

A large construction crane dominates the foreground, its silhouette stark against a sky transitioning from deep blue to a vibrant orange and yellow at the horizon. The sun is a bright, glowing orb on the right side of the frame. In the background, other cranes and the silhouettes of city buildings are visible, creating a sense of a busy urban construction site at dusk.

Studijski program:  
PROIZVODNO-INFORMACIONE  
TEHNOLOGIJE

**Predmet: TRANSPORTNI SISTEMI  
U PROIZVODNJI**

A photograph of several construction cranes silhouetted against a sunset sky. The sun is a bright orange orb on the right horizon, casting a warm glow over the scene. The cranes are dark metal structures with long jibs. In the background, the outlines of city buildings are visible. A semi-transparent red rectangle is overlaid on the left side of the image, containing white text.

**Proračun transportnog ciklusa  
mosne dizalice**

**ZADACI**

# Zadatak 1.



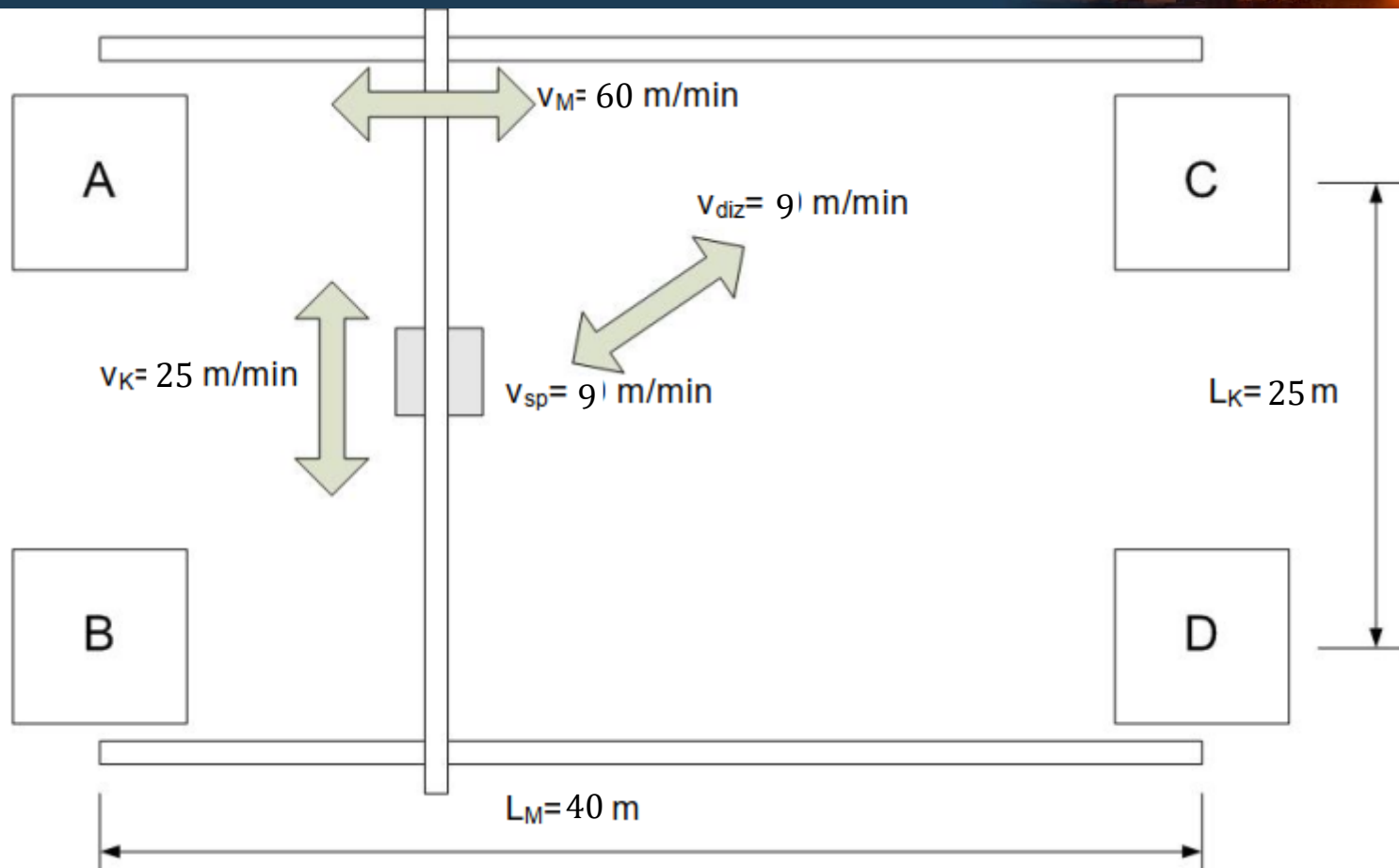
Mosna dizalica realizuje pretovarni zadatak koji se sastoji u transportu tereta iz zona B u D.

