



K: ΚΕΝΤΡΟΕΙΔΙΣ $\therefore OK = 4m$, $F = 40 kN$, $W = 120 kN$, $S_2 = ?$, $S_3 = ?$

$$\vec{e}_{BH} = -\frac{\sqrt{2}}{2}\vec{i} + \frac{\sqrt{2}}{2}\vec{k} , \quad \vec{S}_2 = \frac{S_2\sqrt{2}}{2}(-\vec{i} + \vec{k})$$

$$\vec{e}_{\Gamma H} = \frac{\sqrt{2}}{2}\vec{i} + \frac{\sqrt{2}}{2}\vec{k} , \quad \vec{S}_3 = \frac{S_3\sqrt{2}}{2}(\vec{i} + \vec{k})$$

$$\begin{aligned} \underline{M_{AA}^{S_2}} &= \vec{M}_A^{S_2} \cdot \vec{i} = (\vec{AB} \times \vec{S}_2) \cdot \vec{i} = [8\vec{j} \times \frac{S_2\sqrt{2}}{2}(-\vec{i} + \vec{k})] \cdot \vec{i} = \\ &= 4S_2\sqrt{2}(\vec{k} + \vec{i}) \cdot \vec{i} = \underline{4S_2\sqrt{2}} \end{aligned}$$

$$\begin{aligned} \underline{M_{AA}^{S_3}} &= \vec{M}_A^{S_3} \cdot \vec{i} = (\vec{\Delta\Gamma} \times \vec{S}_3) \cdot \vec{i} = [2\vec{j} \times \frac{S_3\sqrt{2}}{2}(\vec{i} + \vec{k})] \cdot \vec{i} = \\ &= 4S_3\sqrt{2}(-\vec{k} + \vec{i}) \cdot \vec{i} = \underline{4S_3\sqrt{2}} \end{aligned}$$

$$\begin{aligned} \underline{M_{AA}^W} &= \vec{M}_O^W \cdot \vec{i} = (\vec{OK} \times \vec{W}) \cdot \vec{i} = [4\vec{j} \times (-120\vec{k})] \cdot \vec{i} = \\ &= -480\vec{i} \cdot \vec{i} = \underline{-480} \end{aligned}$$

$$\underline{M_{AA}^{S_2, S_3, W}} = 4S_2\sqrt{2} + 4S_3\sqrt{2} - 480 \equiv 0 \Rightarrow \underline{S_2 + S_3 = \frac{480}{4\sqrt{2}} = \frac{120}{\sqrt{2}} = 60\sqrt{2}} \quad (1)$$

$$\underline{M_{OE}^{S_2}} = \vec{M}_E^{S_2} \cdot \vec{k} = (\vec{EH} \times \vec{S}_2) \cdot \vec{k} = \left[8\vec{j} \times \frac{S_2\sqrt{2}}{2}(-\vec{i} + \vec{k}) \right] \cdot \vec{k} =$$

$$= (\text{όμοια με πριν}) = 4S_2\sqrt{2}(\vec{k} + \vec{i}) \cdot \vec{k} = \underline{4S_2\sqrt{2}}$$

$$\underline{M_{OE}^{S_3}} = \vec{M}_E^{S_3} \cdot \vec{k} = (\vec{EH} \times \vec{S}_3) \cdot \vec{k} = \left[8\vec{j} \times \frac{S_3\sqrt{2}}{2}(\vec{i} + \vec{k}) \right] \cdot \vec{k} =$$

$$(\text{όμοιος}) = 4S_3\sqrt{2}(-\vec{k} + \vec{i}) \cdot \vec{k} = \underline{-4S_3\sqrt{2}}$$

$$\underline{M_{OE}^F} = \vec{M}_O^F \cdot \vec{k} = (\vec{OK} \times \vec{F}) \cdot \vec{k} = (4\vec{j} \times 40\vec{i}) \cdot \vec{k} = -160\vec{k} \cdot \vec{k} = \underline{-160}$$

$$\underline{M_{OE}^{S_2, S_3, F}} = 4S_2\sqrt{2} - 4S_3\sqrt{2} - 160 \equiv 0 \Rightarrow \underline{S_2 - S_3 = \frac{160}{4\sqrt{2}} = \frac{40\sqrt{2}}{\sqrt{2}\sqrt{2}} = 20\sqrt{2}} \quad (2)$$

$$(1) + (2) \Rightarrow 2S_2 = 80\sqrt{2} \Rightarrow \underline{\underline{S_2 = 40\sqrt{2} \text{ kW}}} \quad (3)$$

$$(1), (3) \Rightarrow S_3 = 60\sqrt{2} - 40\sqrt{2} \Rightarrow \underline{\underline{S_3 = 20\sqrt{2} \text{ kW}}} \quad (4)$$