

$$Q = \Delta U' - W$$

$$\Delta U' = U_B - U_A$$

$$Q + W - \Delta U' = 0$$

$$\Delta U = -\Delta U'$$

$$Q + W + \Delta U = 0$$

$$Q_{bpi} + W_{bpi} + \Delta U_s = 0$$

$$Q_{bpi} + W_{bpi} + (U_A - U_B) = 0$$

W_{bpi} maksimum $\Rightarrow Q_{bpi}$ minimum $\Rightarrow \Delta S_{bpi}$ minimum $\Rightarrow \Delta S_{osca}$ minimum \Rightarrow

ΔS_{osca} minimum \Rightarrow "Minimumum pertama"
"Minimumum absolutum"

$$\Delta S_{osca} = 0 \quad \text{PROSES ITUNGKALIA}$$

$$dU + \delta Q_{bpi} + \delta W_{bpi} = 0$$

EKP

$$dS_{osca} = dS + \frac{\delta Q_{bpi}}{T_{bpi}} (\geq 0) \quad \begin{cases} > 0 & \text{IE} \\ = 0 & \text{IG} \end{cases}$$

EEM

$$\delta W_{bpi} = -dU - \delta Q_{bpi}$$

$$dS + \frac{\delta Q_{bpi}}{T_{bpi}} \geq 0 \Rightarrow \frac{\delta Q_{bpi}}{T_{bpi}} \geq -dS \Rightarrow -\delta Q_{bpi} \leq T_{bpi} dS$$

$$\Rightarrow \delta W_{bpi} \leq -dU + T_{bpi} dS$$

$$\delta Q = dU - \delta W \Rightarrow -dU = -\delta Q - \delta W$$

$$\delta W_{bpi} \leq -\delta Q - \delta W + T_{bpi} dS$$

$$[\delta W_{bpi}]_M = -\delta Q - \delta W + T_{bpi} dS$$

maksimum berdiskusi beta dengan
berdiskusi beta \Rightarrow prosesnya itungkalia

$$\delta Q = T dS$$

$$[\delta W_{bpi}]_M = -T dS - \delta W + T_{bpi} dS$$

$$= -T dS \left(1 - \frac{T_{bpi}}{T}\right) - \delta W$$

$$[\delta W_{bpi}]_M = \left(1 - \frac{T_{bpi}}{T}\right)(-\delta Q) + (-\delta W)$$

$(-\delta W)$ ukuran atavatako lana
 $(-\delta Q)$ ukuran atavatako ukuran
fraksiya