

利用鋼纜將海底觀測艇自海面下 1800 呎處等速吊起。已知鋼纜之張力始終保持 7460 牛頓，拉動鋼纜之馬達的輸出功率為 2.5 hp。試求 (1) 共費時幾分鐘？(2) 若欲使吊起的時間縮短為 1 個小時，則馬達的輸出功率必需為幾個 hp？

(1 hp = 746 W)

$$P = \frac{W}{t} = \frac{F \times S \times \cos \theta}{t}$$

$$\begin{aligned} (1) \quad t &= \frac{W}{P} = \frac{F \times S \times \cos \theta}{P} \\ &= \frac{7460 \times 1800 \times \cos 0^\circ}{2.5 \times 746 \times 60} \end{aligned}$$

$$= 120 \text{ (分鐘)}$$

$$t = \frac{120}{60} = 2 \text{ (小時)}$$

$$(2) \quad \frac{P_2}{P_1} = \frac{t_1}{t_2}$$

$$P_2 = \frac{t_1}{t_2} \times P_1 = \frac{2}{1} \times 2.5 \text{ (hp)} = 5 \text{ hp}$$