# 48 Volt Batteries Launched

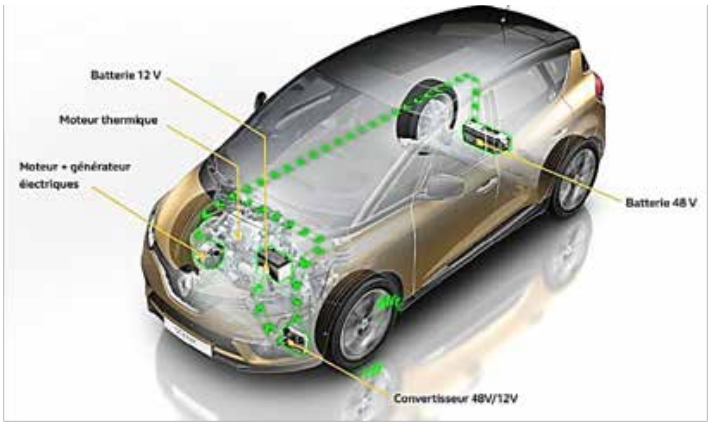
## By Bob Gell, GELCOservices

The automotive industry is undergoing a transformation. Fuel economy regulations are tightening, and the promise of connected, and even self-driving,vehicles loom large on the horizon.

At the same time, fuel economy requirements mean that more components, such as oil and water pumps, steering racks, and even superchargers, need to become electrical rather than mechanical. The move to downsize and 'downspeed' engines also means that there is less power available to meet the growing electrical demands. Meanwhile, the demand for hybrid and all-electrical vehicles is growing.

One of the consequences of these trends and developments is that the traditional 12V battery that has powered vehicles for decades seems to be coming to the end of its useful life.

Current vehicles equipped with 12 -volt batteries and crammed with electrical systems are struggling to meet demand for sufficient power supply. In future, electrical architectures will have to support electrically drivetrain components, an assortment of hybrid-drive parts, and more computing and processing power to improve connectivity, and set the foundation for autonomous vehicles that can not only drive themselves, but also interact with smart city applications, such as smart traffic lights, car parks, signage, and of course the internet.  Air conditioning is also more efficient with an electric motor instead of a driven belt, and it can cycle on even when the combustion engine is in stop-start mode.



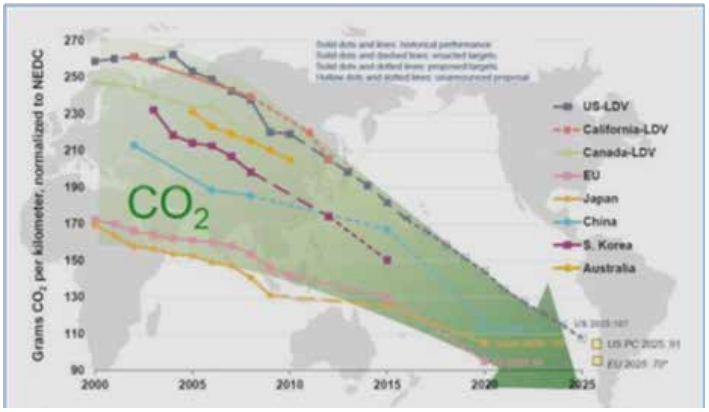

## 48V battery systems offer this option for more power.

One of the challenges for the industry, however, is balancing the cost: reward equation. With a 48V system adding around $1,200 to the cost of a vehicle, the industry will need to weight up whether the cost of such a system returns a meaningful fuel economy benefit. 48V mild-hybrids, the most common system currently being developed by automakers, are powered by an internal combustion engine driven by electric power using a motor/generator in a parallel configuration. This allows the engine to be turned off whenever the car is coasting, braking, or stopped, yet restart quickly.

It's estimated that this option provides fuel economy improvements of around 10–15%. However, according to estimates from Continental, this could increase to around 21%, making 48V

batteries an easy to implement system that significantly boosts fuel economy. As a result, the auto industry is already embracing the 48V system.

Audi's SQ7 TDI and Q8 Sport Concept vehicles, for example, both have an electric supercharger. Air conditioning is also more efficient with an electric motor instead of a driven belt, and it can cycle on even when the combustion engine is in stop-start mode. Again, 48V offers this option.




VW meanwhile expects significant weight savings through smaller cable cross-sections. 48V reduces the amount of wiring required – which is only set to grow with increasing requirements for vehicle connectivity, computing power and smart/self-driving capabilities.

In a 48V system, the same size wire carries four times the amount of power than a 12V system. For example, a 12V wire controlled by a 15-amp fuse could carry 180W, compared to a 48V system in which the same wire would carry 720W. At the same time, according to Navigant Research, nearly 60 million vehicles annually will include engine start-stop systems by 2024, which means that more than 7 million vehicles will adopt 48V electrical systems to support hybrid powertrains.

