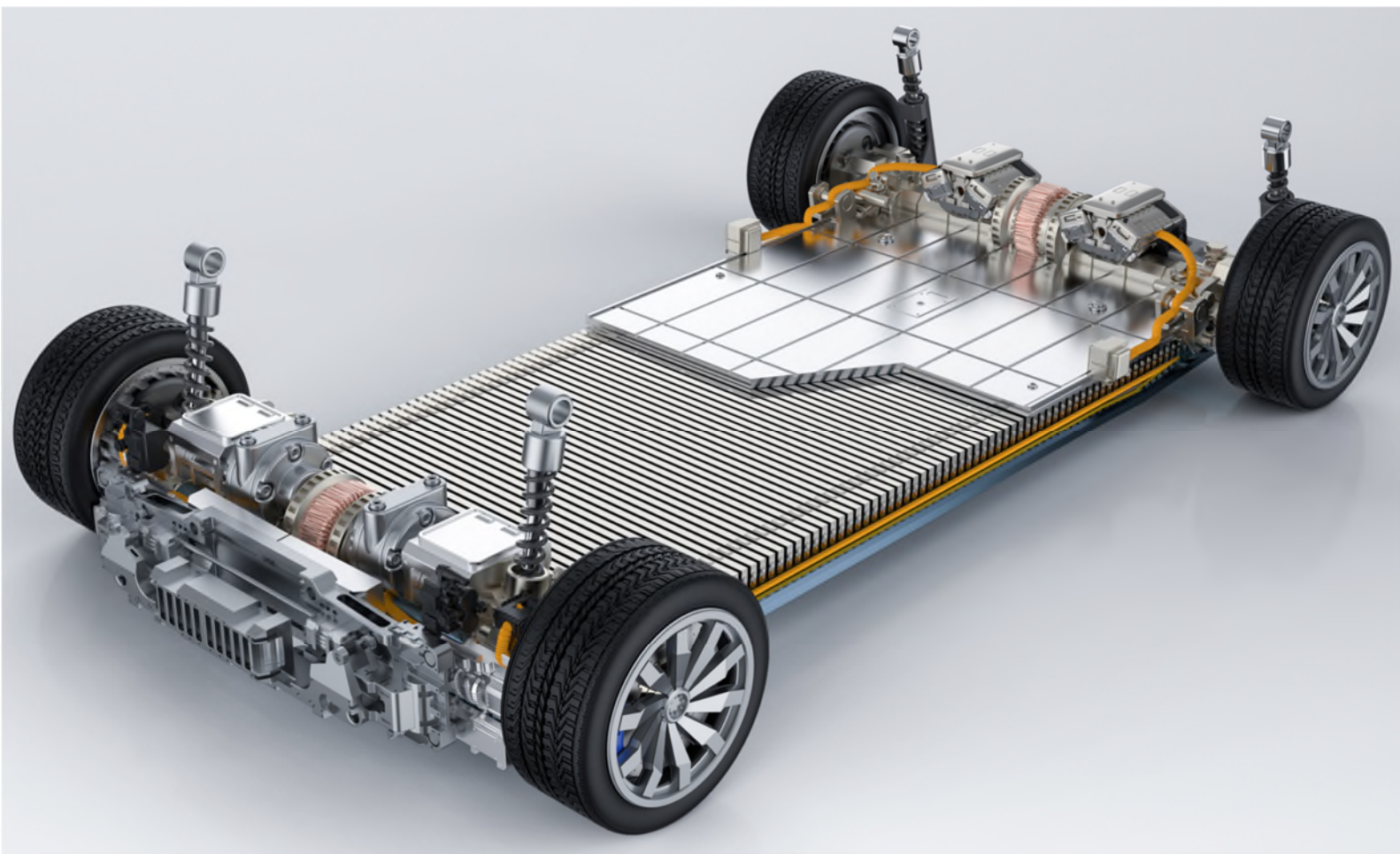


Appendix «Handling of Damaged High-Voltage Automotive Batteries» to the BTVE Guidelines

«Analysis of HV Batteries»



Inspection personnel: requirements
Condition checks on high-voltage batteries
Handling damaged high-voltage batteries
Optimisation of the loss assessment process
Cost optimisation in the event of a claim
Additional costs for significantly damaged high-voltage batteries

Analysis of HV batteries

Content

1	INTRODUCTION	3
2	LEGAL STATUS OF THESE GUIDELINES	3
2.1	BASIC PRINCIPLE	3
2.2	MEMBERS OF THE WORKING GROUP	4
3	REQUIREMENTS FOR THE INSPECTOR – INSPECTION FACILITY	4
3.1	REQUIREMENTS FOR THE INSPECTOR.....	4
3.2	REQUIREMENTS FOR THE INSPECTION FACILITY/LOCATION.....	5
4	BACKGROUND	5
5	ANALYSIS REPORT HV BATTERY	6
5.1	STATUS OF THE HV BATTERY.....	6
5.2	DEFINITIONS	7
6	INSPECTION PROCEDURE	7
6.1	APPLICATION OF THE INSPECTION PROCEDURE.....	7
6.2	INSPECTION PROCEDURE AT DAMAGE LOCATION/PARKING SPACE	9
6.3	APPLICATION OF INSPECTION PROCEDURE IN THE GARAGE.....	10
7	STATUS/RESULT	14
7.1	EXCLUSIONS FROM INSPECTION OF HV BATTERIES.....	14
8	CLOSING REMARKS	15
9	BIBLIOGRAPHY	15
10	ABBREVIATIONS	15
11	APPENDIX: ADDITIONAL COSTS FOR SIGNIFICANTLY DAMAGED BATTERIES	17
11.1	BASIC PRINCIPLE (UNDER ORRCHEM)	17
11.2	DEFINITION OF A SIGNIFICANTLY DAMAGED BATTERY ACCORDING TO ORRCHEM SR 814.81	17
11.3	REMOVAL.....	18
11.4	TRANSPORT.....	18
11.5	DISPOSAL.....	18
11.6	TWO-WHEELED VEHICLES	19
12	APPENDIX: DOCUMENTS	20
12.1	ANALYSIS OF TRACTION BATTERY TEMPLATE.....	20
12.2	HANDOVER REPORT TEMPLATE.....	22
12.3	HAZARD ANALYSIS TEMPLATE	24
12.4	FUNCTION ANALYSIS TEMPLATE.....	25

1 Introduction

These guidelines provide comprehensive information on relevant points for checking an HV battery from a vehicle that has suffered significantly damage. They are intended as a tool to ensure the correct handling of damaged HV batteries. They explain how the condition of the HV batteries can be checked and what the requirements are for the test centre/person carrying out the inspection. The guidelines also serve to optimise the claims assessment process, thereby avoiding unnecessary waiting periods and costs.

