Battery Enclosure for Headset Safety

Anonymous
Battery Enclosure for Headset Safety

ABSTRACT

Devices such as virtual reality headsets include a battery to power the device during use. This disclosure describes a battery enclosure (mount) for a VR headset that includes design elements that improve safety. A plastic enclosure is utilized to mount the battery. A piece of foam is placed between the plastic enclosure and the housing to enable egress of smoke in case of a thermal event. The enclosure is provided with a metal lid to enable battery swell detection. The piece of foam is placed between a user-facing outer surface of the headset housing and the battery enclosure. Three edges of the enclosure form a seal against foam. In case a thermal event occurs, a gap on the fourth side, located away from the user enables egress of any smoke or fumes. The three sealed sides enable smoke to be pushed out, away from the headset and the user.

KEYWORDS

- Virtual reality (VR)
- Headset
- Thermal event
- Foam
- Battery swell detection
- Battery housing

BACKGROUND

Devices such as virtual reality (VR) headsets include a battery to power the device during use. The battery pack is usually placed within a metal enclosure. Given the proximity of the
headset to a user that wears it, it is important that the device be designed for safety. One possible risk that is to be mitigated includes thermal events related to the battery.

**DESCRIPTION**

This disclosure describes a battery enclosure (mount) for a VR headset that includes design elements that improve safety. A plastic enclosure is utilized to mount the battery. A piece of foam is placed between the plastic enclosure and the housing to enable egress of smoke in case of a thermal event. The enclosure is provided with a metal lid to enable battery swell detection.

![Diagram of headset battery enclosure](image)

**Fig. 1: A plastic enclosure is used to house the headset battery**

Fig. 1 depicts use of the plastic battery enclosure, per techniques of this disclosure. Use of a plastic enclosure for the battery enables a headset with lower weight/cost and easy manufacturability. The battery is placed within the battery enclosure, which is in turn attached to the housing of the headset.
Fig. 2: A piece of foam is placed between the headset and the battery enclosure

Fig. 2 illustrates the use of foam as a safety element, per techniques of this disclosure. A piece of foam is placed between the battery enclosure and the headset housing. The piece of foam is between a user-facing outer surface of the headset housing and the battery enclosure. Three edges of the enclosure form a seal against foam. In case a thermal event occurs, a gap on the fourth side, located away from the user enables egress of any smoke or fumes. The three sealed sides enable smoke to be pushed out, away from the headset and the user. The foam also enables venting of gases and serves to reduce temperature of the surrounding areas during a thermal event.

Fig. 3: A metal lid and sensor enable battery swell detection
Fig. 3 illustrates the use of a metal lid for the battery enclosure. The metal lid enables battery swell detection by utilizing a sensor placed above the battery. A piece of conductive foam can be utilized instead of a metal lid.

CONCLUSION

Devices such as virtual reality headsets include a battery to power the device during use. This disclosure describes a battery enclosure (mount) for a VR headset that includes design elements that improve safety. A plastic enclosure is utilized to mount the battery. A piece of foam is placed between the plastic enclosure and the housing to enable egress of smoke in case of a thermal event. The enclosure is provided with a metal lid to enable battery swell detection. The piece of foam is placed between a user-facing outer surface of the headset housing and the battery enclosure. Three edges of the enclosure form a seal against foam. In case a thermal event occurs, a gap on the fourth side, located away from the user enables egress of any smoke or fumes. The three sealed sides enable smoke to be pushed out, away from the headset and the user.