Alpha ESS Welcomes TESLA to the industry

Thanks to Tesla’s unveiling of the Tesla PowerWall this week the spotlight has been firmly place onto the domestic energy storage industry. Back from exhibiting our own Energy Storage Systems at [insert exhibition name] it is refreshing to see that AlphaESS’s vision for the future of domestic power is mimicked in a wider audience.

AlphaESS welcomes newcomers to the industry. Growing awareness of Solar Energy Storage and its place in the household will only greater achieve our goals to create a future where millions can become energy independent. AlphaESS envisages the next generation of SmartHomes to be

Tesla’s decision to diversify its range away from the motor industry is strategically crucial. The revenue generated by Tesla has been consistently high since flotation in 2010 however profit hasn’t reflected that. Large competition with well-established companies in the automotive arena and new self-generation incentives from the State of Californian likely contributed to Tesla’s impression that the energy storage industry is a short-term solution.

AlphaESS has, since its inception in 2012, produced and distributed Energy Storage Solutions for Photovoltaic systems. Currently operating in Europe and Australia AlphaESS has built up a quality reputation with customers and within the industry being nominated for ees AWARD finalist before Intersolar Exhibition in Munich this June. As such at AlphaESS we feel qualified and obligated to comment on changes in the industry landscape.

At first look, the design of Tesla’s PowerWall is very appealing. With the use of high energy density batteries the PowerWall has been made very compact. The wall mount design offers obvious advantages in situations of limited floor space.

Electricity storage in automobiles and domestic storage prioritises different aspects. Much more importance is given to both safety and lifetime in the domestic setting.

Safety:

Having a storage system inside a home as apposed to in an automobile brings about a change in user perspective. In a home environment the user is not in a sense of alertness as with driving and is more reliant on a system functioning in a safe manner. Tesla’s use of Lithium NMC batteries in its PowerWall seems to stem from a design point of view. Lithium NMC batteries have a high energy density and therefore the PowerWall can be made more compact. The use of Lithium NMC has been directly taken from the batteries used in Tesla cars simply for the reason of capacitance. However in terms of safety the use of Lithium NMC is considered to be less safe than other cell types namely, Lithium Iron Phosphate (LFP). Used in AlphaESS products LFP is considered the safest form of Lithium battery available a point for which AlphaESS sacrificed on energy density, least important for domestic energy storage .

Lifetime:

The two aspects of lifetime are considered separately, calendar life and cycle life. The upper end unit 10 kWh allows a continuous power discharge of 2 kW. Curiously low power considering the expected power usage of a home in evenings is more close to 3 kW. This application can be considered as a compromise of power to gain a longer cycle life, but the battery can’t discharge enough energy that could have supported the load. This would greatly reduce the system revenue because the loss overweighs the gain.

With respect to calendar life of the batteries used, the choice of 18650 batteries seems again from a design perspective, logical, however when considering 18650 Lithium NMC give a maximum of 10 Wh energy units then this requires more than 1000 batteries per unit, decreasing reliability. Individually these cells will have a long lifetime but even then a claimed 10 years from Tesla seems very ambitious.

End user considerations:

Taking customer needs into account Tesla have chosen a design in terms of modulation but have decided to use modules of 7 or 10 kWh. Randomly taking UK for example, when the average household consumes near 14.5 kWh per day, increase storage in such large steps becomes impractical and inflexible.

Modules need to act as one unit once installed, a master modular needs to be assigned to the system by means of an energy management system a system also used to view performance of the unit as a whole. AlphaESS has developed a web enabled energy management system with LCD touch screen. The system allows remote monitoring of operation optimising effectiveness of the photovoltaics. The energy management system acts as the nerve centre of the system whereby it automatically assigns master module, can identify and predict peak usage and identify problems that arise. Master modules assignment and problem identification can be done remotely, reducing the need for engineer callout. Peak usage can be predicted by big data collection from many units and this can be then used to feed power back to the grid a high demand times and therefore increase profitability for the user.

Tesla’s arrival in the industry is seen as a positive move for the whole industry, bringing awareness and ability to impact public opinion is something to be admired. We at AlphaESS are proud that our vision for the future can be shared by so many and that this new spotlight will attract new talents, drive growth and allow our vision to become reality.