The topic of additional costs for significantly damaged batteries is also addressed in these guidelines. The detailed description of this can be found in Appendix 11 of this document.

These guidelines were drawn up on the basis of the applicable legal conditions, the manufacturers' specifications and empirical values from a large number of HV batteries that had been checked. Accordingly, due consideration is given to both theoretical and practical aspects.

The «Analysis of HV Batteries» guidelines are an extension of the existing «Recovery – Transport – Storage and Disposal» guidelines from the Swiss Association of Roadside Assistance and Recovery Services (ASS) (BTVE Guidelines).

2 Legal status of these guidelines

2.1 Basic principle

These guidelines were initiated by the Expert Committee of the Swiss Insurance Association (SIA) and LiBaService24 GmbH. Further important industry representatives were added to the working group.

The guidelines take into account the legal provisions that apply today and the latest technology. The information and recommendations provided are based on careful research. However, no guarantee can be given for their accuracy and completeness. All liability is expressly excluded. These guidelines do not in any way release vehicle owners, disposal companies, inspection garages, transport firms and insurance companies processing, inspecting and disposing of HV batteries from additional clarifications that must be carried out as part of the technical qualification process and in particular under their own responsibility.

These guidelines do not replace any legal provisions; they are a compilation of existing regulations and practical recommendations with regard to the inspection and disposal of damaged HV batteries. Following these recommendations provides a certain degree of legal certainty in terms of compliance with the relevant legal requirements. In addition, these guidelines are intended to enable enforcement agencies to harmonise their enforcement practices across the different cantons.

The Allianz Language Services Team is supporting the Expert Committee (AGFS-SIA) and making the translation available in order to ensure standardised terminology throughout Switzerland and a shared understanding of the processes.

In the event of differences or contradictions between the various language versions of these guidelines, only the German version shall be binding.

2.2 Members of the working group

The following representatives of institutions, associations and companies were part of the working group:

Adrian Müller	Head of Recycling/Recovery Service, Autoverwertung Müller AG
Daniel Blumer	Team Lead Vehicle Experts & RWH HUB Aarau & Bern
Daniel Christen	Managing Director, Stiftung Auto Recycling Schweiz Managing Director of the Sestorec Cooperative
Daniel Junker	Head of Vehicle Experts, Baloise Insurance Ltd
Dr Viktor Haefeli	Managing Director, LiBaService24 GmbH
Luigi Cescato	Technology and Statistics, auto-suisse Sestorec Cooperative
Reto Schibli	Expert Motor Manager, Allianz Suisse
Thomas Keusch	Specialist in Traffic Accident Analysis, Zurich Insurance Company Ltd
Urs Bucheli	Vehicle Expert Zentrex AG – ASS representative

3 Requirements for the inspector – inspection facility

3.1 Requirements for the inspector

The inspector must have up-to-date knowledge of automotive technology and be active in the profession. He/she must have the methodological skills required to carry out the inspection work and must comply with the requirements of these guidelines.

For the reasons already mentioned, a distinction is drawn between the requirements:

Function analysis pursuant to section 6.3 and hazard analysis pursuant to section 6.2 can be performed by people with HV1 and HV2 training or equivalent.

If work is performed on live HV components (e.g. connectors, modules or cells) or these are being checked or analysed, at least one specialist trained in working on live high-voltage systems must be present (HV3 / S3 or equivalent qualification).¹

Once the people in question have qualified successfully, they must keep their specialist knowledge up to date through regular attendance of training courses.

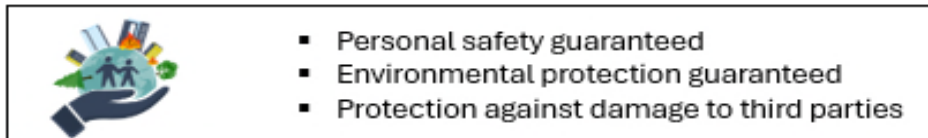
¹ See FCOS Guideline 6281 on Occupational Health and Safety in Connection with High-Voltage Systems of Hybrid and Electric Vehicles

3.2 Requirements for the inspection facility/location

According to the «Quarantine HV vehicles» checklist from the ASS BTVE Guidelines, the following requirements apply to the inspection facility/location:

- Personal protection
- Environmental protection
- Protection against damage to third parties

Checklist for quarantine of HV vehicles



Source: ASS BTVE Guidelines – extract

The company owner or the managers appointed by him/her are responsible for occupational safety in the company. The responsible people must ensure that only employees who meet the applicable requirements work on electric or hybrid vehicles² (employer obligations under Art. 6 of the Employment Act (ArG), Art. 82 of the Accident Insurance Act (UVG), Art. 328 of the Swiss Code of Obligations (OR)).

4 Background

Automotive HV batteries can pose a safety risk after a significantly collision or a natural event, regardless of vehicle type (car, delivery van, lorry, etc.) and brand, model, etc.

A significant damage event can cause thermal, mechanical, electrical or chemical stress, or a combination thereof, to the vehicle's HV battery, which may not be visible or recognisable externally and without an in-depth analysis. As a result, the condition of such an HV battery may be undefined/indeterminable, which can sometimes pose a significant safety risk. The condition of the HV battery must therefore be determined using the proposed inspection steps and the result must be recorded in an analysis report in order to minimise the safety risk.

Both the manufacturers' specifications and experience from previous inspections of HV batteries that posed a risk due to a damage event should be included in the evaluation. Environmental protection and sustainability should be given appropriate priority in compliance with applicable laws and regulations.

These guidelines relate exclusively to damage to HV batteries that are based on lithium-ion compounds. «Lithium-ion batteries» is used as an umbrella term and includes various construction types (e.g. lithium iron phosphate, lithium NMC/NCA, lithium polymer).

Industrial batteries that have already been dismantled with a view to removing replacement parts or valuable components and raw materials are not covered by the free, mandatory return scheme. Anyone who dismantles industrial batteries and uses parts of them is obliged to

² This rule encompasses all xEV (i.e. all types of electric vehicles that use an electric drive system). Typical examples include BEVs (battery electric vehicles), PHEVs (plug-in hybrid electric vehicles), HEVs (hybrid electric vehicles) and FCEVs (fuel cell electric vehicles).

dispose of the remaining battery parts/modules in an environmentally friendly, state-of-the-art manner at their own expense.

These guidelines also aim to provide clarity on the actual additional costs that can arise for an HV battery deemed to be «significantly damaged/critically defective» versus one that is merely «damaged/defective». See Chemical Risk Reduction Ordinance (ORRChem), Appendix 2.15.

