

1. Specific questions from report of Öko Institute dated 28 July 2010, Chapter 4.5 Exemption No 5

3.1 Voltage (p. 53) – since the cell voltage is 3.6 V, the usual voltage range for lead acid batteries cannot be reached:
cells (nominal 14.4 V) would need to charge Li-Ion battery at 16.8 V (which is too high for the onboard electronics, since the maximum design voltage is 15 V), or for 3 cells would result in nominal voltage 10.8 V which is considered too low for the engine starting

Answer - The nominal voltage of 3.6 volts is for a different Li-ion technology probably Li Co. The technology used by Olife3 is Li –FePO₄ this has a nominal voltage of 3.2 volts per cell. 4 cells in series gives a battery voltage of 12.8 volts which is exactly equivalent to lead acid. In view of this the rest of the comments are irrelevant

3.2 Question - Cold Cranking Ability (p. 53) – delivery of high power at low temperatures, typically below -30°C

Answer – Modern Li – FePO₄ batteries are developed to operate at temperatures below -30C. The supercapacitors operate independently of the temperature and will function at near 100% capability below -30C. The combination of supercapacitors and an Li FePO₄ battery enable cold cranking performances comparable to, or better than lead acid batteries.

3.3 Question - Packaging constraints (p. 58) – operating temperature for combination of a lead-acid battery with a supercap (producer KBi) had operation temperature between -50°C and +50°C. For the installation nearby the motor block in the engine compartment the temperature up to +75°C is mentioned on Table 8 (p. 54)

Answer – this constraint is largely due to the lead acid battery attached to the capacitors. The Li FePO₄ battery has an operating range greater than lead acid and all other Li based technologies. Tests conducted by NASA to determine the safe operating range for all aspects of Li FePO₄ cells included the safe working temperature range. This study concluded that a temperature as high as 80C is permissible. The lower operating temperature is determined by the supercapacitors which do not have a low temperature restriction. The anticipated operating range will be -50C to +80C