

**Submission
No 18**

ELECTRIC AND HYBRID VEHICLE BATTERIES

Organisation: Federal Chamber of Automotive Industries

Date Received: 24 November 2023

FCAI response to:

NSW Parliamentary inquiry on Electric and hybrid vehicle batteries

November 2023



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1.0 FCAI FEEDBACK

The Federal Chamber of Automotive Industries (FCAI) is the peak Australian industry organisation representing the importers and distributors of over 99% of light duty passenger vehicles and light commercial vehicles up to 3.5t Gross Vehicle Mass (GVM) and motorcycles sold into the Australia market.

The Australian vehicle fleet is changing and will continue to do so in response to the various state and federal policies and initiatives. In order to reduce emissions of the Australian vehicle fleet, the FCAI members are adapting their offering across the range of powertrain technologies – including Non-Plug-In Hybrid Electric Vehicles (HEV), Plug In Hybrid Electric Vehicles (PHEV), Battery Electric Vehicles (BEV) and Hydrogen Fuel Cell Electric Vehicles (FCEV). According to the vehicle sales data that FCAI collects as part of [VFACTS](#), hybrid, plug-in hybrid and battery electric vehicles accounted nationally for 16.5 per cent of new vehicle sales in the year to the end of October (up from 11.3% across the same period in 2022).

The FCAI acknowledges the NSW parliamentary inquiry on electric and hybrid vehicle batteries led by the Joint Standing Committee on Road Safety and refers the Committee to the [previous FCAI submission to the ACCC – Lithium-ion batteries Issues Paper](#) (attached as an appendix to this document) Further, the Committee should note the recent publication of Vehicle Standard ADR 109/00 and 109/01 – Electric Power Train Safety Requirements 2023 which all FCAI members will certify to in due course but which we understand all FCAI brands are already capable of meeting through their compliance with international regulation UN R 100 which these ADRs are based upon.

FCAI remains available to the Committee for further discussion on the matter.

END OF FCAI SUBMISSION

FCAI response to:

ACCC – Lithium-ion batteries Issues Paper December 2022



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1.0 FCAI POSITION

The Federal Chamber of Automotive Industries (FCAI) welcomes the opportunity to provide our views on the ACCC's Lithium-ion issues paper.

The FCAI is the peak Australian industry organisation representing the importers and distributors of over 99% of new passenger vehicles and light commercial vehicles up to 3.5t Gross Vehicle Mass (GVM) and motorcycles sold into the Australia market.

Australia is a small market comprising approximately almost 1.1 million new passenger cars and light commercial vehicles sales each year. This amounts to around only 1.2% of annual, global new vehicle sales. Following the withdrawal of all domestic manufacturing in 2017, Australia is a technology taker of increasingly complex automotive products particularly as we consider the technological changes that are occurring within the industry.

In the first instance, FCAI points out that motor vehicles imported into Australia are designed and built to comply with Federal regulation under the Road Vehicle Standards Act (RVSA). It is this Act which describes several pathways through which a road vehicle model can be demonstrated to be compliant with the Australian Design Rules (ADRs) and be approved for provision to the Australian market. The ADRs are nationally consistent and uniform standards, with which road vehicles must comply and which facilitates registration and on-road use by the States and Territories across Australia.

The RVSA includes the Register of Approved Vehicles (RAV) being a publicly searchable database of approved vehicles that are available for supply in Australia.

In line with environmental considerations, FCAI does expect that the light vehicle fleet will increasingly introduce a range of electrified powertrains in various manners. These electrified powertrains can include:

- Hybrid Vehicles (HV)
- Plug In Hybrid Electric Vehicles (PHEV)
- Battery Electric Vehicles (BEV)
- Hydrogen Fuel Cell Electric Vehicles (FCEV)

All electrified powertrains will contain some form of traction battery, most commonly incorporating a Lithium-Ion battery technology including:

- Lithium-Ion Phosphate (LFP),
- Lithium Nickel Cobalt Manganese (NCM) or,
- Lithium Cobalt Aluminium Oxide (LCO)

The following section provides responses to questions raised in the issues paper. Please note that FCAI will only respond to those questions that we believe are relevant to the light vehicle automotive sector.

2.0 BACKGROUND

In line with global environmental challenges, the automotive industry is responding through the development of a range of electrified powertrains.

FCAI members are developing these products in line with global regulations that considers many aspects of automotive safety. Specifically, FCAI has advocated with the DITRDCA to adopt UN regulation on a “must comply, if fitted” basis - UN 100 - *Uniform provisions concerning the approval of vehicles with regard to specific requirements for the electric power train*. FCAI have recently been contacted by DITRDCA where they highlighted their proposal to adopt this UN regulation as ADR 109/00 which will be open to public comment in the near future.

Within the UN regulation there are two parts that are relevant to this discussion:

- Part I: Requirements of a vehicle with regard to specific requirements for the electric power train.
- Part II: Requirements of a Rechargeable Electrical Energy Storage System (REESS) with regard to its safety.