The detailed description of this can be found in Appendix 11 of this document.

5 Analysis report HV battery

The aim of analysing an HV battery is to provide clarity on the battery’s possible further use and thus indicate whether it can remain in the vehicle or, if necessary, to indicate the correct recycling or disposal process.

The evaluation of whether a cell or battery is damaged or defective must include an assessment or rating on the basis of the safety criteria of the cell, battery or product manufacturer or be performed by a technically qualified person with knowledge of the safety features of the cell or battery (in accordance with ADR SP 376, 2025).

5.1 Status of the HV battery

functional	repairable	damaged/defective	significantly damaged/critically defective
HV battery can be sold	HV battery can be sold	HV battery cannot be sold	HV battery cannot be sold
with analysis report	with analysis report	use of modules or parts / proper recycling	proper recycling

The analysis report is a high-quality product that ensures a high level of safety for people and the environment and is designed to meet sustainability requirements. Potential consequential events, personal injury and property damage associated with those events and possible consequential costs should be ruled out as far as possible. The analysis report can be used to clarify questions of liability.

5.2 Definitions

The information provided in accordance with ADR 2025 is used as the basis for the definition.

Functional	HV battery from damaged vehicles with no impairments to its functioning.
Repairable	HV battery from damaged vehicles which can be returned to a functional condition by replacing individual components.
Damaged, defective	Evaluation criteria pursuant to ADR SP 376, 2025 b) Use or misuse of the cell or battery c) Indications of physical damage, such as deformation of the cell or battery casing or paint on the casing d) External and internal protection against short circuits, such as voltage or insulation measures e) Condition of the safety features of the cell or battery f) Damage to the internal safety components, such as the battery management system
Significantly damaged/ critically defective:	Critically defective cells or batteries. a) Acute danger, such as gas, fire or leakage of electrolytes, batteries or cells which, under normal transport conditions, are liable to rapid decomposition, ignition, dangerous heat development or dangerous emission of toxic, corrosive or flammable gases or vapours. (Critically defective in accordance with ADR SP 376, 2025)

6 Inspection procedure

The inspection of the HV battery is limited to non-destructive procedures. During the inspection procedure, the HV battery is not placed under any further mechanical, chemical or thermal stress. Current values are measured or read out in order to achieve a meaningful, understandable and consistent analysis.

6.1 Application of the inspection procedure

The inspection procedure is to be used for HV batteries that have suffered a damage event in accordance with the «Recovery of accident-damaged HV vehicles» checklist (events 4 to 7) from the BTVE Guidelines when there are indications that the battery is in an undefined condition.

In this respect, both the damage event and the undefined condition of the HV battery are decisive for the application of the test procedure.

The manufacturers' rescue sheets can serve as a useful aid when it comes to applying the inspection procedure.

Rescue sheets of the vehicle manufacturers – TCS Switzerland

Rescue sheets vehicle manufacturers – TCS





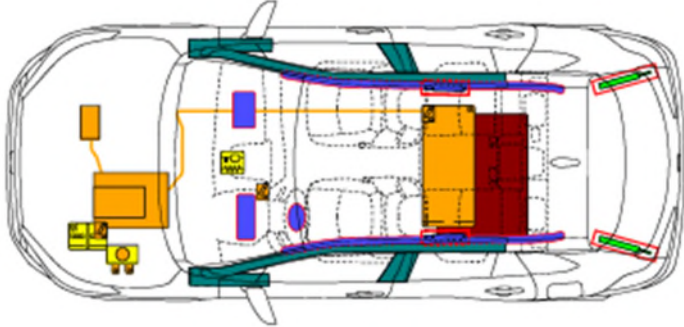
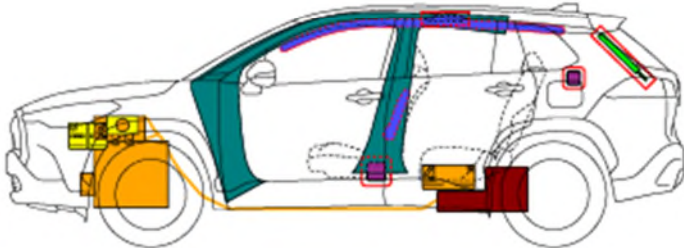
























		TOYOTA COROLLA CROSS HYBRID 2021-01							
									
 									
	Airbag		Gasgenerator		Gurtstraffer		SRS Steuergerät		aktives Fußgängerschutzsystem
	automatisches Überroll-Schutzsystem		Gasdruckdämpfer / vorgespannte Feder		Karosserie-Verstärkung		Achtung-Zone		
	Niedervolt-Batterie		Niedervolt-Kondensator		Treibstofftank		Gastank		Sicherheitsventil
	Hochvolt-Batterie		Hochvolt-Kabel / -Komponente		Hochvolt-Trennstelle		Hochvolt-Sicherung		Hochvolt-kondensator
	Niedervoltgerät zum Abtrennen der Hochspannung								
			ID No.	Version No.	Version date	Page			
			COROLLACROSSHV10	01	01 / 2021	1 / 4			

Image source: <https://www.toyota.de/zubehoer-service/fahrzeuginformationen/rettungsdatenblaetter>

Events 4 to 7 on BTVE Guidelines checklist

Event 4		Accident-damaged vehicle with triggered airbag (ready mode <u>cannot</u> be activated)	<ul style="list-style-type: none"> ▪ Significant front or rear damage with damage to rigid structural components ▪ Passenger compartment deformed from side
Event 5		Accident-damaged vehicle with damage to HV battery	<ul style="list-style-type: none"> ▪ Underbody damaged ▪ Vehicle overturned
Event 6		Flooded	<ul style="list-style-type: none"> ▪ From bottom edge of seat ▪ HV connector to HV battery with water ingress
Event 7		Vehicle partly gutted by fire	<ul style="list-style-type: none"> ▪ Partial fire without HV battery ▪ HV battery with superficial fire damage

Excerpt: ASS BTVE Guidelines

Event 8 (it must be clearly assumed that the battery is damaged)

In the case of damage event 8, the analysis is limited to evaluating whether the HV battery is «damaged/defective» or «significantly damaged/critically defective».

