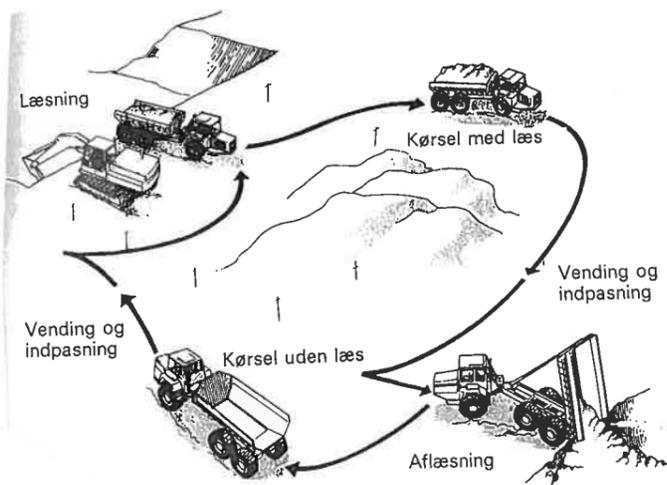


Equipment Production



Cycle of dumper

PRODUCTION (factors engaged)

$$P = V \times A \times C \quad [m^3/\text{hour}]$$

$$V = \text{volume pr. cycle } [m^3] = V_B \times k_L$$

V_B = bucket volume $[m^3]$
(bucket factor ~ 1.0)

k_L = loading factor $\begin{cases} \rightarrow \text{topsoil, clay} \sim 0.8 \\ \rightarrow \text{sand} \sim 0.9 \end{cases}$

A = number of loadings pr. hour

$$= \frac{60}{t_f + t_v}$$

t_f = loading + unloading + manœuvre time $[min]$

$$t_v = \left(\frac{L_{out}}{v_{out}} + \frac{L_{home}}{v_{home}} \right) \times 60 \quad [min]$$

L = distance out and home $[km]$

v = velocity out and home $[km/h]$

$$C = \text{factor of effectivity} \\ = k_p \times k_f \times k_s \times k_k \times k_{ms} \times k_{le}$$

k_p = personel factor counting small breacks and accuracy ~ 0.83

k_f = qualification factor $\begin{cases} \rightarrow \text{Expert} = 1.33 \\ \rightarrow \text{poor} = 0.75 \end{cases}$

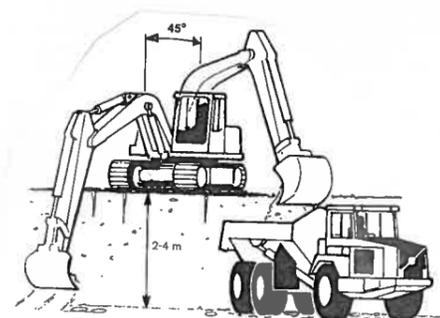
k_s = visibility factor $\begin{cases} \rightarrow \text{Clear} = 1.0 \\ \rightarrow \text{snow, mist, dusk} = 0.8 \end{cases}$

k_k = interaction factor between two or more machines = 0.9

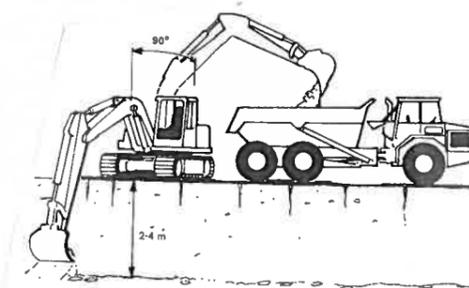
k_a = factor depending on complexity of work $\begin{cases} \rightarrow \text{large open pits} = 1.0 \\ \rightarrow \text{narrow spaces} = 0.6 \end{cases}$
(around pipes/close to other buildings)

k_{ms} = factor taking machine brackdown into account ~ 0.9

k_{le} = factor taking placement of machinery into account:



$k_{le} = 1.0$



$k_{le} = 0.9$

NB!!

(in your assignments you can guesstimate $C = 0.6$)