

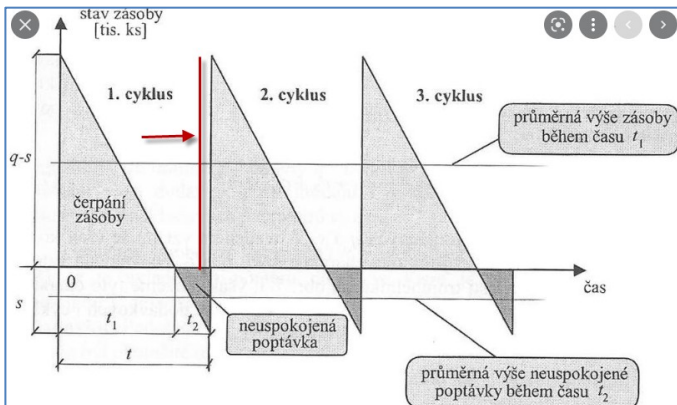
Economic Order Quantity-basics

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Karta zboží – záložka doplnění

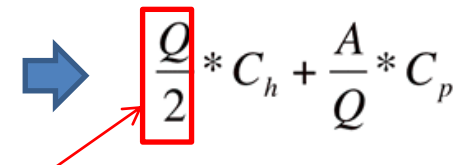
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Kritické:	<input type="checkbox"/>
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Minimální zásoby:	<input type="text" value="0"/>

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Období kumulace dávky:	<input type="text" value="1T"/>
Období přeplánování:	<input type="text"/>
Parametry bodu-přibjedení	
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Přibjedené množství:	<input type="text" value="0"/>
Maximální zásoby:	<input type="text" value="0"/>
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Interval času:	<input type="text"/>
Modifikátory objednávky	
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Maximální obj.množství:	<input type="text" value="0"/>
Násobek objednávky:	<input type="text" value="0"/>



EOQ 1

- **EOQ** = Economic Order Quantity and limitation of this model
- **EQO** = Deterministic model – jde o deterministický model
- Variables used to derive EOQ basic formula (see slide EOQ5)
 - **Ch** = Cost to hold one unit inventory for a year – náklad na skladování položky za jeden rok
 - **Cp** = Cost to place a single order – náklad spojený s vyřízením jedné objednávky
 - **A** = Demand for the year – požadavky za celý rok
 - **Q** = Quantity of orders – počet objednávek
- The economic order quantity (EOQ) is the **order quantity** that minimizes total holding and ordering costs for the year. Even if all the assumptions don't hold exactly, the **EOQ** gives us a **good indication** of whether or not current order quantities are reasonable – **má to vazbu na využívání sešitu požadavků**
- **Total Relevant Cost (TRC)**
 - why relevant ? ->because they are affected by order quantity
- **TRC**= Yearly Holding Cost + Yearly Ordering Cost