Event 8		Vehicle completely gutted by fire
---------	-------------------------------------------------------------------------------------	-----------------------------------

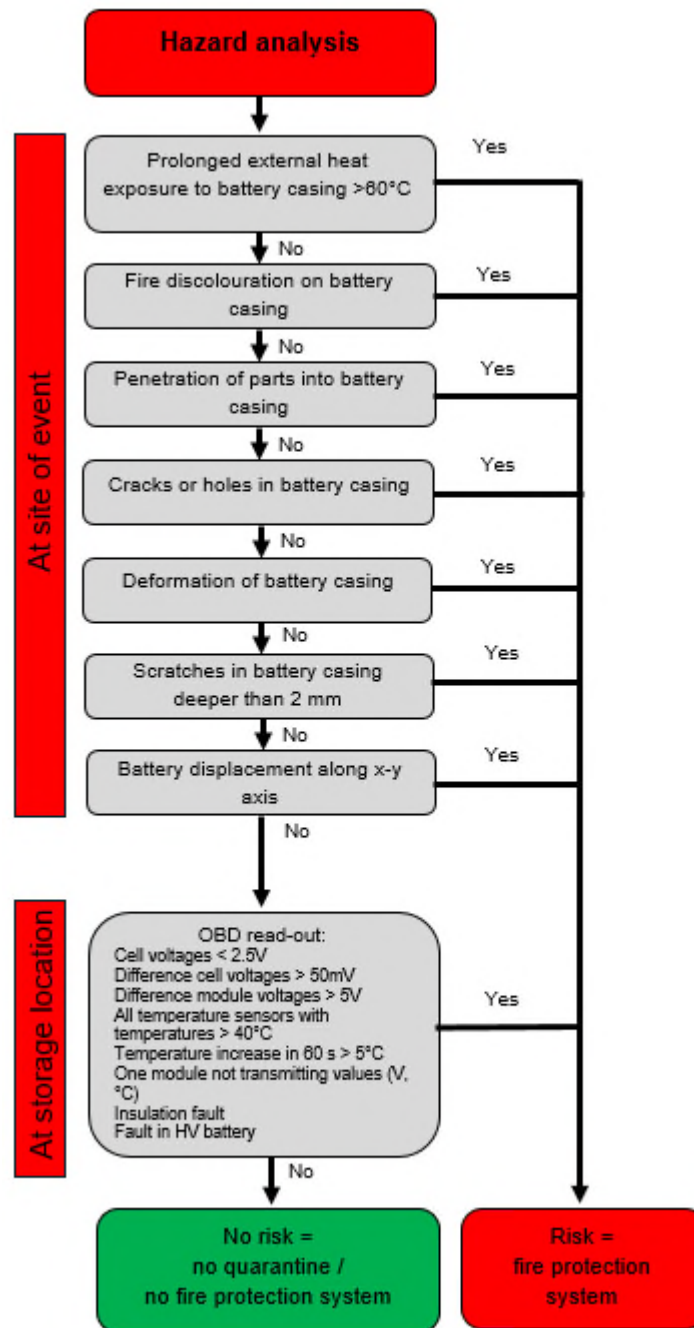
Excerpt: ASS BTVE Guidelines

The inspection procedure differs depending on whether the HV battery is inspected at the damage location/parking space (hazard analysis) or in a garage (function analysis).

6.2 Inspection procedure at damage location/parking space

This inspection procedure is a further assessment of the damage levels in accordance with the checklists in the ASS BTVE Guidelines. In the case of damage events 4 and 5, this should be used to evaluate whether a vehicle with or without a fire protection system needs to be transported away from the location at which the damage occurred and whether quarantine is necessary. The following inspection points and results must be recorded in the analysis report:

HV1 and HV2 training or equivalent in accordance with section 3.1 is required as a minimum for the following inspection procedure.



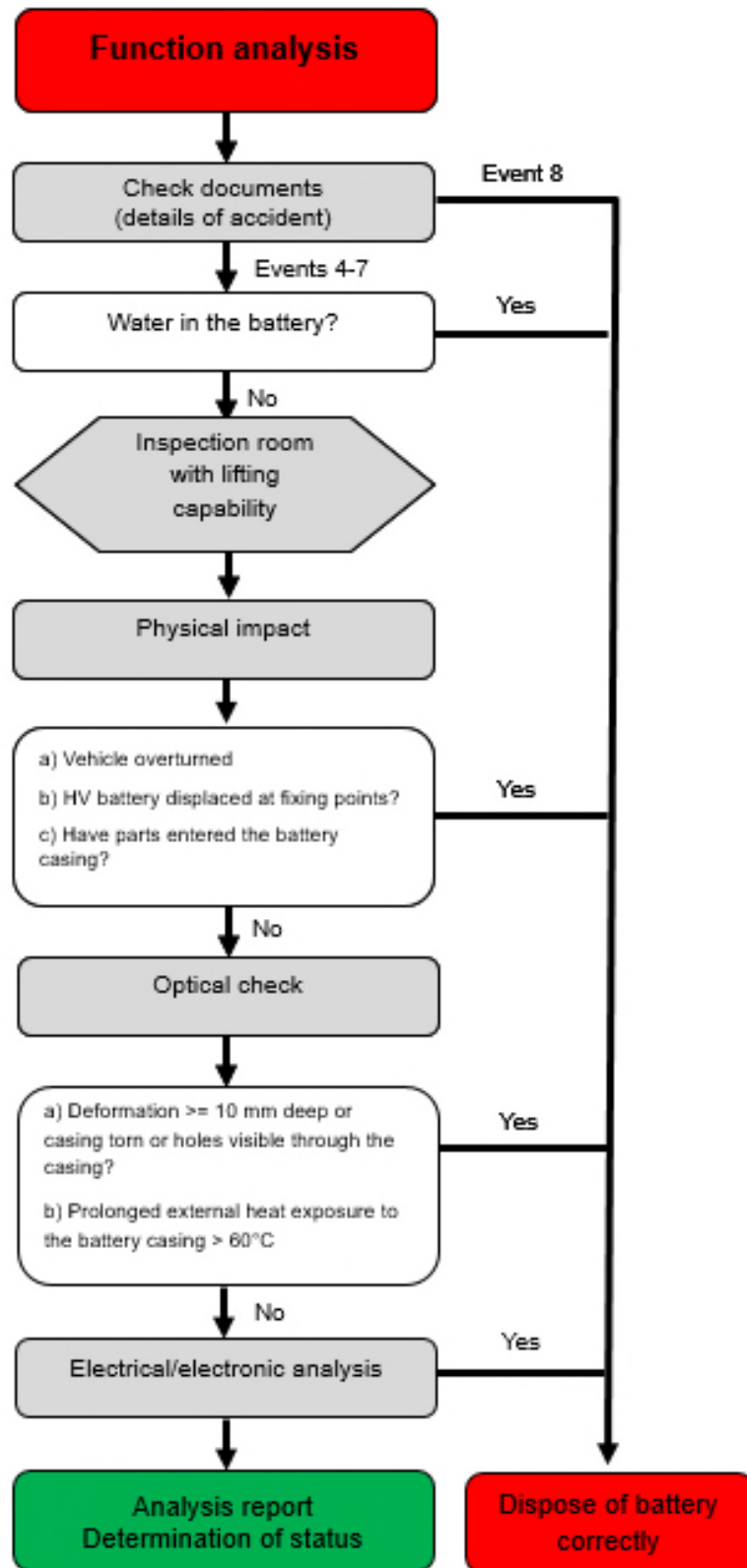
Comment: The figures listed above are average figures based on various manufacturers' specifications and specialist literature. The information provided by the manufacturer always applies in the event of deviations.

