

Technical guidance sheet 2.4

Labelling requirements



Solar
Victoria



This guidance provides further information to support installers' understanding of applicable requirements in AS/NZS 5139:2019 *Electrical installations – Safety of battery systems for use with power conversion equipment* in relation to correct labelling.

To help installers maintain standards, this document includes installation advice and examples of installations that may not be meeting the requirements relating to labelling.

Standards referenced:

- » AS/NZS 3000:2018 *Electrical installations "Wiring Rules"*.
- » AS/NZS 4777.1:2016 *Grid connection of energy systems via inverters Part 1: Installation requirements*.
- » AS/NZS 5033:2021 *Installation and safety requirements for photovoltaic (PV) arrays*.
- » AS/NZS 5139:2019 *Electrical installation – Safety of battery systems for use with power conversion equipment (PCE)*.

This guidance is part of a series we commissioned TechSafe Australia (sheets 2.1 and 2.2) and Grey Sky Solar Consulting (sheets 2.3 – 2.5) to develop. Energy Safe Victoria has also reviewed this guidance.

In series 2:

- 2.1 Physical protection of battery systems
- 2.2 Battery system protection against the spread of fire and battery system protected locations
- 2.3 Protection of wiring and wiring systems

2.4 Labelling (this sheet)

- 2.5 Earthing

Labelling requirements:

For Grid Connected Battery Energy Storage Systems (GC BESS)

The requirements for correctly labelling a GC BESS are derived from AS/NZS 5139:2019 *Electrical installations – Safety of battery systems for use with power conversion equipment*. However, in most cases there will also be a Grid Connected PV system on site so other Standards will also need to be considered.

In this document we focus on the requirements from **AS/NZS 5139:2019**.

Standards referenced:

- » AS/NZS 5139:2019 *Electrical installation – Safety of battery systems for use with power conversation equipment (PCE)*.
- » AS/NZS 3000:2018 *Electrical installations “Wiring Rules”*.
- » AS/NZS 4777.1:2016 *Grid connection of energy systems via inverters Part 1: Installation requirements*.
- » AS/NZS 5033:2021 *Installation and safety requirements for photovoltaic (PV) arrays*.



Figure 1.1

All signs are required to be:

- » Sufficiently durable and designed to have a lifetime at least equal to the service life of the battery energy storage system.
- » Be constructed of durable materials suitable for the location and if installed in a location exposed to direct sunlight, be made from UV stabilised material.
- » Be fixed in a durable manner.
- » Be in English
- » Be legible and in a letter size appropriate for the location (recommendation is for lettering to be in uppercase with a minimum height of 5mm and lowercase 4mm high (per meter of viewing distance))
- » Be indelible (e.g. permanent markings that cannot be removed)
- » Visible, as required, at the installed position.

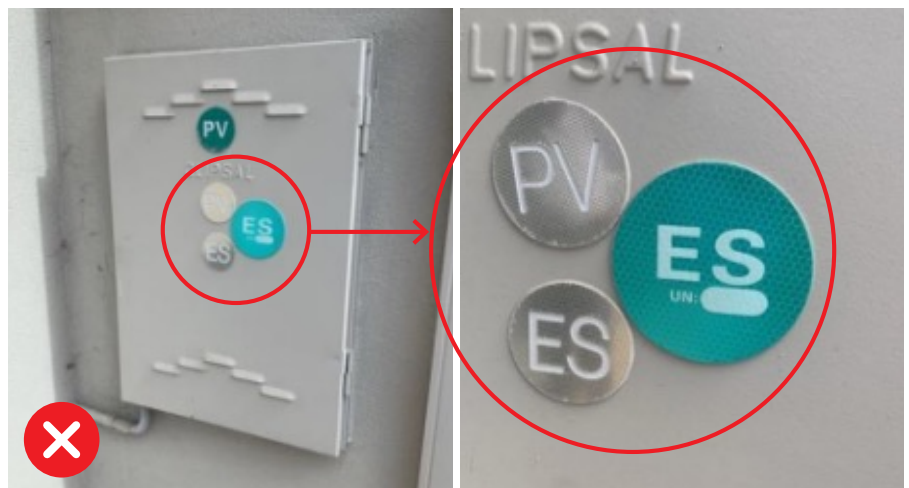


Figure 1.1.1

Signs should not be:

