

What's happening with Batteries?

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Which Battery Technology?

- Developed by the electronics industry for mobiles phones and laptops
- Small batteries with high packing density
- Lithium Ion batteries now mass produced and this drives down cost
- Unlikely other battery technologies will be able to compete unless manufactured in similar large numbers
- This battery technology now being used by the motor industry
- More manufacturing drives down prices



Batteries for EV's

- Investment in new battery plants is £B's
- Big brands, LG, Samsung, Panasonic (Tesla) and BYD
- China is the largest market for EV's together with the largest battery manufacturing plants in the World
- Rapid advancements in technology and new innovation means we can only look forward for a maximum of 5 years
- Next technology - Solid State Batteries in development, Porsche, Toyota, VW & Dyson – reason being they can handle a 5 minute superfast charge – more expensive but unlikely to be necessary for all EV's



EV's are a solution to City Pollution

- Deaths from pollution now published and is a “driver” for change
- Transport is the biggest polluter
- Clean cities globally are banning dirty vehicles
- Diesel cars already no longer economic to make – falling sales
- New EV's have range of 200 to 350miles with a target of 500 miles - range anxiety will be dead!
- EV's arriving in bulk in 2020
- Other clean city transport coming to the market – taxi's, delivery vans, etc



“Clean” delivery Vehicles

- No Diesel in Cities soon to reduce pollution – higher taxes or legislation
- Petrol will be next, probably by 2025
- All sizes of electric delivery vehicles are being developed, many on sale and starting mass production
- Even heavy transport can be powered by battery electric



Public Transport

- All moving to electric
- Hydrogen fuel cell was thought to be the future solution
- But battery technology is now a lower cost solution
- Industry gearing up fast with new products hitting the market
- Development cost of battery electric vehicles significantly lower than petrol / diesel powered products and much faster to put in production



Electricity for charging

- Electricity for charging needs to be “clean”
- Growth in Solar and Wind as the lowest cost of generation matches requirements for EV's
- Most EV's will be charged at home (night) or at work (daytime) – average car mileage only 20 miles per day
- Fast chargers only required for long journeys
- Smart technology will avoid overloading the grid – take electricity at the right times
- V2G solutions developing fast



Battery in House and Car

- Nissan / Audi / Mercedes, etc offering a home storage system that also talks to your EV and powered by Solar
- Massive spare capacity in a car battery
- Time of use "Smart" metering for domestics on the horizon
- All batteries can be remotely controlled – trade energy!
- Taking energy from the grid or putting electricity into the grid avoids need for expensive standby generation or new power stations and grid upgrades



Regulations will change

- Buildings will be generators
- New developments will need to calculate the impact on the grid – Solar, storage and V2G will change dynamics of grid impact
- Buildings will be all electric – Gas not a secure supply and a cause of pollution will be a problem by 2030
- Solar canopies on car parks, linked to EV charging, will be common place
- Planning and Building Regulations will be “drivers” at no cost to Government



Future energy provision

- The change over is rapid
- Battery storage is a “game changer” for both transport and buildings
- Yes we still need a grid but of reduced capacity and better balanced as a result of batteries
- The end of diesel and then petrol will come fast – hence BP/ Shell investing in renewables and EV charging
- Energy companies are becoming service industries and not power producers – EoN, Centrica, etc



Thank You

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