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QUIZ # 5

⊛ Two roller supported belt conveyors are used to convey toteboxes of material, 250ft. from the assembly department to the packaging department. The first conveyor is 150ft. and has a speed of 300 fpm. and the second conveyor is 100ft. long and has a speed of 200 fpm. The toteboxes are 24" in length. Rollers are 25" in diameter and are spaced on 10-in centers (RC=10"). The WBR dimension is 27 in. The design clearance between toteboxes on the first conveyor is 12". The weight of the toteboxes are 45 lb.

- What should be the spacing between toteboxes in the second conveyor?
- Determine the loads on both conveyors.

From the first conveyor:

$$\frac{300 \text{ ft/min} * 12 \text{ in/ft}}{(24+12) \text{ in/totebox}} = 100 \text{ totebox/min}$$

(3pts)

" output of the first conveyor will directly go to second conveyor."

On the second conveyor:

$$\frac{200 \text{ ft/min} * 12 \text{ in/ft}}{100 \text{ toteboxes/min}}$$

(3 pts)

$$= 24 \text{ in/totebox}$$

$$100 \text{ toteboxes/min}$$

"this is the totebox + spacing in the second conveyor."

$$\therefore \text{spacing on the second conveyor} = 24 - 24 = 0 \neq$$

(2 pts)

"No spacing between toteboxes in the second conveyor"

Load of the first conveyor:

$$\frac{150 \text{ ft} * 12 \text{ in/ft}}{(24 + 12) \text{ in/totebox}}$$

$$= 50 \text{ toteboxes (full load segment)}$$

$$(24 + 12) \text{ in/totebox}$$

(2 pts)

$$L_{\text{first}} = 50 * 45 = \underline{\underline{2250 \text{ lb.}}}$$

(1 pt)

Load of the second conveyor:

$$\frac{100 \text{ ft} * 12 \text{ in/ft}}{(24 + 0) \text{ in/totebox}}$$

$$= 50 \text{ toteboxes (full load segment)}$$

$$(24 + 0) \text{ in/totebox}$$

(2 pts)

$$L_{\text{second}} = 50 * 45 = \underline{\underline{2250 \text{ lb.}}}$$

(1 pt)