

Avant-propos

Cette formation a été développée dans le but de fournir des principes de bases communs à tous les employés de Grace-Darex dans le monde qui devaient prendre à un moment ou un autre des décisions sur la gestion des stocks : cela pouvait aller de l'employé-cariste dans un petit centre de stockage distribution au chef de service achat et logistique dans une unité plus importante.

Il s'agit donc d'une formation simple (simpliste ?) avec des exemples compréhensibles sur tous les continents. J'ai volontairement laissé cette présentation en anglais (ce jargon « globish » qu'on parle de Sao Paulo à Shanghai et que même mes collègues de Cambridge comprennent !)

Cette formation a été donnée des dizaines de fois. Son format correspond généralement à 1 demi-journée avec des exercices pratiques tirés du quotidien des participants.

Le but de ce document est de donner une impression des idées développées et de leur format. Ce n'est pas de donner le contenu précis. On trouvera ci-après un extrait d'une présentation de 35 pages.

**INVENTORY MANAGEMENT**

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**Part I**

**Basic Principles of Inventory Management**

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**INVENTORY MANAGEMENT**

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- ☞ Usual difficulties in managing inventories
  - trade-off between stockouts and excessive inventories
  - Crystal ball and forecasts
  - buffer stock build-up and safety stock
  - inventory follow-up
- ☞ Purpose of this presentation
  - Theory reminder: basics of inventory management
  - Policy guidelines about:
    - Safety Stock
    - Forecasts
    - Replenishment - When? How much?

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**Basic principles of inventory control**  
**Rule # 2**

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**The WEATHER FORECAST THEOREM**

cloud-cloud- cloud-cloud-sun-sun-sun-sun-sun-sun-shower-shower- sun-sun-sun-sun-sun- sun-sun

- ☞ Tomorrow's weather will be the same as today

Pros and cons:

- simple
- only 70% to 80% true

What does that mean for DAREX?

- ☞ Average Weekly Usage (AWU) is generally the current best estimate of future forecasts: LET'S USE IT !

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**Basic principles of inventory control**  
**Rule # 3 - Lead time definition**

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**LEAD TIME (LT)** it is the time spent between

- making the decision of stock replenishment, and
- actual availability of the goods in the warehouse

**Logic** - it must contain all steps including order (PO / MO) processing time, QC check/quarantine, etc. ....

**Effective** - all steps must be as short as possible

**Attainable** - let's remain reasonable and not too optimistic

**Dependable** - the reliability of a lead time is the most important characteristic; supplier quality assessment program could become a prerequisite to inventory management

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**Basic principles of inventory control - chart 10**

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What can actually happen during the LeadTime, i.e. between placing the order and receiving the goods ?

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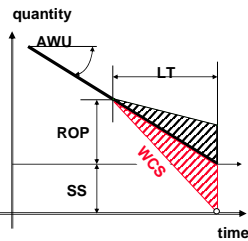
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## Basic principles of inventory control Formula # 1

### SafetyStock - SS

- The SafetyStock is the difference between the WorstCaseScenario and the AverageWeeklyUsage (i.e. Forecasts) during the LeadTime period

$$SS = [WCS - AWU]_{LT}$$



## Basic principles of inventory control Rule # 4

### The TAP WATER THEOREM

- Tap water does not need any buffer inventory because its lead time is ZERO
- In a more general case, the shorter the lead time, the smaller the safety stock

What does that mean for DAREX

- LT - 50% => SS - 30%
- Let's have more focus on Lead Time

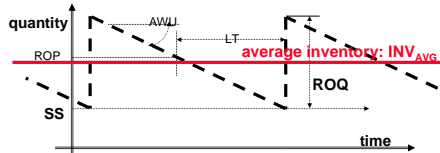


## Basic principles of inventory control Formula # 2

### Average Inventory: $INV_{AVG}$

- The Average Inventory is the sum of the SafetyStock and half the ReOrderQuantity

$$INV_{AVG} = SS + 1/2 \times ROQ$$



## Basic principles of inventory control Rule # 5

### The TOMATO and PIZZA PARTY theorem (Nick Tannenberger's)

- When you do shopping and purchase your weekly tomatoes, you do not need to know what the tomatoes are for (sandwich, salad, pasta sauce, ...?)
- But if you forecast a pizza party, you must reconsider your shopping list: tomatoes, but also beer, etc. ....
- If you want to be able to organize a pizza party at any time, you must constantly have a fridge full of tomatoes and beer.

What does that mean for DAREX

- Usual sales don't need a lot of details
- Usual inventories are not for exceptional sales
- Unusual events must be given as much notice as possible (forecasts)

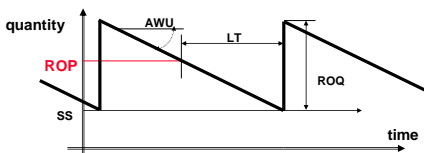


## Basic principles of inventory control Formula # 3

### When do we need to re-order? If actual < ROP

- The ReOrderPoint is the sum of the SafetyStock and the quantity used during the lead time

$$ROP = SS + (AWU \times LT)$$



## SUMMARY What did we learn? 5 rules and 3 formulae

### 5 rules

- Unit of time = WEEK
- Weather Forecast = the past (AWU) is generally the best estimate of the future
- Lead Time = Logic + Effective + Attainable + Dependable
- Tap Water = the shorter the lead time, the smaller the safety stock
- Tomato / Pizza party = usual inventory for usual sales; unusual sales must be forecasted



## SUMMARY What did we learn? 5 rules and 3 formulae

### 3 formulae

- SafetyStock:  $SS = [WCS - AWU]_{LT}$
- AverageInventory:  $INV_{AVG} = SS + 1/2 \times ROQ$
- ReOrderPoint:  $ROP = SS + (AWU \times LT) - \text{sum}(C_i)$



## NEXT STEPS

### PART II - Application Tools

- WCS\_xREL.XLT : Excel template with which one can analyse the past, define and document the WorstCaseScenario, then derive the SafetyStock
- INV\_xREL.XLT (formerly "inventory.xlt") : Excel template for the follow-up of any inventory with automatic re-ordering
- ROQ\_xREL.XLT (formerly "algocha.xlt") : Excel template for the calculation of the optimum size of any replenishment (supply or finished goods) based on total cost (supply + fixed cost per order + cost of holding an inventory)

### PART III - Good Practice in Inventory Management

- The TOP 20 items inventory board
- Typical Examples - Typical Recommendations