Within Part II there are numerous requirements that consider how the REESS is managed in regard to its safety and operational performance under numerous scenarios.

In general, Electric Vehicles (EVs) have extensive protections including Battery Management Systems (BMS) that control charging to specifically, amongst other things, limit the amount of heat generated particularly during recharging events. In addition, vehicle manufacturers commonly install cooling and heating systems to manage the wide variety of operating conditions encountered in the environment and during operation.

The chargers used for EVs are integrated into the vehicle’s electrical architecture and connect to vehicle chargers through industry standard plugs – refer to <https://www.fcai.com.au/news/codes-of-practice/view/publication/99> aligning to a number of international EV charging standards.

Automotive products typically use 12V-24V electrical systems – typically referred to as Extra Low Voltage. For the purposes of this document, we will use the term “Low-Voltage” to describe the higher voltage REESS components operating in the range (>50VAC to <1000VAC or 120VDC to < 1500VDC).

3.0 QUESTIONS

Q1. Do you consider certain types of Li-ion batteries (see Table 1.1) are more hazardous than others? For example, are certain types of Li-ion batteries more hazardous because of the chemistry make up and/or other factors that impact the hazard (see Table 1.2 for reference)? Please provide an explanation and/or evidence to support your response.

FCAI response

All batteries are energy storage devices and are therefore hazardous to some degree. There are many factors to consider when selecting batteries for electric vehicles which include but are not limited to:

- Energy Density
- Size
- Discharge capabilities
- Dimensions and Weights
- Longevity and Durability
- Cost for intended application (including safety management systems)

Based on information/feedback provided by FCAI Members we understand that generally batteries used in EV applications within Australia are designed to meet the UN regulation UN 100 governing safety standard, regardless of the battery technology employed. Differing battery technologies use battery management and cooling systems specifically designed for that technology and the intended application.

Q2. Do you consider the characterisation of the hazards of Li-ion batteries in Table 1.3 accurate and why? Are there other hazards?

FCAI response

In the case of automotive products using Li-Ion batteries, the hazards highlighted in table 1.3 are considered in the design of the vehicle and the REESS in line with UN regulation 100. In automotive applications, manufacturers consider the placement and protection from environmental impacts that would be expected in an “on-road” vehicle.

The table does not identify the electrical hazards associated with REESS products or contemplate the training requirements necessary for service and repairs to these products.

Q3. Is there a stage at which Li-ion batteries are most dangerous? For example, when being manufactured, transported, stored, used/misused, charged or disposed of. Please provide an explanation and/or evidence to support your response.

FCAI response

The process of charging Lithium-Ion batteries generates heat. Automotive products have battery management systems that monitor (amongst many other parameters) the temperature of the battery pack and:

- generally, limit the charging rate particularly above 80% State Of Charge (SOC).
- implement cooling protocols, where necessary.

Lithium-Ion batteries are susceptible to damage in the automotive environment although motor vehicles use robust designs that consider collisions and placement amongst other factors designed to minimise the potential for this to occur.

Q4. Can you provide any information or data (not already provided) on injuries, incidents, fatalities or near-misses involving a Li-ion battery?

FCAI – No response

Q5. Do you consider that consumers are sufficiently educated on Li-ion battery safety hazards? If so, what are the key sources of information for consumers? Do you consider that further consumer education is required, what should the message be and in what form?

FCAI response

Automotive products are provided with consumer information on the correct operation and maintenance requirements of the vehicle including the following:

- Operational handbook (physical / digital).
- New vehicle handover procedures and instruction.
- Appropriate warnings placed strategically on the vehicle.
- Warning messages displayed within the vehicle's instrument cluster if a malfunction or improper operation is attempted in relation to the lithium-ion battery.
- Warnings provided with charging interconnecting equipment.
- FCAI members abide by the FCAI Code of Practice for Recycling of Traction Batteries
 - <https://www.fcai.com.au/news/codes-of-practice/view/publication/173>

Q6. What actions can consumers take to mitigate the risks presented by Li-ion batteries?

FCAI response

Consumers of automotive products need to follow the manufacturer's instructions and guidelines on the safe use of their EV products. It is also important to ensure that the product is maintained by appropriately qualified technicians using only genuine replacement components and recommended charging equipment to ensure system compatibility and interoperability according to the original design intent.

Q7. As a consumer or retailer:

a. Do you assume the manufacturer has conducted safety testing on Li-ion battery products you purchase?

b. What safety-related factors influence your purchasing decisions?

FCAI – No response

Q8. Are there particular Li-ion battery products, brands or manufacturers you have safety concerns about? Please provide an explanation and/or evidence to support your response.

FCAI – No response

Q9. What other actions can supply chain participants take to mitigate the risks presented by Li-ion batteries?

FCAI response

The use of non-genuine parts and accessories can seriously compromise the integrity of these highly complex electrified powertrain vehicles.

Service and repair personnel, and other technicians, should also ensure that they dispose of a REESS lithium-ion battery through an OEM's authorised collection agent who is capable of handling the battery safely. FCAI members abide by the [FCAI Code of Practice for Recycling of Traction Batteries](#) for these purposes.

