Formula Hybrid Accumulator pricing and Fuel equivalency.

Accumulator pricing:

To avoid the distorting effect of different price breaks on the dollar value of accumulator devices, we will use the following technique to determine our official prices.

To find the price at some quantity q_x, we use the published prices, p_1 and p_2, at the next lower and higher quantities, q_1 and q_2.

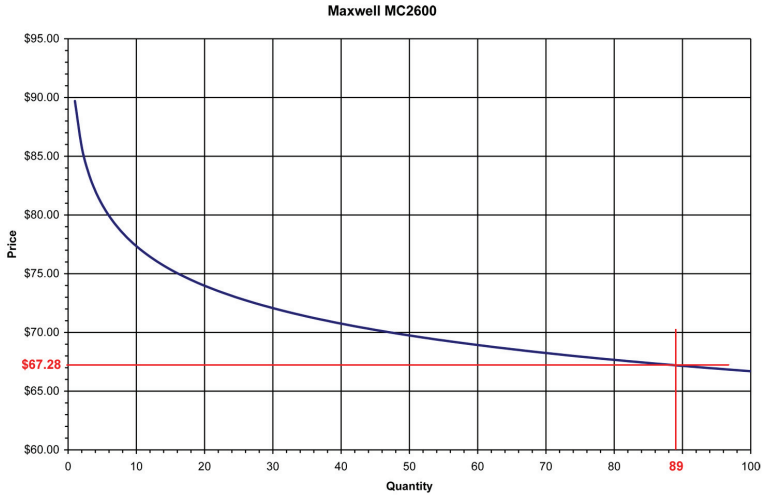
$$p_x = p_1\left(\frac{q_x}{q_1}\right)^a \qquad \text{where} \qquad a = \frac{\log\left(\frac{p_2}{p_1}\right)}{\log\left(\frac{q_2}{q_1}\right)}$$

(This formula has been shown to approximate many electronic device manufacturers pricing structures.)

For example, suppose the Maxwell MC2600 Ultracapacitor were priced at $89.70 in quantities from 1 to 99, and $66.70 for 100 to 999.

If we were to apply our $6,000.00 limit based strictly on this pricing structure, a team could use only 66 devices. However had we set a limit of $6,700.00 they could have used 100.

Using the above formula, the resultant price for the device would be $67.28, allowing the team to use 89 devices.



Fuel Equivalency:

We will assign a fuel equivalency to each device based on the following:
(Note: C, V_{nom}, V_{peak} and Ah are device name-plate values.)

Batteries:

$$Energy(Wh) = (V_{nom})(Ah)(0.8)$$

Capacitors:

$$Energy(Wh) = \left(\frac{C(V_{peak}{}^2 - V_{\min}{}^2)}{2} \right) / 3600$$ where V_{min} is assumed to be 10% of $V_{peak.}$

Gasoline:

$$Gasoline = 2{,}414 \frac{Wh}{l}$$ *(at a 27% mechanical efficiency);*

For example, taking the Maxwell MC 2600 used in the example above, the fuel equivalency would be 2.606 Wh per device, or 231.9 Wh for a bank of 89, resulting in a 96cc reduction of gasoline.

Other Fuels:

Fuel Type	**Wh / Liter** (@ 27%)
Gasoline (regular)	2,414
Diesel #2	2,706
Biodiesel (B100)	2,472
Biodiesel (B20)	2,665
Ethanol (E85)	1,710