

Enterprise Inventory and Service Level Optimization

SAP EIS: Batch Size, Inventory, and Safety Stock



Batch Size

Batch size is common in manufacturing industries

- High cost of changeover, setup and transportation

Production / Order quantities must satisfy Minimum and incremental batch size requirements (a multiple of batch size)

Example: Minimum batch size = 0, Incremental batch size = 100

Order quantity can be 0, 100, 200, 300, ...

Example: Minimum batch size = 1000, Incremental batch size = 0

Order quantity can be 0, 1000, 1001, 1002, ...

Example: Minimum batch size = 1000, Incremental batch size = 100

Order quantity can be 0, 1000, 1100, 1200, ...

Example: Batch Size Impact on Inventory

Static Demand of 100 +/- 25

Non-stockout Probability of 95%

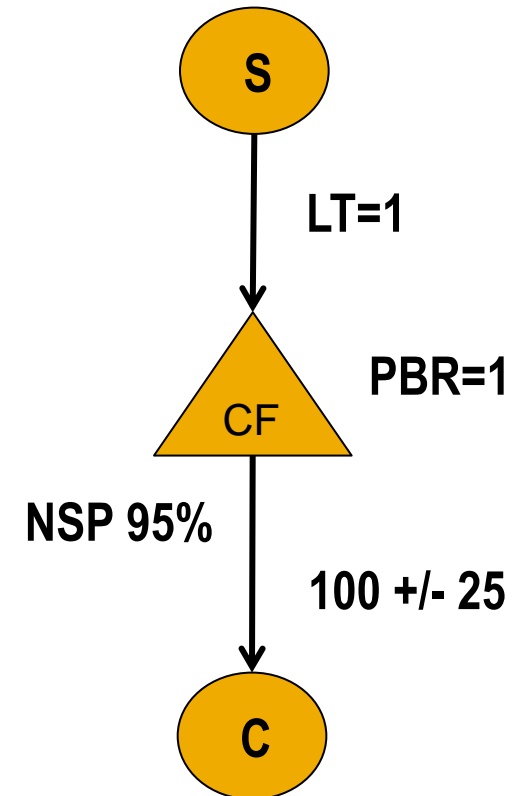
Lead Time is 1, PBR is 1

Relevant Outputs without Batch Size Considerations

Target Inventory Position or Order up to Point is 258

Safety Stock is 58

End of Period Inv	Re-order Quantity	Ending Inventory
158	100	258



Example: Batch Size Impact on Inventory

Static Demand of 100 +/- 25

Non-stockout Probability of 95%

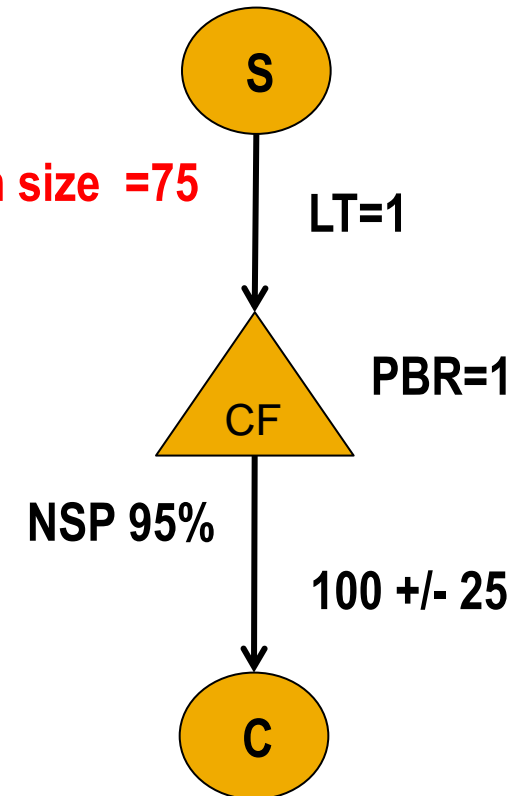
Lead Time is 1, PBR is 1

Relevant Outputs without Batch Size Considerations

Target Inventory Position or Order up to Point is 258

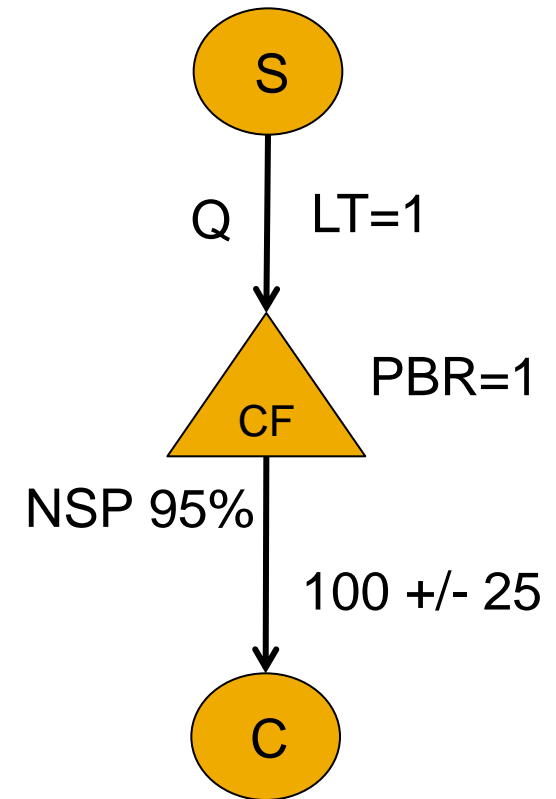
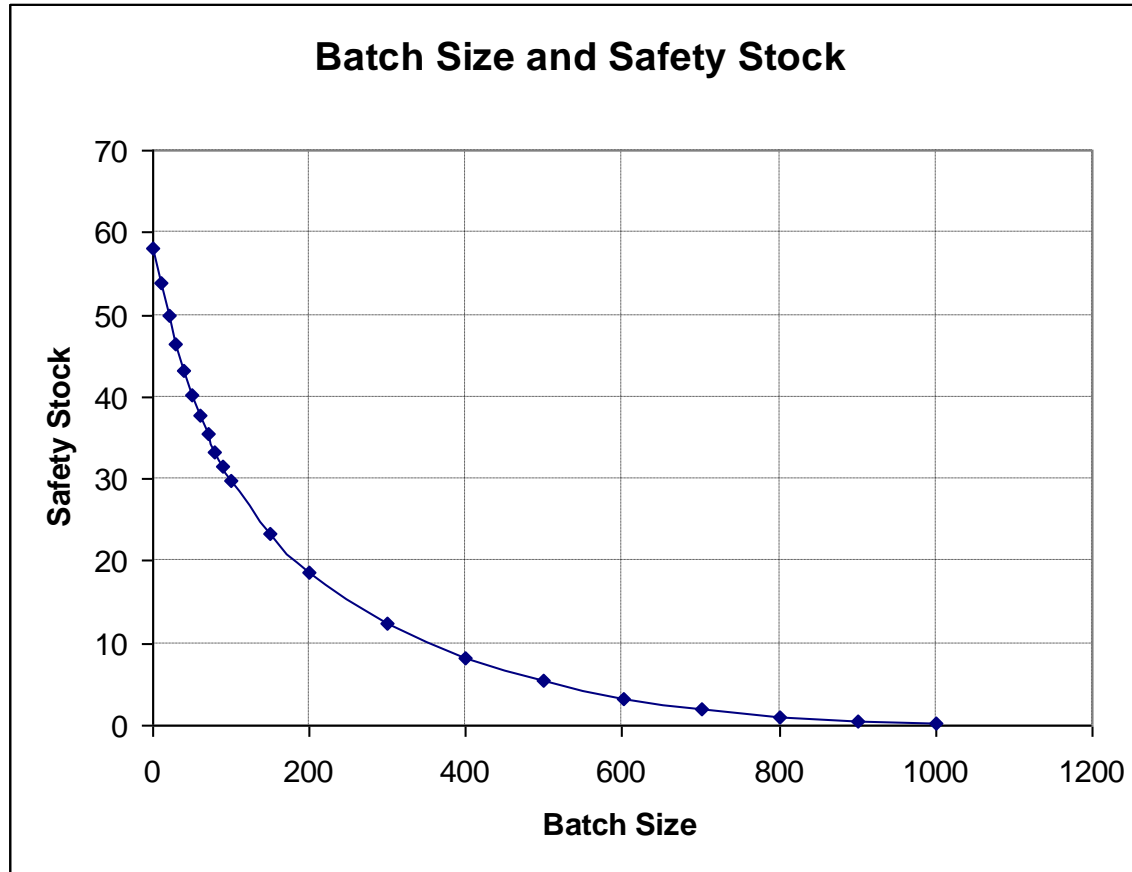
Safety Stock is 58