6.3 Application of inspection procedure in the garage

This inspection procedure is used to assess the condition of the HV battery in order to provide clarity on whether the HV battery is **functional, repairable, damaged/defective** or **significantly damaged/critically defective**. The inspection procedure can be used for all event levels (in particular events 4 to 8 pursuant to the BTVE checklist on the recovery of accident-damaged vehicles).

HV1 and HV2 training or equivalent in accordance with section 3.1 is required as a minimum for the following inspection procedure.

If live HV components (e.g. connectors, modules or cells) are being checked or analysed, HV3 training or equivalent is required as a minimum.



Comment: The figures listed above are average figures based on various manufacturers' specifications and specialist literature. The information provided by the manufacturer always applies in the event of deviations.

Function analysis		
Inspection method	Inspection point	Comment
Documents	Claims notification	
	Police report	
	Handover report	
	Damage event pursuant to BTVE checklist	
Physical impact	Bodywork and chassis parts displaced as far as battery	
	Foreign objects/parts have entered the battery	
	Battery displacement along x or y axis	Check all screw connections between battery and body-work
	Deformation of vehicle floor	
	High kinetic forces	
Optical check	Vehicle readiness (ready mode)	
	External influences: water	Check whether water has entered the battery. Check all electrical connectors directly at the battery casing
	External influences: fire	
	External influences: heat	Prolonged external heat exposure to the battery casing > 60°C
	External influences: soot	
	Use of extinguishing agents	
	Airbag triggered Driver/passenger	
	Airbag triggered (Seat or side airbags)	
	Seat belt tensioner triggered	
	Electrical connections on the battery casing	
	Battery underbody/casing (dents, deformations, scratches, cracks, holes)	Casing must be completely visible (remove covers)
	Cooling system of the HV battery	Connections on the battery / wires connected to the battery
Cooling system of the HV battery	Deformation of cooling plates (underbody cooling plate: protective cover must be removed for the inspection)	
Cooling system of the HV battery	Leaky cooling plates	

	Cooling system of the HV battery	Leaks in the battery or internally
	Cooling system of the HV battery	Heat transfer cooling elements to modules

Inspection method	Inspection point	Comment
Electrical/electronic analysis	Read error memory	
	Read vehicle	
	Check battery data (BMS data): state of charge (SOC)	Mandatory values
	Check battery data (BMS data): individual cell voltages	Mandatory values
	Check battery data (BMS data): individual module voltages	Mandatory values
	Check battery data (BMS data): module temperatures	Mandatory values
	Check battery data (BMS data): difference in cell voltages	Mandatory values
	Communication with all modules and temperature sensors	Mandatory values
	Check battery data (BMS data): insulation values	Value in [Ω] or condition OK Mandatory values
	Check battery data (BMS data): state of health (SOH)	Additional values
	OBD read-out: no errors HV battery	Errors that impact the safety of the cell or modules
	Pyrofuse triggered	If there is one in the battery

Comment: this table is not exhaustive.

7 Status/result

The inspector must determine the status of the HV battery based on the data obtained from the various inspection methods. In this process, a distinction can be drawn between:

functional	repairable	damaged/defective	significantly damaged/critically defective
HV battery can be sold	HV battery can be sold	HV battery cannot be sold	HV battery cannot be sold
with analysis report	with analysis report	use of modules or parts / proper recycling	proper recycling

Given the continuous further development of high-voltage batteries by manufacturers and the large number of different battery casings, module variants and module arrangements, it is not possible to specify a definitive inspection procedure for each case here.

Nevertheless, important inspection points to be used as a basis for decision-making are listed for «damaged/defective» and «significantly damaged/critically defective» HV batteries. Comprehensive knowledge on the part of the inspector, in particular of possible safety risks, is required in all cases.

7.1 Exclusions from inspection of HV batteries

HV batteries that have suffered the damage or events listed below are excluded from further inspection as the severity of the damage means that they cannot be reused and must be disposed of without further inspection.

Damaged/defective		
Inspection method	Inspection point	Result/finding
Physical impact	High kinetic forces	Vehicle overturned multiple times
	HV battery displaced along x or y axis	Significant displacement detectable at fixing points
Optical check	Foreign objects/parts have entered the HV battery	
	Battery underbody/casing (dents, deformations, scratches, cracks, holes)	Deformation \geq 10 mm deep or casing torn or holes visible through the casing
	External influences: heat	Prolonged external heat exposure to the battery casing $>$ 60°C

Significantly damaged/critically defective (battery must be disposed of)		
Inspection method	Inspection point	Result/finding
Documents	Event in accordance with the «Recovery of accident-damaged HV vehicles» checklist from the BTVE Guidelines	Event 8 (Cell modules involved in fire)
	External influences: water	Water in the battery

8 Closing remarks

Due to the many different battery types available and rapid advances in the field of HV batteries, at present it is only possible to make general statements about the test procedure and suitable concepts. The working group therefore reserves the right to make changes to these Guidelines on the basis of the latest findings at any time.