Vremena uzimanja i odlaganja tereta su po 20s.

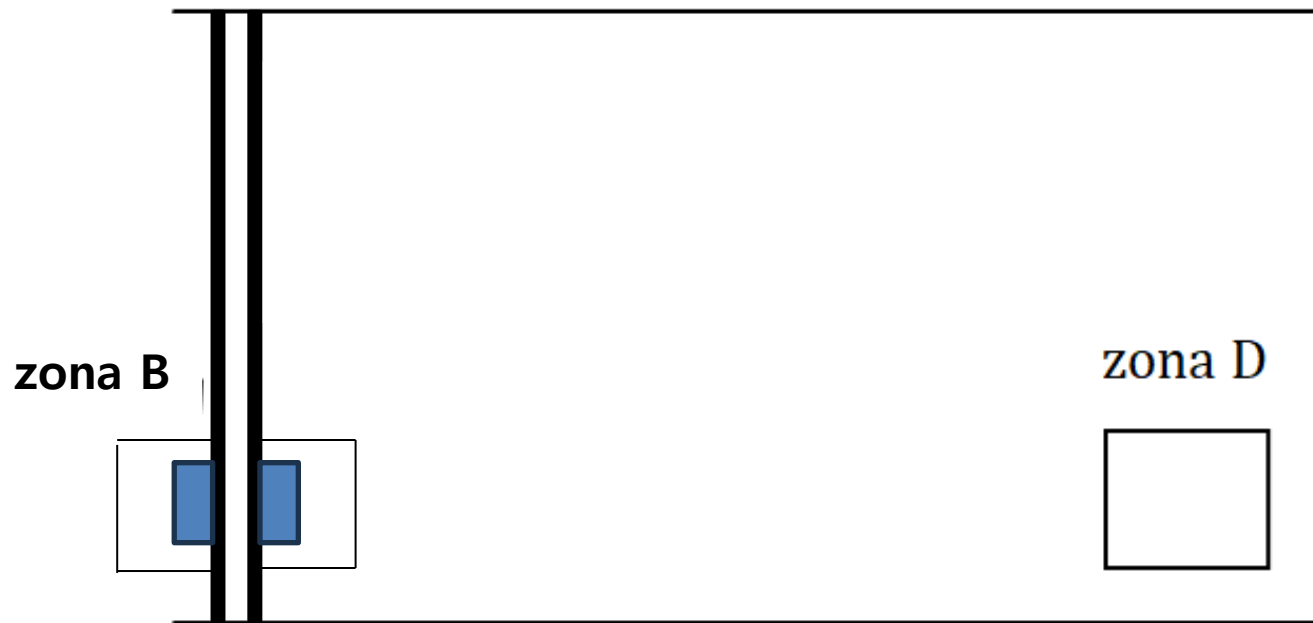
Visina dizanja i spuštanja tereta je 6m (pretpostavljeno je da su brzine kretanja sa i bez tereta iste).

Odrediti vreme pretovara jedne jedinice tereta iz zone B u zonu D.