The electrification opportunities provided by 48V offers lightning fast start-stop capabilities, with less drain on mechanical power requirements. Furthermore, 48V systems could allow the engine to shut off in a wider array of situations, for example, while at a introduced in next year's Mercedes S-Class. The electric motor is directly attached to the crankshaft, allowing it to act as both an alternator and a starter, restarting the engine in a fraction of a second, as well as offering regenerative braking. Mercedes

expects fuel economy gains of 10–15%.

Ford, Hyundai, Bentley, Geely and many others are adopting the 48V system as the most cost-effective way of meeting emissions and fuel economy regulations, introducing advanced infotainment systems, and future-proofing vehicles for the smart applications of tomorrow.

While the 12V battery system will not completely disappear anytime soon, it seems that the majority of automakers have already embraced the 48V system as the solution to meeting the increasing and changing demands on vehicles brought about

by connectivity, advanced driver assistance systems (ADAS), stricter fuel economy and emissions regulations, and automated driving. Expect to see many more announcements from the automotive industry in the near future.

## SUMMARY

48-volt systems are expected to penetrate the market significantly over the next 2-3 years, as manufacturers aim to meet emission and fuel efficiency targets at costs which make mass production viable. While electric vehicles are touted as the long term future, the path will be paved with hybrid and mild hybrid technology which can offer significant improvements and a significantly lower cost.

REFERENCES & Images courtesy of:
Automotive iQ, Continental, Navigant Research, Nissan-Renault, EVS-30 Lectures

**Bob Gell and his business GELCOservices operates a Technical Laboratory service and Consultancy based in Adelaide which focusses on battery testing and validation to manufacturer's specifications and relevant Standards. More info go to www.gelcoservices.com.au**

# Keynote Speaker From USA At Autcare 2018

The AAAA (Afternarket Assn) has recently announced that Aaron Lowe, Senior Vice President, Regulatory and Government Affairs for the Autocare Association in the USA will be one of the headline speakers at Autocare 2018 to be held from 4th - 5th May 2018 at the International Convention Centre in Darling Harbour, Sydney.

Aaron led the Auto Care Association's successful effort in 2012 to obtain enactment of the Motor Vehicle Owners' Right to Repair Act in the Commonwealth of Massachusetts, as well as the 2014 Right to Repair national agreement which ensures that independent repairers have effective and affordable access to the information, tools and software to work on today's highly sophisticated computer-controlled vehicle systems.

Number one on the list of issues facing the independent aftermarket industry is telematics; and ownership and control of data. This complex issue touches on car owner privacy and competition; threatening to provide vehicle manufacturers with extensive power over the repair market by permitting them to harness the enormous amounts of data available from vehicles. Lowe will discuss the positive and negative impacts telematics could have on the independent auto car industry and its customers, the car owner.

An immediate threat to independents is occurring as vehicle components move from being mechanically driven to software driven. Aftermarket companies attempting to provide competitive replacement parts and repair tools are now finding themselves struggling with protections under copyright law that never were contemplated to address issues related to access and use of the embedded software now found on most vehicle components. Lowe will outline the battle now growing in the U.S. over who really owns the software on a vehicle, the vehicle owner or the manufacturer.

**For further information visit www.autocare.org.au**

# New Projecta Smart Controllers

The boom in RV & Offroad is a logical addition to our readers' businesses, you are routinely answering enquiries about Solar.

Ideal for owners of motorhomes, caravans and four wheel drivers who spend extended time on the road and away from mains power, Projecta's new controllers deliver a comprehensive four-stage charging process and also allow the user to tailor settings to best suit requirements and battery type.

There are many common features across the range which comprises SC220, SC245 and SC260 models, with the main difference between each being the number of AMPs each can accommodate from the solar panels they connect to.

All three controllers are EMC-approved and allow the owner the versatility to set the charging profile to suit a variety of battery chemistry types: Wet, AGM or Gel. Alternatively, the two 5V 2.4A USB ports also allows for charging directly from the controller, an ideal feature to quickly power mobile phones, cameras and similar devices.

Each controller is simple to operate courtesy of an easy-to-read, digital LCD screen that displays battery voltage, charging current, charging capacity, fault codes and more.

To ensure safe and reliable operation, each controller is equipped with a low voltage disconnect function that protects the battery from damage from over charging.

Other benefits of the controllers include a built-in temperature sensor that enables each unit to optimise charge performance and offer additional protection. An optional external temperature probe is also available at extra cost.

Choosing from the three models will depend on the size and output of the solar panels to which the smart controllers will be attached – the SC220 model is designed for use with solar panels producing up to 20 Amps.

The SC245 can handle solar panels with output of up to 45 Amps and is well suited to charge the larger deep cycle battery banks that are often found in motorhomes, house boats or remote cabins.

Similarly the SC260 is designed for like applications but can handle a larger output of up to 60 Amps from the solar panels.

The Smart Controllers are compact in design, the largest being 214mm x 129mm x 72 mm (depth) and come with integrated mounting brackets with predrilled holes for easy installation to a wide range of surfaces.

**Available now.**