Internship report

On

AC HELMET FOR CONSTRUCTION WORKERS

Submitted by

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1.Introduction:

The construction industry is one of the most labour-intensive sectors, where workers are frequently exposed to extreme environmental conditions, especially high temperatures. Prolonged exposure to heat can lead to fatigue, dehydration, heat strokes, and reduced productivity. In many countries with hot and humid climates, construction workers often perform strenuous physical labour under direct sunlight, making heat stress a serious occupational hazard.

To address this challenge, recent advancements in wearable technology and personal protective equipment (PPE) have led to the development of **air-conditioned (AC) helmets**. These innovative helmets are designed to provide active cooling to the head, which is one of the most heat-sensitive areas of the human body. By incorporating compact cooling systems, such as thermoelectric modules (Peltier elements), battery-powered fans, and smart ventilation mechanisms, AC helmets can significantly reduce thermal discomfort and enhance worker safety and performance.

The AC helmet not only functions as a safety gear to protect against head injuries but also helps in maintaining a regulated microclimate inside the helmet. Some designs may integrate features like rechargeable batteries, solar panels for sustainable power supply, and smart sensors for temperature monitoring. This dual functionality offers a promising solution to improve occupational health in construction environments.

This report aims to explore the design, functionality, and benefits of AC helmets for construction workers. It also highlights the technological components involved, challenges in implementation, and the potential impact on worker well-being and productivity. Through this study, we seek to assess the feasibility and effectiveness of adopting AC helmets as a standard PPE in the construction industry.

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