Derivation of the Mellinger Number
Let ε = the power deliver efficiency, I = current, r = resistance / unit length

ε = Pload/Pterminal
ε = (Vload * I) / (Vterminal * I) Vload = Vterminal - 2 * I * r * length
ε = (Vterminal - 2 * I * r * length) / Vterminal
ε * Vterminal = Vterminal - 2 * I * r * length
2 * I * r * length = Vterminal - ε * Vterminal
= Vterminal * (1 - ε)
I * length = (Vterminal / (2 * r)) * (1 − ε)

Pload = Vload * I = ε * Vterminal * I

ε * Vterminal * I * length = ((Vterminal / 2 * r)) * (1 - ε) * ε * Vterminal
Pload * length = ((Vterminal / 2 * r)) (1 - ε) * ε * Vterminal

Nmellinger = (Vterminal^2 / 2 * r) * (ε - ε^2)

For the Canyon Dynamics extension cable (5 conductors of Number 20AWG @ 10.5Ω/1000 feet)

$V_{terminal} := 600 \cdot V \qquad \varepsilon := 0.5 \qquad r := 2\frac{1}{5} \cdot 10.5 \cdot \frac{ohm}{1000 \cdot ft} \qquad r = 13.78\,\frac{ohm}{km}$

$N_{mellinger} := \frac{V_{terminal}^{2}}{2 \cdot r} \cdot \left(\varepsilon - \varepsilon^{2}\right) \qquad N_{mellinger} = 3.266 \times 10^{3}\,watt \cdot km$

$V_{terminal} := 400 \cdot V \qquad \varepsilon := 0.75$

$N_{mellinger} := \frac{V_{terminal}^{2}}{2 \cdot r} \cdot \left(\varepsilon - \varepsilon^{2}\right) \qquad N_{mellinger} = 1.089 \times 10^{3}\,watt \cdot km$

Examples :

$l := 10 \cdot km \qquad P := \frac{N_{mellinger}}{l} \qquad P = 108.857\,watt$

$l := 1 \cdot km \qquad P := \frac{N_{mellinger}}{l} \qquad P = 1.089 \times 10^{3}\,watt$

$l := 100 \cdot m \qquad P := \frac{N_{mellinger}}{l} \qquad P = 1.089 \times 10^{4}\,watt$