9 Bibliography

Swiss Association of Roadside Assistance and Recovery Services (ASS)

Recovery, transport, storage and disposal of vehicles with electric drive systems

https://www.astra.admin.ch/dam/astra/de/dokumente/abteilung_strassenverkehrallgemein/btve-leitfaden-efahrzeuge-entsorgung.pdf.download.pdf/leitfaden-bergung-transport-verwahrung-entsorgung.pdf

sestorec – Swiss Energy Storage Recycling

Guidelines for Garages on the Handling of Lithium-Ion Batteries in Vehicle Technology

https://www.sestorec.ch/_files/ugd/44b498_1d4b2b593e654dbca0ca250413072150.pdf

Touring Club Switzerland

Rescue sheets from vehicle manufacturers

<https://www.tcs.ch/de/testberichte-ratgeber/ratgeber/alle-themen/rettungskarten.php>

Federal Roads Office (FEDRO)

ADR volume I + II

<https://www.astra.admin.ch/astra/de/home/fachleute/fahrzeuge/gefaehrliche-queter/recht-international.html>

Federal Office for the Environment (FOEN)

Explanations in the Chemical Risk Reduction Ordinance (ORRChem)

<https://www.bafu.admin.ch/dam/de/sd-web/IJPRHIqlyMMk/erlaeuterungen-aenderung-verordnung-chemrrv-mai2025.pdf>

10 Abbreviations

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road (Accord Dangereux Routier)
ADR / SP	Special Provision
ArG	Employment Act
BMS	Battery Management System
BTVE	Guidelines for the Recovery, Transport, Storage and Disposal of Vehicles with Alternative Drive Systems – Swiss Association of Roadside Assistance and Recovery Services (ASS)
FCOS	Federal Coordination Commission for Occupational Safety
HV battery	High-voltage battery
INOBAT	Battery Disposal Interest Group
Lithium NCA	Lithium nickel cobalt aluminium oxide
Lithium NMC	Lithium nickel manganese cobalt
OBD	On-board diagnosis (vehicle diagnosis system)
OR	Swiss Code of Obligations
ORRChem	Chemical Risk Reduction Ordinance
SDR	Swiss Ordinance on the Carriage of Dangerous Goods by Road

SOC	State of charge
SOH	State of health
SIA	Swiss Insurance Association
UVG	Accident Insurance Act
VEG	Prepaid disposal fee

11 Appendix: additional costs for significantly damaged batteries

11.1 Basic principle (under ORRChem)

Traders must take back batteries free of charge, including damaged ones. If significantly damage to an industrial battery leads to additional costs in the disposal process, traders can invoice these additional costs to consumers.

ORRChem SR 814.81 «Provisions relating to groups of preparations and articles», Annex 2.15, section 5.2 (excerpt) contains the following on this topic:

5.2 Take-back obligation

1: Traders who supply portable batteries must take back portable batteries from consumers free of charge at every sales point.

2: Traders who supply automotive batteries must, at every sales point, take back from consumers free of charge those types of batteries which are stocked there.

2 bis: Traders who supply industrial batteries must, at every sales point, take back from consumers free of charge those types of batteries which are stocked there. If they incur additional costs in disposing of significantly damaged industrial batteries, the traders may charge such costs to the consumers.

3: Manufacturers of portable, automotive or industrial batteries must take back from consumers, traders and collection scheme or collection point operators free of charge those types of batteries which they supply.

Addition/clarification

According to ORRChem, portable, automotive and industrial batteries must be taken back at every sales point.

However, in order to ensure safety and avoid unnecessary costs and transport, it makes sense in practice to involve a suitable sales point or the importer in the correct procedure for taking back portable, automotive or industrial batteries. The sales point must clarify the correct procedure promptly.

11.2 Definition of a significantly damaged battery according to ORRChem SR 814.81

Industrial batteries can suffer significant mechanical damage as a result of a fire, an accident, flooding with water or similar, for example. A battery is deemed to be significantly damaged if its casing is broken or torn, or if the battery is visibly deformed.

As significantly damaged industrial batteries can easily catch fire, they must be transported and stored in accordance with special safety requirements. Traders may invoice the proven additional costs incurred to consumers. They must list the additional work and treatment steps that led to additional costs in the disposal process on the consumer invoice in an easily understandable manner. The regular disposal costs incurred in the disposal of a high-voltage battery must be borne by the retailers in all cases.

Additional costs for the disposal of HV batteries that have suffered significant mechanical damage may arise during removal, transport and disposal.

11.3 Removal

In the case of significantly damaged vehicles, additional work may be required to remove the HV battery from the vehicle – for example as a result of significant deformation of the car body or the battery casing. These additional costs, which exceed the cost of removing an undamaged battery, must be borne by the consumer (vehicle owner). Such additional costs can be covered by collision or supplementary insurance for motor vehicles.

The additional work and the resulting additional costs must be reported in detail and in an easily understandable way by the company carrying out the work.

11.4 Transport

As damaged HV batteries already have to be transported under dangerous goods conditions pursuant to the ADR/SDR, no additional costs occur during the transport of significantly damaged HV batteries. The only point at which additional costs may be incurred is in the packaging (certified and fire-tested packaging). These additional costs can be invoiced to the consumers.

11.5 Disposal

Costs for disposing of HV batteries must be borne by the manufacturer. These costs are paid via the prepaid disposal fee (VEG) or the respective industry solutions. According to ORR-Chem, additional costs can only arise for significantly damaged industrial batteries. The disposal routes recommended by the manufacturer must be taken into account. The manufacturer/importer must be contacted.

During the disposal of significantly damaged HV batteries, additional PPE³ material, chemical consumables, complicated dismantling and unloading tasks (individual unloading of cells) and the creation of extra waste can generate additional costs. These must be paid by the consumers or via an insurance policy, if one exists. The work and the resulting additional expenses must be reported by the disposal company in a detailed, transparent and understandable manner.

³ PPE = personal protective equipment

11.6 Two-wheeled vehicles

Batteries from electric motorcycles, mopeds, e-scooters, e-bikes, etc., can be disposed of free of charge at the sales points or at the public disposal sites via the recycling fee, which is paid in advance at the time of the purchase.

On behalf of the Federal Office for the Environment (FOEN), INOBAT charges, manages and appropriates the prepaid disposal fee (VEG) that consumers pay as part of the sales price of bicycles.

Saland, 31 October 2025

Swiss Association of Roadside Assistance and Recovery Services (ASS)



Auto Suisse



Sestorec



Stiftung Auto Recycling Schweiz



**SIA
Swiss Insurance Association**

**Working Group
of Vehicle Experts (AG FS)**



VASSO



12 Appendix: documents

12.1 Analysis of traction battery template

Analysis of traction battery

Vehicle information	
Vehicle	Inspection date
FIN	Room temperature
Date of first registration	
Mileage (in km)	Claims no.
Inspector	

HV battery values	
SOC	State of charge of battery -
SOH	State of health -
Status	
Insulation value	MΩ
Battery voltage	V
Max. difference in cell voltage	mV
Max. difference in cell temperature	°C

Analysis points				
Types of damage	YES	NO	Impact on battery	Comment
Mechanical damage				
Fire				
Water				
Short circuit				
Insulation fault				
HV shut off				(Pyrofuse, relay)
Deformation of interior floor				
Displacement of battery				

Read out OBD/BMS				
Data source	YES	NO	Result values	Comment
OBD read-out				
BMS read-out				

Condition of HV battery

Remarks

Place, date:

Signature of inspector, stamp:

This is a snapshot. All liability is excluded. The analysis report without photos may only be forwarded to third parties in connection with claims for costs relating to the disposal of the HV battery and any additional costs for badly damaged HV batteries.