- » Obscured by being inside cupboards or behind doors.
- » Located where other materials or objects could be placed in front of them.
- » Blocked from view by the door of an enclosure when opened. Some battery signs may need to be within enclosures and may only become visible after enclosure is opened. In this case additional external labels may be required.

Labelling requirements:

For Grid Connected Battery Energy Storage Systems (GC BESS)

For battery energy storage systems comprised of lithium-ion chemistry there shall be signs to identify:

- » Battery System (BS) or Battery Energy Storage System (BESS)
- » The correct short-circuit current (specifying current in amperes)
- » The correct maximum d.c. voltage (specifying voltage in volts)

For systems over DVC-A, the sign should also state "Hazardous D.D. Voltage".

There are additional requirements for sites with multiple battery energy storage systems.

Standards referenced:

- » AS/NZS 5139:2019 Clause 7.6.

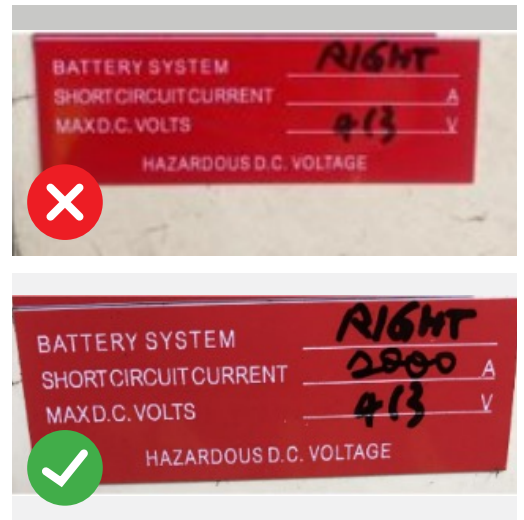


Figure 1.2

It is imperative that a circular green reflective label that is at least 100 mm in diameter with the letters "ES" on or immediately adjacent to the main meter panel and main switchboard be installed in a visible location for any site with a GC BESS. This is to provide vital information to any approaching emergency worker.

The label must also include the United Nations number for the primary chemistry installed below the "ES" lettering, e.g. UN3480

Standards referenced:

- » AS/NZS 5139:2019 Clause 7.3.

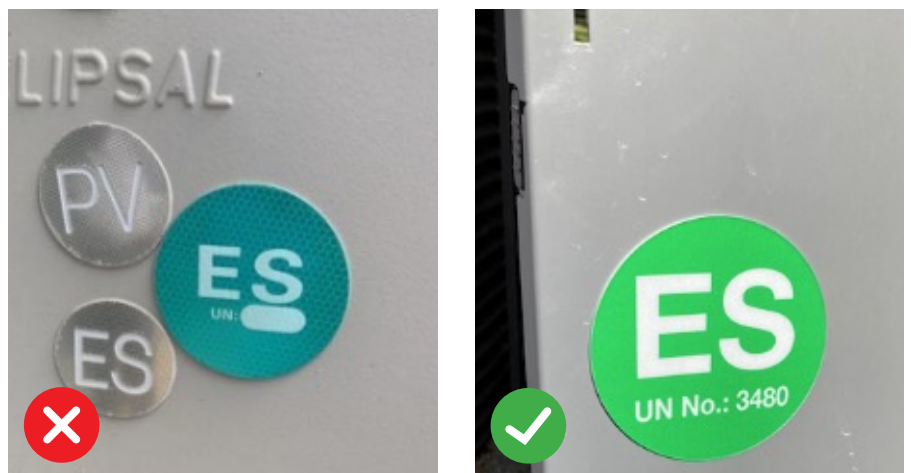


Figure 1.3

Labelling requirements:

