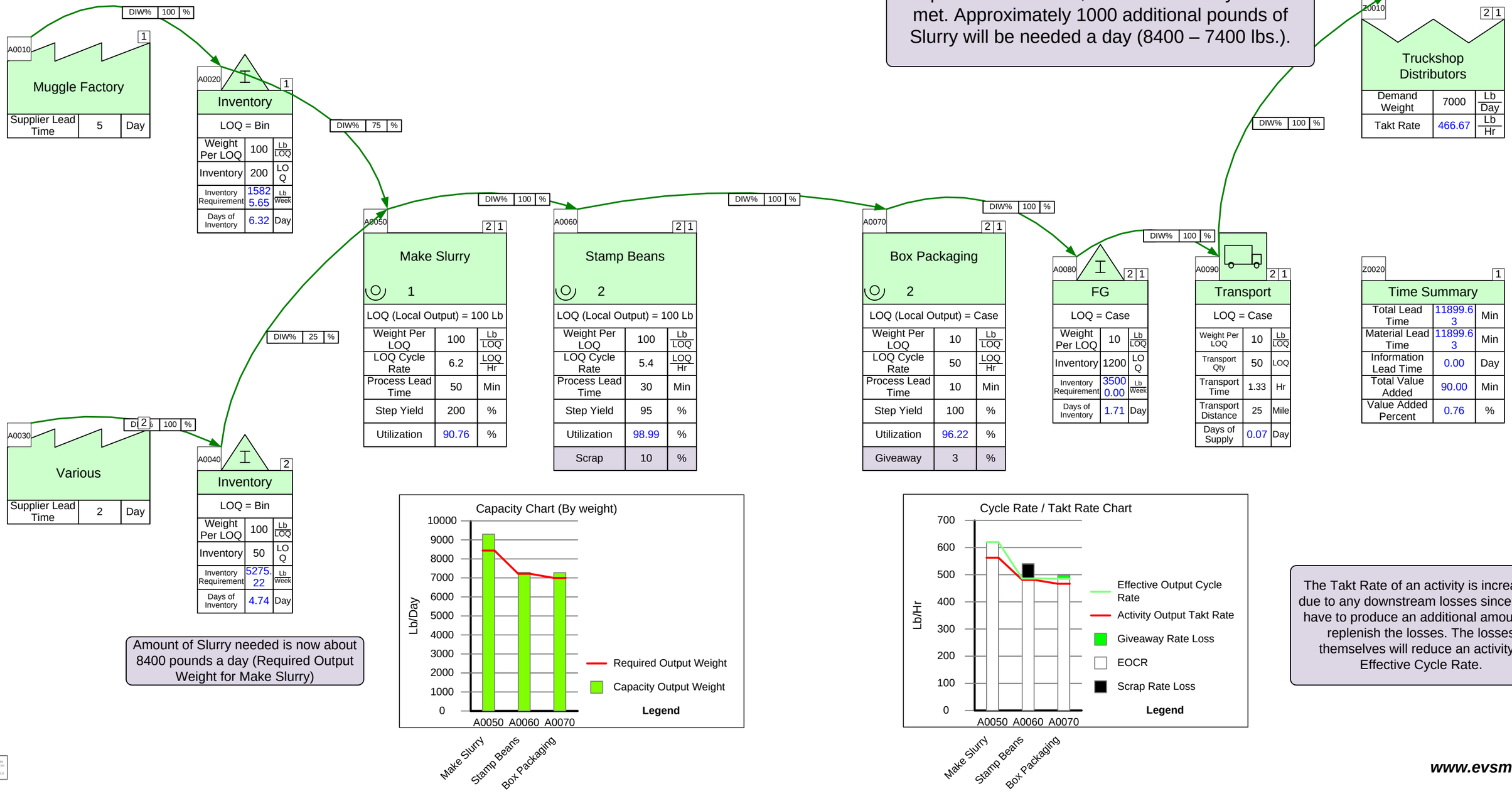
|---|---|
| 15 | 5 |
| Hr | Day |




## 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)







The Takt Rate of an activity is increased due to any downstream losses since it will have to produce an additional amount to replenish the losses. The losses themselves will reduce an activity's Effective Cycle Rate.