LIGHTWEIGHT SOLUTION USED IN LLVISION'S AUGMENTED REALITY (AR) GLASSES FOR THE HEARING IMPAIRED

WITH SABIC'S ULTEM™ RESIN

LLVISION is one of China's pioneers and leaders in AR enterprise service. Their signature product solutions include surgery broadcasting with smart glasses, enterprise remote supervising and smart glasses for power sectors. LLVISION's solutions are widely used in smart manufacturing, aviation, healthcare, education, financial service, public security and entertainment. Their latest innovation, AR glasses for persons with hearing loss, uses SABIC's lightweight and reliable ULTEM™ 1000 resin.

BALANCE OF COMFORT AND PERFORMANCE

LLVISION wanted to develop a new generation of AR glasses that uses artificial intelligence (AI) to help individuals with hearing-loss to "see the voice" during conversation. The new product, named "LEION Hey", was the first to be designed for consumer usage, offering an embedded 400mAh battery and eliminating the need for cables. However, the additional functionality added to the total weight of the glasses, making them potentially uncomfortable to wear on daily basis. The challenge arose to find a lightweight, flame retardant (FR), and high-performance material to reduce the total weight to less than 80 grams. The material also needed to be compliant with IEC 62368-1 electronic safety standards since the onboard computer and battery are integrated into the legs.

THE SOLUTION: HIGH STRENGTH ULTEM 1000 RESIN

SABIC proposed **ULTEM 1000 resin**, a high performance, inherent FR polyetherimide (PEI) material, for consideration in the legs of LLVISION "LEION Hey" AR glasses. The high strength-to-weight ratio of ULTEM resin helped LLVISION to address their key challenges.

In addition, the excellent balance of stiffness and resilience of ULTEM resin provided the right clamping force, giving the end-user an overall more comfortable wearing experience.

Compared to incumbent amorphous nylon solutions, the excellent dimensional stability of the ULTEM material supported LLVISION to create a more efficient assembly of the electronic components within the legs.

ULTEM 1000 resin was chosen to bring comfort and light weight to the AR glasses legs.

ULTEM™ RESIN IS WELL-SUITED FOR BATTERY OPERATED AR/VR GLASSES

KEY ULTEM RESIN FEATURES, ADVANTAGES & POTENTIAL BENEFITS

- High strength to weight ratio enables a thin wall, light weight design.
- Excellent balance of strength and resilience, in addition to light weight, offers flexibility for designers to deliver both comfort and functionality.
- High dimensional stability supports efficient assembly of electronic components.
- ULTEM™ resin's inherent FR eliminates the need for an additional FR agent, which can cause materials, such as amorphous nylon, to be more brittle and less resilient.
- Adheres to IEC62368-1 electronic safety standards.

"I admire LLVISION's endeavor to make life easier for people that suffer from a loss of hearing. Our high performance ULTEM resin helped them to address key product design and manufacturing challenges. I'm proud we were able to help LLVISION realize a discrete, comfortable and safe design for their novel Augmented Reality (AR) glasses."

Scott Fisher
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