Q10. If you are a manufacturer or seller/distributor of Li-ion batteries, what education or information, if any, do you provide to your supply chain participants, staff and/or consumers about Li-ion battery hazards and risks?

FCAI response

Automotive products are provided with extensive consumer information on the correct, safe operation and maintenance requirements of the vehicle, including the following:

- Dealer training and education
 - Sales Professionals
 - Aftersales Technician and Body Repairer training
- Operational handbook (physical / digital), including appropriate hints, warnings and cautions within service and repair manuals.
- Appropriate warnings placed strategically on the vehicle.
- Appropriate colouring of low-voltage parts associated with lithium-ion batteries. For example, orange wiring harnesses and connectors to indicate low-voltage circuits.
- Warnings provided with charging interconnecting equipment.

Q11. If you are a manufacturer or seller/distributor of Li-ion batteries, what safety and quality assurance processes do you have in place? How and where is safety and quality assurance testing undertaken? Have you encountered any barriers to undertaking this process?

FCAI response

Automotive products are extensively tested internationally both from a laboratory perspective as well as across a broad range of environmental extremes before being released to the market for which they were intended.

OEMs may submit their electrified vehicles for crash testing by ANCAP, an independent body that publishes star-based ratings for many new vehicles. ANCAP wields significant influence in vehicle selection for private consumers and fleet buyers, and its suite of testing includes electrical system safety checks.

In addition, FCAI members have extensive in-market monitoring systems consistent with their vehicle quality assurance processes.

Q12. What information or data can you provide about who the major players are in the Australian market for Li-ion batteries, including all supply chain participants, and the types of products they supply?

FCAI - No response

Q13. Are there alternatives to Li-ion batteries that are in the market or in development that are potentially safer than Li-ion batteries? What are they?

FCAI response

For automotive products, Li-ion batteries are the current dominant battery technology in its various forms. Globally, the automotive industry expends considerable resources on research, design, and development.

There are always new technologies being developed and many have not yet been commercialised for the mass market. For instance, solid state batteries have been in the development phase for some time and are expected to be commercialised in the 2025-30 timeframe for motor vehicles.

Q14. Do you consider government intervention is required to manage Li-ion battery safety risks? If yes, what form of intervention do you recommend? Please explain your response.

FCAI response

Government regulation outside of the Australian Design Rules (ADRs) is unnecessary for light vehicle automotive products using Lithium-Ion batteries. The ADRs provide the necessary mechanisms for type approval and introduction to the Australian market encompassing global safety requirements on motor vehicles.

However, there is a role for Government to ensure that those automotive personnel working in Low Voltage (>50VAC to <1000VAC or 120VDC to < 1500VDC) electrical systems have been trained appropriately either by the manufacturer of the products or through the TAFE system.

The FCAI notes that as part of the [Motor Vehicle Service and Repair Information Sharing Scheme \(MVIS\)](#), access to safety information such as low-voltage and electric propulsion systems for repairers and registered training organisations (RTOs) is restricted to those who have completed a suitable training course and have passed a fit and proper person check. Any future regulation of lithium-ion batteries should align with these existing requirements.

Q15. Do you recommend any existing voluntary, industry or international safety standard, or overseas regulatory frameworks or certification methods, as having potential to mitigate the risks discussed in this Issues Paper? To what extent do these already address the risks discussed in this Issues Paper?

FCAI response

Based on information/feedback provided by FCAI Members we understand that generally batteries used in EV applications within Australia are designed to meet the UN regulation UN 100 governing safety standard, regardless of the battery technology employed.

Differing battery technologies use battery management and cooling systems specifically designed for that specific technology and the intended application.

Please also note the applicability of existing requirements under the Motor Vehicle Service and Repair Information Sharing Scheme per the response to Q14 above.

Q16. If you are a manufacturer or seller/distributor of Li-ion batteries, please provide details about whether the products you, or your supply chain participants, supply meet any relevant voluntary, industry and/or international standard and/or regulations, or other certification or quality assurance processes/requirements.

FCAI response

Based on information/feedback provided by FCAI Members we understand that generally batteries used in EV applications within Australia are designed to meet the UN regulation UN 100 governing safety standard, regardless of the battery technology employed.

Q17. Do you consider that any of the potential risk mitigation strategies identified in this Issues Paper would prevent injuries or fatalities from Li-ion batteries in Australia, either on their own or as part of a combined approach? Why?

FCAI – No response

Q18. What other potential risk mitigation strategies may be effective in reducing the risks posed by Li-ion batteries? Please explain your response.

FCAI – No response

Q19. What research is available that is directed to the prevention of injuries or fatalities caused by Li-ion batteries. For example, research into safer design and manufacturing practices. Please provide details of this research.

FCAI – No response

Q20. Are there further innovations, including advances in technology, that could either mitigate or exacerbate the hazards associated with Li-ion batteries discussed in this Issues Paper?

FCAI – No response

END OF FCAI SUBMISSION