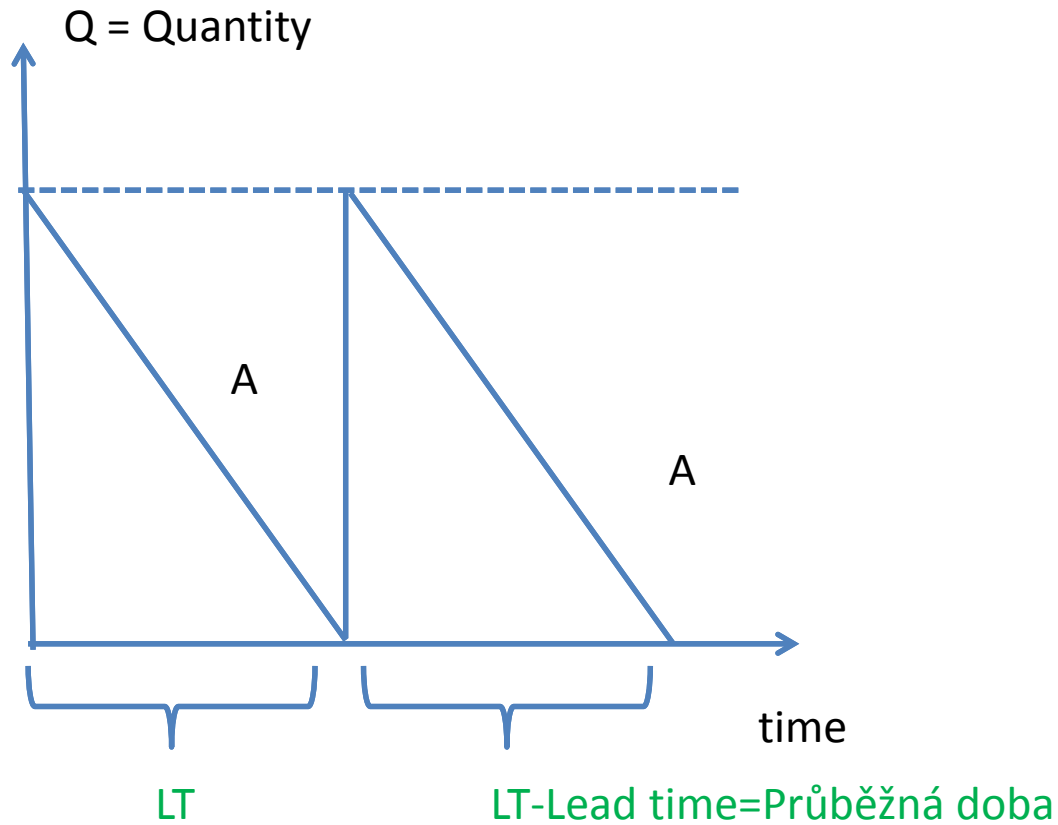

$$\frac{Q}{2} * C_h + \frac{A}{Q} * C_p$$

Average inventory carrying cost –see EOQ4 slide

EOQ 2

- **What is the EOQ Model?**
- Cost Minimizing Order Quantity (Q)
- **Assumptions=prerequisites (předpoklady):**
 - Single item only
 - Relatively uniform (continuous) & known demand rate
 - Fixed item cost
 - Fixed ordering and holding cost
 - No stock shortage and Instantaneous shipment
- Constant lead time =LT (see slide EOQ3)

EOQ 3



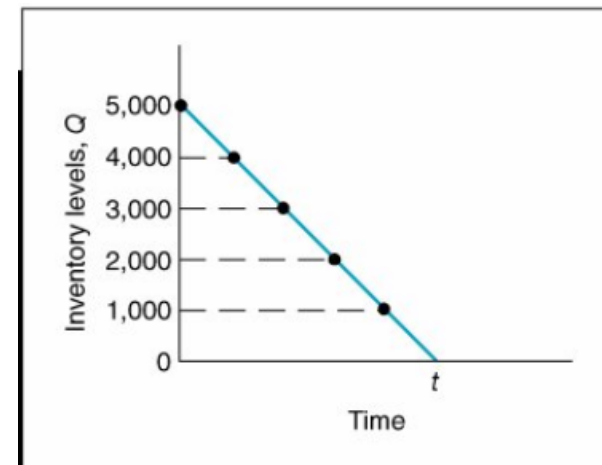
Notice, that inventory never goes below zero; shortages do not exist !!

EOQ4 - Carrying cost (náklady na skladování)

$$\text{Average inventory (carrying) cost} = \frac{Q}{2}$$

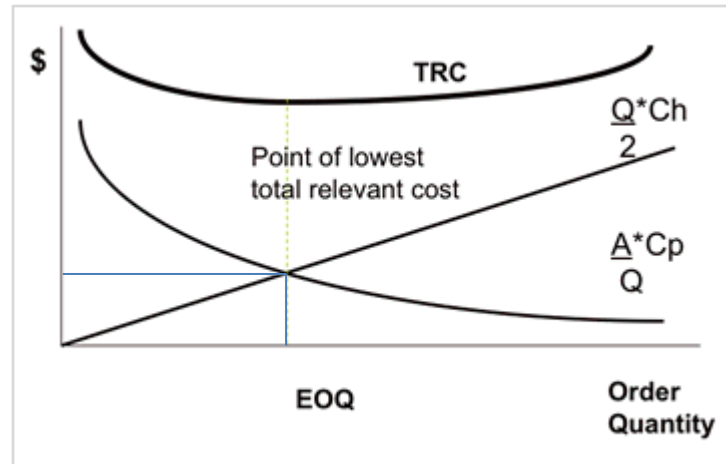
To verify this relationship, we can specify any number of points values of Q over the entire time period, t , and divide by the number of points. For example, if $Q = 5,000$, the six points designated from 5,000 to 0, as shown in shown figure, are summed and divided by 6:

$$\begin{aligned} \text{average inventory} &= \frac{5,000 + 4,000 + 3,000 + 2,000 + 1,000 + 0}{6} \\ &= 2,500 \end{aligned}$$



EOQ 5

$$\text{TRC} = \frac{Q}{2} * C_h + \frac{A}{Q} * C_p$$



To calculate derivative of TRC and put it to 0

$$d\text{TRC}/dQ=0=C_h/2+(A*C_p)/(Q*Q)\rightarrow Q=\sqrt{\frac{2*A*C_p}{C_h}}$$

Derivujeme tuto rovnici a najdeme extrém

TRC=Total Relevant Cost

EOQ 6 – simple example

- Pam runs a mail-order business for gym equipment. Annual demand for the TricoFlexers is 16,000 = A . The annual holding cost per unit is \$2.50 = Ch and the cost to place an order is \$50 = Cp . What is the economic order quantity?

$$\sqrt{\frac{2 * 16,000 * \$50}{\$2.50}} = 800 \text{ units per order}$$

$$\sqrt{\frac{2 * A * Cp}{Ch}}$$

Ch = Cost to hold one unit inventory for a year

Cp = Cost to place a single order

A = Demand for the year

Q = Quantity of orders

Thanks for your attention !