## A silhouette of a construction crane against a sunset sky. The crane is positioned in the foreground, with its long jib extending across the frame. The sun is low on the horizon, creating a warm, orange glow. In the background, other construction cranes and structures are visible, also in silhouette.



# Iz B u D



UZIMANJE TERETA (POČETNI-  
KRAJNI POLOŽAJ)



**NAKON OVOGA SE KOLICA  
I MOST PO ISTOM  
PRINCIPU VRAĆAJU U  
ZONU A (PRAZAN HOD),  
ČIME SE ZAVRŠAVA  
TRANSPORTNI CIKLUS.**

## REŠENJE: Iz zone A u zonu D

$$T_c = \sum_{i=1}^{10} t_i$$

$$T_c = (t_1 + t_2 + t_3 + t_4 + t_5 + t_6 + t_7 + t_8 + t_9 + t_{10})$$



$t_1(s)$  – vreme zahvatanja tereta

$$t_1 = 20s$$

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$t_2(s)$  – vreme podizanja tereta (kretanje po pravcu 1)

$$t_2 = \frac{H_d}{V_d} = \frac{6}{9} = 0,67 \text{ min} = 40,2 s$$

$H_d = 6 m$  – visina na koju se teret podiže

$v_d = 9 m/min$  – brzina podizanja tereta

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$t_3$  (s) - vreme vožnje kolica do linije odlaganja tereta (kretanje po pravcu 2)

$$t_3 = \frac{L_K}{v_K} = \frac{0}{30} \text{ min} = 0 \text{ s}$$

$L_K = 0 \text{ m}$  -rastojanje koje prelaze kolica  
 $v_K = 35 \text{ m/min}$  - brzina kolica

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$t_4$  (s) - vreme premeštanja mosta od pozicije zahvatanja tereta do linije odlaganja tereta (kretanje po pravcu 3)

$$t_4 = \frac{L_M}{v_M} = \frac{40}{60} = 40 \text{ s}$$

$L_M = 40 \text{ m}$  -rastojanje koje prelazi most  
 $v_M = 60 \text{ m/min}$  - brzina mosta

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**$t_5 = 40,2 \text{ s}$  – vreme spuštanja tereta, analogno  $t_2$**

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**$t_6 = 20 \text{ s}$  – vreme odlaganja tereta, analogno  $t_1$**

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**$t_7 = 40,2 \text{ s}$  – vreme podizanja neopterećene  
zahvatne naprave, analogno  $t_2$**



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$t_8 = 0 \text{ s}$  - vreme vožnje kolica do linije zahvatanja tereta, analogno  $t_3$

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$t_9 = 40 \text{ s}$  - vreme premeštanja mosta, analogno  $t_4$

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$t_{10} = 40,2 \text{ s}$  - vreme spuštanja zahvatne naprave, analogno  $t_2$

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$$T_C = (20 + 40,2 + 0 + 40 + 40,2 + 20 + 40,2 + 0 + 40 + 40,2)$$