Incremental batch size =75



End of Period Inv	Re-order Quantity	Ending Inventory	Excess Inventory
158	150	308	50

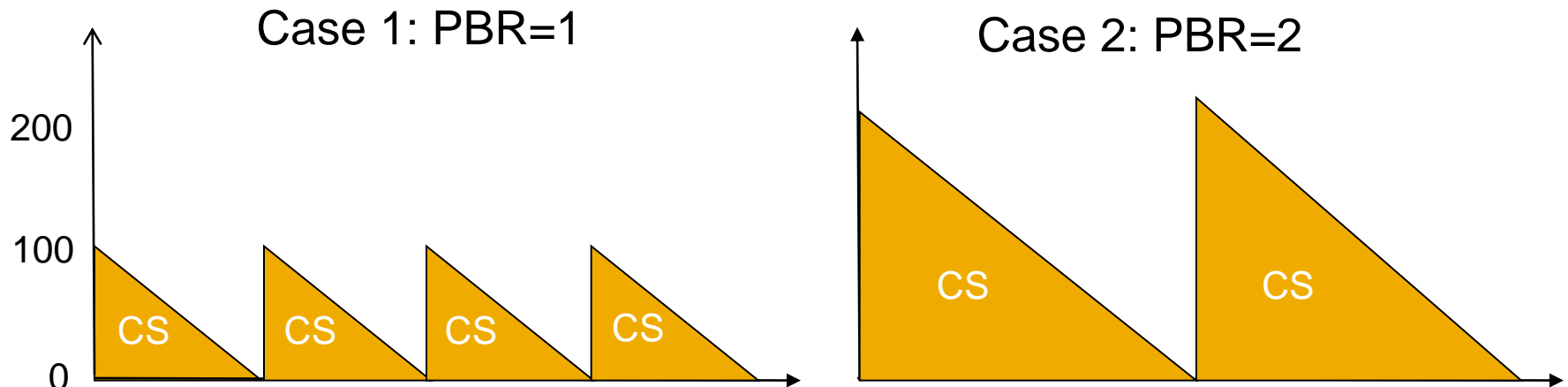
Batch Size Example: Scenario Analysis



Cycle Stock is driven by Replenishment Frequency or Batch Size

Cycle Stock (CS) is based on the forecasts of all periods until the next review/order, i.e., Period Between Reviews (PBR)

- Cycle Stock Key Drivers:
 - (1) Replenishment Frequency
 - (2) Demand
 - (3) Batch Size



- **Insight:** Cycle stock increases with PBR

Batch Size, Inventory, and Safety Stock

Batch size may result in holding more inventory than target

Opportunity to reduce safety stock requirements with the extra order due to batch size serving as buffer

Total inventory will increase (or stay the same) with batch size compared to no batch size.



Thank you

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