Abstract

Human life is so precious and valuable, that it should not be compromised under any cost. In a latest survey, conducted it is mentioned that nearly 62% of mortality in road accidents occur due to head injury, where the rider has not worn the helmet. It is not that people are very negligent about their lives on road, but that they experience dozens of discomfort by wearing helmets. But the most common discomfort is that, heavy sweat occurs due to excessive heat formation. This mainly focuses on absorbing the heat produced inside the helmet. To achieve this, a suitable phase change material (PCM) is packed into a pouch and placed between the helmet and the wearer head. The heat from the wearer head is transferred to the PCM by conduction through a
Helmet Cooling with Phase Change Material

heat collector which is spread over the wearer head. No electrical power supply is needed for the cooling system. The temperature on the wearer head is maintained just above the PCM temperature, thus the wearer would not suffer from dangerous hot environment on the head which will affect the wearer alertness. The cooling unit is able to provide comfort cooling up to 2.10 h when the PCM is completely melted. The stored heat from the PCM pouch would then have to be discharged by immersing in tap water for about 13 min to solidify the PCM before re-use. The PCM helmet cooling system is simple and has potential to be implemented as a practical solution to provide comfort cooling to the motorcycle riders.

References

- Bicycle Helmet Safety Institute, Bicycle Helmet Cooling, an article on , last revised on 2 January 2005.

Index Terms

Computer Science

Engineering and Technology

Keywords

Phase Change Material  Latent heat storage  Motorcycle Helmet  Helmet Cooling