

**PRESS RELEASE – Global Sustainable Energy Solutions Pty Ltd (GSES)**

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FOR IMMEDIATE RELEASE

**GSES releases a technical paper: Hoverboards, fires, and residential battery storage**

Sydney, NSW

Global Sustainable Energy Solutions Pty Ltd (GSES) has released a technical white paper, entitled *Hoverboards, fires, and residential battery storage*, in response to the recent incidents surrounding the popular Christmas toy.

The article explores the possible reasons for the recent fires in hoverboards and the implications of this in the developing distributed energy storage market. Lithium ion batteries have great performance characteristics and a high energy density; however the chemistry behind these traits also makes them inherently unstable and volatile. They are sensitive to both high and low temperatures, and over and under voltage. Although there are mechanisms and control devices that serve to protect the batteries from operating outside of their temperature and voltage windows, these are not always effective and battery failure (resulting in combustion) is still a possibility.

The battery pack of a hoverboard makes up a significant portion of the cost of the device, and is therefore an obvious target for cost reductions. As the demand for lithium ion batteries has grown, new factories are now producing alternatives to the leading market brands (such as Panasonic and Samsung). Any manufacturing inconsistencies in lithium ion batteries can lead to cells not charging and discharging uniformly, and when any of these problems is coupled with a substandard battery monitoring system (BMS), it can easily lead to the problems that have been reported in regards to hoverboards. Battery packs used in devices such as hoverboards, scooters and electric bikes will also be subjected to physical impacts and vibration stresses that could damage battery cells, or inter-cell connections – leading to non-uniform charging and discharging.

Although there are several factors that reduce the chance of similar issues in residential applications, the same fundamental dangers do exist for residential storage devices. It is essential that distributors, installers and customers verify that the systems which they are supplying, installing, or buying adhere to Australian standards and contain the necessary safety features. This includes consideration of the level of battery monitoring within the battery pack, information given on how to extinguish a battery fire, how the system owner is made aware of a fault, and what safety features are included in each battery cell.

GSES provides white papers and technical information on its website [Resources and Information](#) page for all readers, including system designers, installers and owners. Topics covered so far include Grid Energy Storage, Oversizing PV Arrays, and Microgrids: a Solution to Ageing Grid Infrastructure.

**The “*Hoverboards, fires, and residential battery storage*” technical paper is available to view and download now free of charge from the [GSES website](#).**

GSES is a multi-disciplinary renewable energy engineering, training and consultancy company specialising in PV solar design, online and face-to-face solar training, solar book publishing and PV system audits. Collectively, GSES has over 50 years of local and global experience undertaking projects in Australia, NZ, Asia, Africa and the Pacific Islands. GSES leads Australia in education and training in the Renewable Energy Innovation and Technology Sector and actively partners with government, private enterprise and local communities on a global scale in facilitating the growth and development of the renewable energy industry through education, training, engineering, consulting and publications.

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Link to *Hoverboards, fires, and residential battery storage* article: [http://www.gses.com.au/images/GSES\\_Hoverboards-fires-residential-bat-storage.pdf](http://www.gses.com.au/images/GSES_Hoverboards-fires-residential-bat-storage.pdf)

Link to Resources and Information page: <http://www.gses.com.au/publications/technical-articles>