Photos for analysis of traction battery

- Overall view of vehicle
- Accident damage
- Battery underbody without covers
- Damage to the battery
- Battery type label (if visible, always on removal)
- Battery mounting (screw connections)

Example:



12.2 Handover report template

Vehicle handover report Version 2025-12

Date:

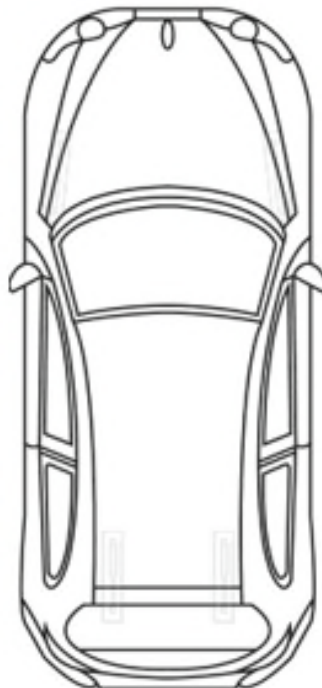
Vehicle brand/type: Licence plate:

Drive type: Petrol Diesel Hybrid Electric Hydrogen Natural gas

- 1 Vehicle owner
- 2 Police / contact details
- 3 Fire service / incident command
- 4 Recovery service
- 5 Garage / bodywork / other
- 6 Salvage yard
- 7 Disposal company with permitOMW company no.:

The following actions were performed on your vehicle / the following observations were made (not exhaustive):

12V battery 12V <ul style="list-style-type: none"> <input type="radio"/> Disconnect terminal <input type="radio"/> Battery removed
<ul style="list-style-type: none"> <input type="radio"/> Pilot wire cut
HV cable <ul style="list-style-type: none"> <input type="radio"/> Damaged <input type="radio"/> Cannot be assessed
HV battery <ul style="list-style-type: none"> <input type="radio"/> Damaged <input type="radio"/> Flooded <input type="radio"/> Cannot be assessed
HV disconnecter <ul style="list-style-type: none"> <input type="radio"/> Disconnected



Airbag damaged <ul style="list-style-type: none"> <input type="radio"/> Front airbags <input type="radio"/> Side airbag <input type="radio"/> Knee airbag <input type="radio"/> Pedestrian protection <input type="radio"/> Seat belt tensioner <input type="radio"/> Head airbag
Fuel tank <ul style="list-style-type: none"> <input type="radio"/> With content <input type="radio"/> Emptied
Gas tank <ul style="list-style-type: none"> <input type="radio"/> Valve closed manually <input type="radio"/> With content <input type="radio"/> Emptied <input type="radio"/> Safety device triggered
Fluid loss <ul style="list-style-type: none"> <input type="radio"/> Engine oil <input type="radio"/> Transmission oil <input type="radio"/> Cooling fluid <input type="radio"/> Battery: <input type="radio"/> 12V <input type="radio"/> 48V <input type="radio"/> HV

Info / risk:

Quarantine No Yes From date:

Damage event pursuant to BTVE checklist Event: 1 2 3 4 5 6 7 8

Photos created No Yes

Depot






i Info:

All liability is excluded.






Contact	Date / Signature
<input type="radio"/> Fire service	_____
<input type="radio"/> Recovery service	_____
<input type="radio"/> Garage / bodywork	_____
<input type="radio"/> Buyer	_____
<input type="radio"/> Disposal company	_____
<input type="radio"/> _____	_____

Checklist recovery of accident-damaged HV vehicles

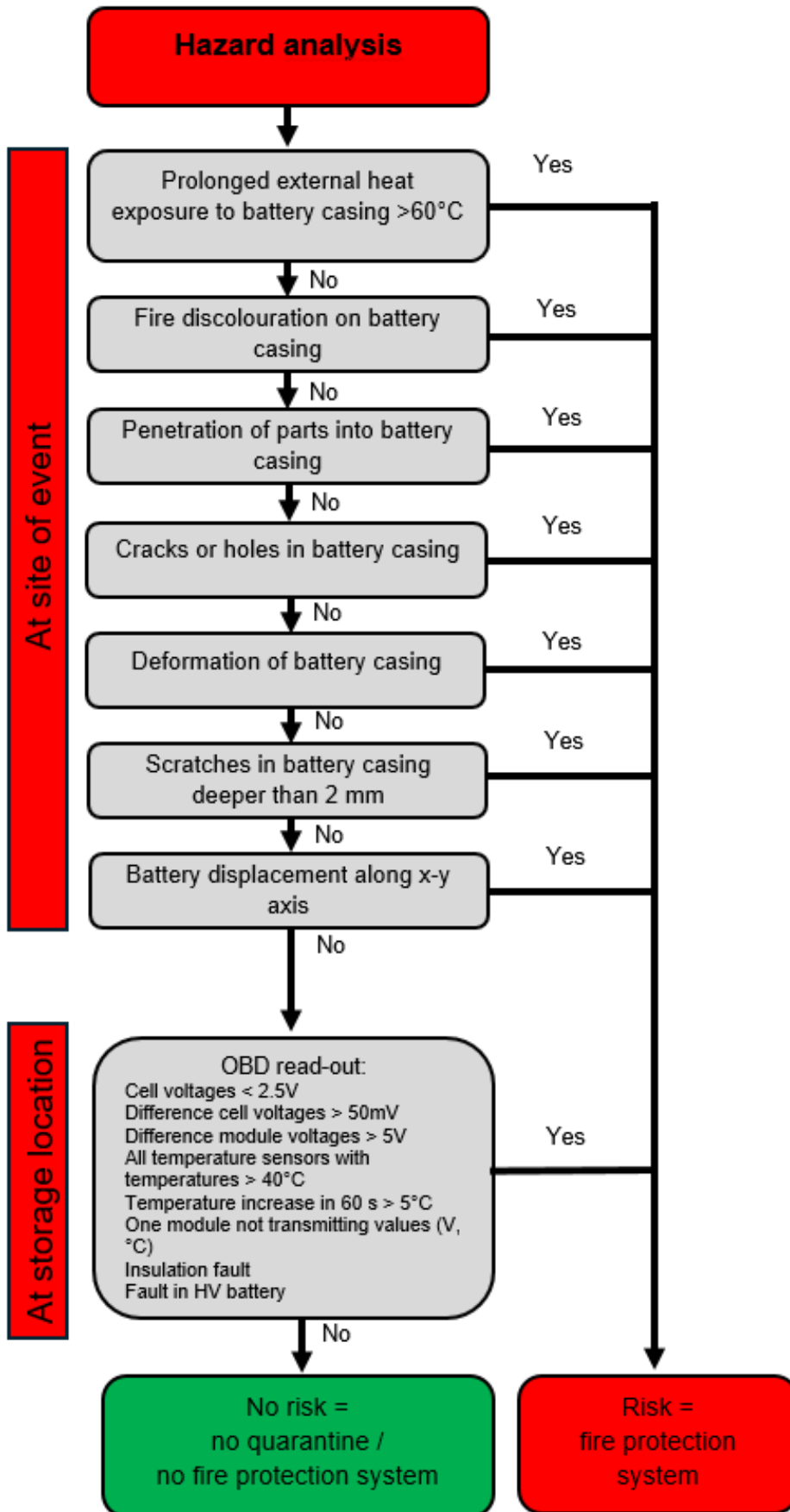
Normal transport: without a fire protection system