For Grid Connected Battery Energy Storage Systems (GC BESS)

For systems with standalone functionality, ensure all alternative energy sources been provided with a main switch and has the main switch been appropriately labelled to indicate its type e.g. standalone-supply, or alternative supply or similar

Standards referenced:

- » AS/NZS 3000:2018 Clause 2.3.3.2



Figure 1.4

For battery energy storage systems comprised of lithium-ion chemistry considered to have a toxic fume hazard through the risk assessment process, a sign saying "Danger, toxic fumes" shall be mounted either adjacent to the battery enclosure or on all doors to the room where the battery system is located detailing the specific fault conditions (e.g. fire) under which the fumes will be present.

This sign should also include PPE requirements for entering the room/ working with the battery system.

Standards referenced:

- » AS/NZS 5139:2019 Clause 7.9

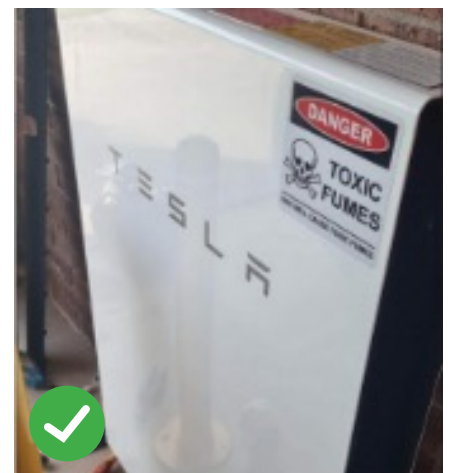
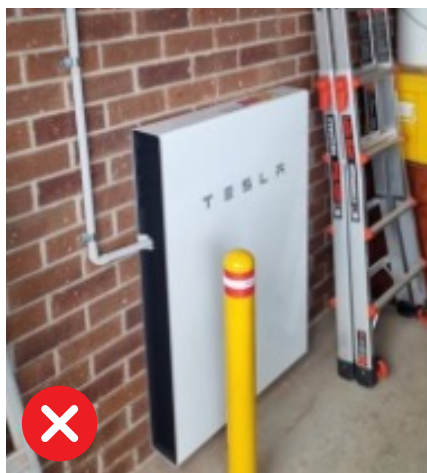


Figure 1.5

Labelling requirements:

For Grid Connected Battery Energy Storage Systems (GC BESS)

Where a BS location is difficult to find, a map shall be provided at the Main Switch Board (MSB) showing the location of the BS.

Standards referenced:

- » AS/NZS 5139:2019 Clause 7.4

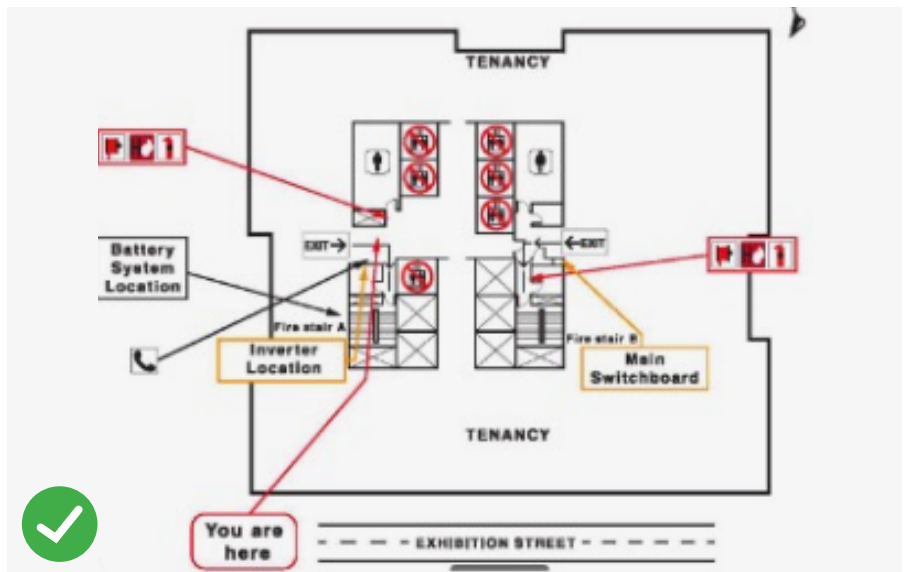


Figure 1.6

For battery energy storage systems comprised of lithium-ion chemistry that may release hydrogen when being charged, these should be considered to have an explosive gas hazard.

A sign stating "DANGER, Risk of Battery Explosion, No Smoking, Sparks, Flames" shall be mounted either adjacent to the enclosure or on all doors to the room where the battery is located.

Standards referenced:

- » AS/NZS 5139:2019 Clause 7.8
- » AS/NZS 5139:2019 Clause 7.9



Figure 1.7

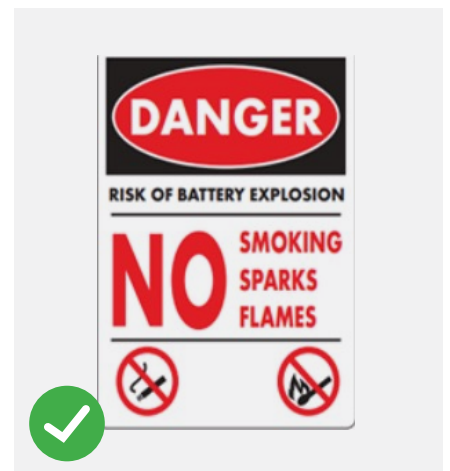


Figure 1.8

Labelling requirements:

For Grid Connected Battery Energy Storage Systems (GC BESS)

All battery systems categorised as having an arc flash risk above “minor”, with access to unprotected d.c. terminals, shall have a sign stating “WARNING, ARC FLASH HAZARD”

The sign shall be mounted either adjacent to the enclosure or on all doors to the room where the battery is located.

Standards referenced:

- » AS/NZS 5139:2019 Clause 7.8



Figure 1.9

The BS isolation device shall be labelled “BATTERY SYSTEM D.C. ISOLATOR”.

Standards referenced:

- » AS/NZS 5139:2019 Clause 7.12

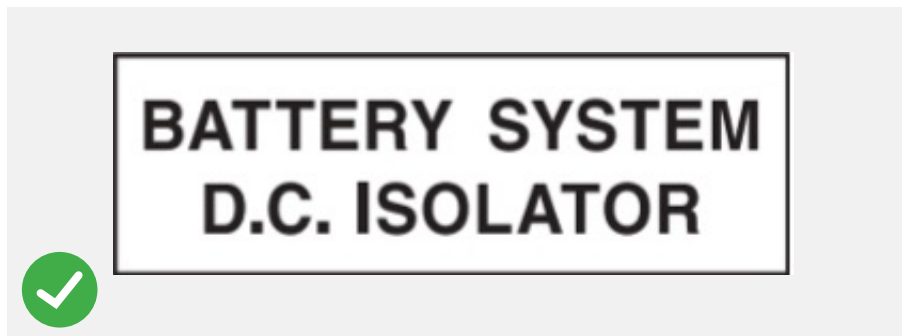


Figure 1.10

Battery system cabling shall be labelled “BATTERY” every 2 metres and be visible after installation,

Labelling shall be visible either on the unenclosed cables, or on the exterior of the wiring system if installed in conduit or similar.

