



TRINITY HOUSE

Rapporteur – Power Peter Dobson



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Areas of discussion

- Lithium primary battery
- Carbon base power capacitor



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PRIMARY CELLS



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Requirement

- Use as an emergency solution
- Needs to be totally sealed
- Needs to be of the same size – 480mm high x 200mm Dia.
- Needs to operate at about the same voltage – 18V down to 10.5V
- Need to weigh less than 25kg
- More capacity

Goal – more time between ship visits



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Construction

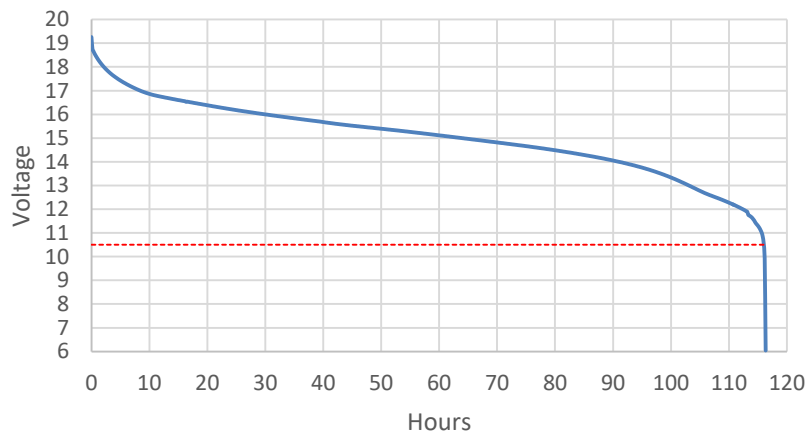




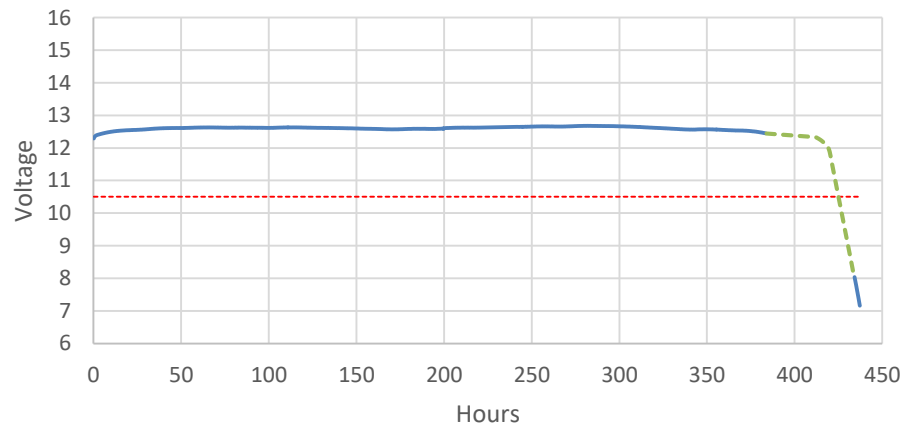
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Performance

Beco 18V 132Ah Alkaline Battery (SN:13226)
@ 0.95A Load



DMS 12V 456Ah Lithium Battery (Prototype) @
0.95A Load





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Outcome

	Height	Diameter	Weight	Capacity to 10.5V at 0.95A	Cost
Beco 132Ah alkaline	480mm	200mm	24kg	110Ah	-
DMS 456Ah lithium	435mm	200mm	19kg	425Ah	£ 4 x alkaline



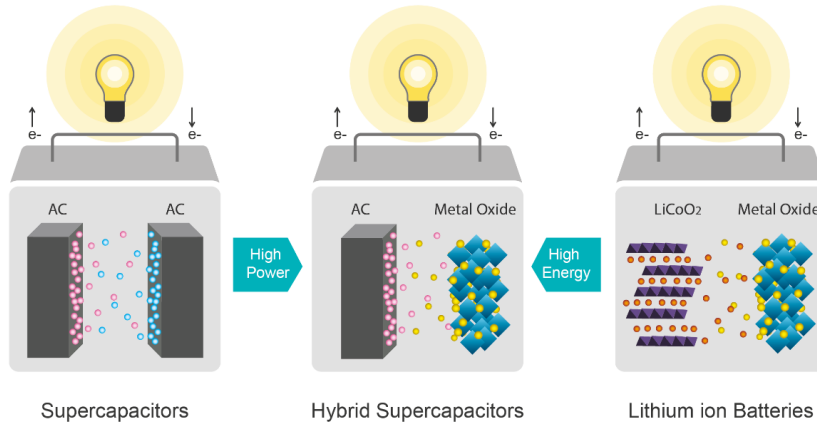
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CARBON BASED POWER CAPACITORS



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Benefits



This technology is a new type of hybrid supercapacitor with a much higher energy density. It bridges a gap between traditional (often Lithium based) supercapacitors and lithium-ion battery cells, but using activated carbon as its active ingredient. Contrary to batteries there is no chemical reaction involved when charging or discharging. Hence, they pose no safety risk, can work at low temperatures and have long lifetime.



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Performance

Model		TMDD 8600/12	TMDD 9800/12	TMDD 10400/12	TMDD 11000/12	TMDD 12800/12
Operating Voltage	V	9 to 15	9 to 15	9 to 15	9 to 15	9 to 15
Rated Capacity	F	8600	9800	10400	11000	12800
Operating temperature.	°C	-40 to +80	-40 to +80	-40 to +80	-40 to +80	-40 to +80
Cycle life		>10000	>10000	>10000	>10000	>10000
Weight	kg	6	7	8	9	10
Size	mm	235×175×190	275×175×190	315×175×190	350×175×190	390×175×190
Equivalent capacity	Ah	60	70	80	90	100



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Summary



Carbon power capacitors DO NOT BURN
Carbon power capacitor pack can be smaller
Sustained high peak demand
No rare metals
No gassing when charged or discharged
Works -40°C/+80°C
Same performance with 1/3 size, no BMS, no thermal management
Website - <https://kurt.energy/>



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