- | | | | |
|----------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Event 1 |  | Broken-down vehicle | |
| Event 2 |  | Accident-damaged vehicle <u>without</u> triggered airbag | <ul style="list-style-type: none"> • Wheel suspension defective • External bodywork damage |
| Event 3 |  | Accident-damaged vehicle <u>with</u> triggered airbag (ready mode can be activated) | <ul style="list-style-type: none"> • Front-end damage • Passenger compartment deformed from side |

Vehicles with lithium-ion batteries: with fire protection system

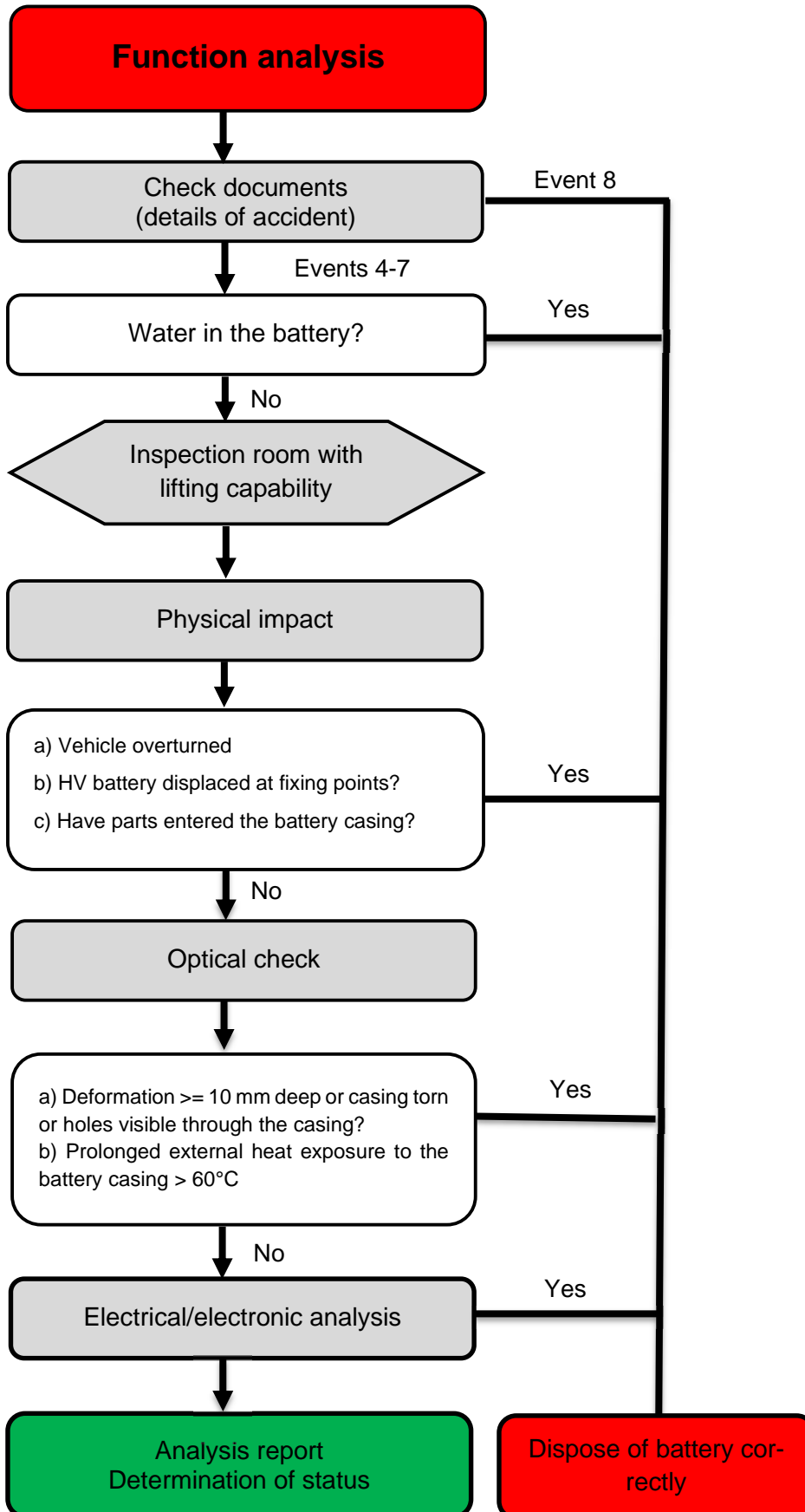
- | | | | |
|----------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Event 4 |  | Accident-damaged vehicle <u>with</u> triggered airbag (ready mode <u>cannot</u> be activated) | <ul style="list-style-type: none"> • <u>Significant</u> front or rear damage with damage to rigid structural components • Passenger compartment deformed from side |
| Event 5 |  | Accident-damaged vehicle with damage to HV battery | <ul style="list-style-type: none"> • Underbody damaged • Vehicle overturned |
| Event 6 |  | Flooded | <ul style="list-style-type: none"> • From bottom edge of seat • HV connector to HV battery with water ingress |
| Event 7 |  | Vehicle partly gutted by fire | <ul style="list-style-type: none"> • Partial fire without HV battery • HV battery with superficial fire damage |
| Event 8 |  | Vehicle completely gutted by fire | |

12.3 Hazard analysis template



Comment: The figures listed above are average figures based on various manufacturers' specifications and specialist literature. The information provided by the manufacturer always applies in the event of deviations.

12.4 Function analysis template



Comment: The figures listed above are average figures based on various manufacturers' specifications and specialist literature. The information provided by the manufacturer always applies in the event of deviations.