$$T_C = 280,8\text{s} = 4,68\text{min}$$

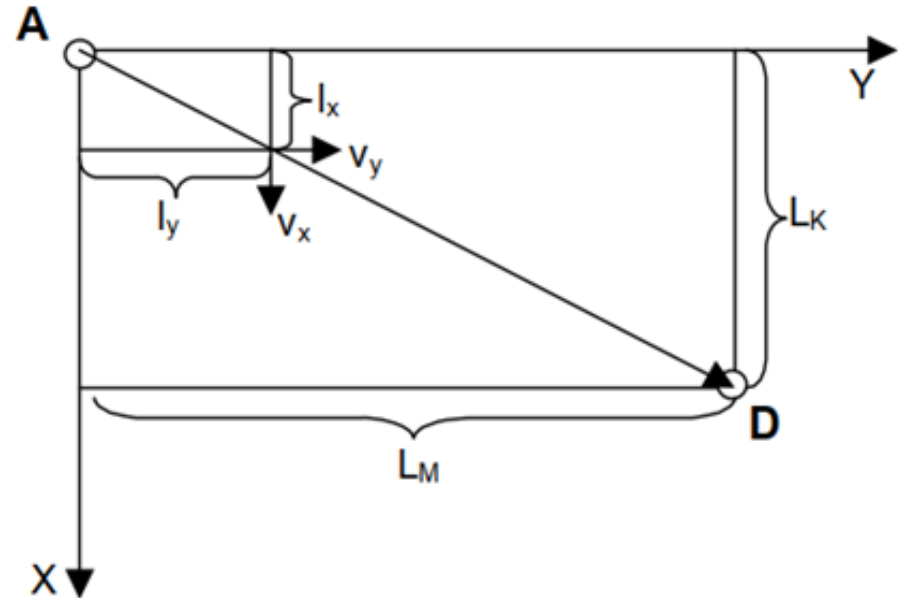
# Iz B u C

Odrediti vreme pretovara  
jedne jedinice tereta kao  
funkciju rezultujuće brzine.



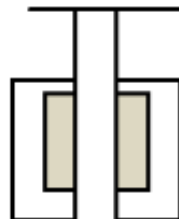
## Rezultujuća brzina

Kada se pri radu mosne dizalice i kretanju između dve dijagonalne tačke koristi mogućnost premeštanja tereta rezultujućom brzinom tada se struktura ciklusa menja u odnosu na prethodno definisanu.





zona A



zona D



**UZIMANJE TERETA (POČETNI-  
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A vertical strip on the left side of the slide shows a construction site at sunset. Several tower cranes are visible against a sky transitioning from orange near the horizon to dark blue at the top. The cranes are silhouetted against the bright light of the setting sun.
$$T_C^R = \sum_{i=1}^8 t_i^R$$

$$T_C^R = (t_1^R + t_2^R + t_3^R + t_4^R + t_5^R + t_6^R + t_7^R + t_8^R)$$

$$t_1^R = t_1$$

$$t_2^R = t_2$$

$t_3^R$  – vreme vožnje tereta od jedne do druge dijagonalne tačke koje je posledica rezultujućeg kretanja

$$t_3^R = \max(t_K; t_M) = \max\left(\frac{L_K}{v_K}; \frac{L_M}{v_M}\right)$$

$$t_4^R = t_5$$

$$t_5^R = t_6$$

$$t_6^R = t_7$$

$$t_7^R = t_3^R$$

$$t_8^R = t_{10}$$

## REŠENJE: Iz zone B u zonu C-rezultujuća brzina

$$t_1^R = t_1 = 20s$$

$$t_2^R = t_2 = 40,2 s$$

$t_3^R$  – vreme vožnje tereta od jedne do druge dijagonalne tačke koje je posledica rezultujućeg kretanja

$$\begin{aligned} t_3^R &= \max(t_K; t_M) = \max\left(\frac{L_K}{v_K}; \frac{L_M}{v_M}\right) = \max\left(\frac{25}{25}; \frac{40}{60}\right) \\ &= \max(1; 0,667) \end{aligned}$$

$$t_3^R = 1 \text{ min} = 60s$$

# REŠENJE: Iz zone A u zonu D-rezultujuća brzina

$$t_4^R = t_5 = 40,2 \text{ s}$$

$$t_5^R = t_6 = 20 \text{ s}$$

$$t_6^R = t_7 = 40,2 \text{ s}$$

$$t_7^R = t_3^R = 60 \text{ s}$$

$$t_8^R = t_{10} = 40,2 \text{ s}$$



$$T_C^R = (t_1^R + t_2^R + t_3^R + t_4^R + t_5^R + t_6^R + t_7^R + t_8^R)$$

$$T_C^R = (20 + 40,2 + 60 + 40,2 + 20 + 40,2 + 60 + 40,2)$$

$$T_C^R = 320,8 \text{ s} = 5,346 \text{ min}$$