Standards referenced:

- » AS/NZS 5139:2019 Clause 7.14

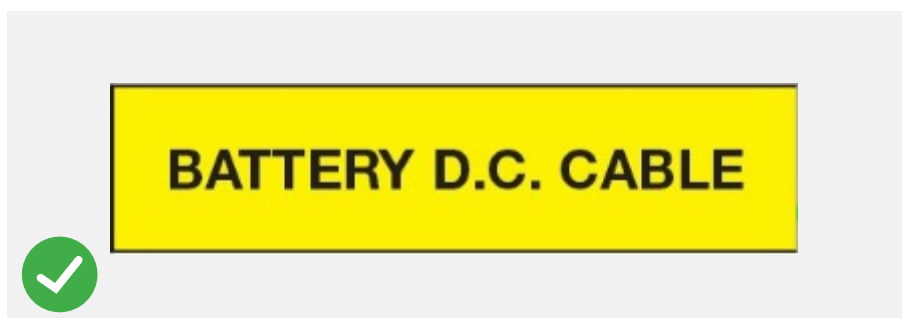


Figure 1.11

Labelling requirements:

For Grid Connected Battery Energy Storage Systems (GC BESS)

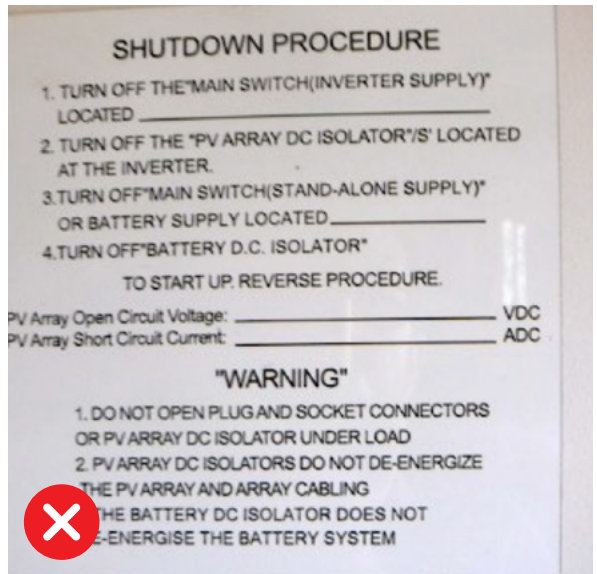
One of the most important labels for any Battery Energy Storage System is an accurate **SITE-SPECIFIC** shutdown procedure.

The shutdown procedure label shall be clear and consistent with the terminology and labelling of the installed components and devices of the battery energy storage systems.

A shut down procedure must be installed adjacent to the power conversion equipment (PCE) to which the BS is connected, and, also placed adjacent to and visible from the equipment to be operated in the event of a shutdown.

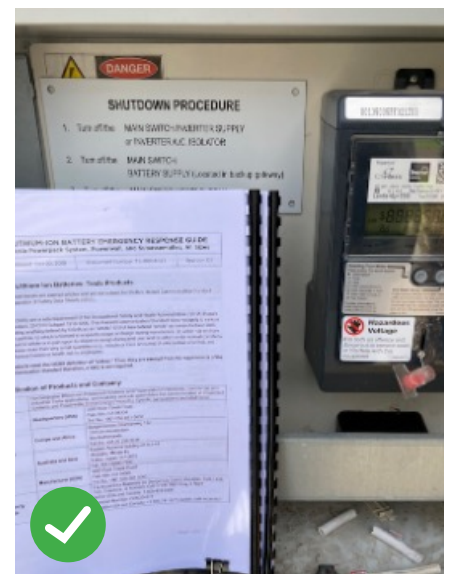
Standards referenced:

- » AS/NZS 5139:2019 Clause 7.16



< This label provides no information relative to the site.

Figure 1.12



Note: A copy of the battery manufacturer’s Safety Data Sheet (SDS) must be kept in the main meter box or main switchboard in close proximity to the shutdown procedure.

More information

For more information about Solar Victoria's commitment to safety and quality, including our audit program, checklists, and training and workforce development visit:

solar.vic.gov.au/industry

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