Battery based Heating and Cooling Suit

Mr.Amit Dewangan, Dept. of Computer Science Engineering

Dr. C.V. Raman University, Bilaspur

ABSTRACT

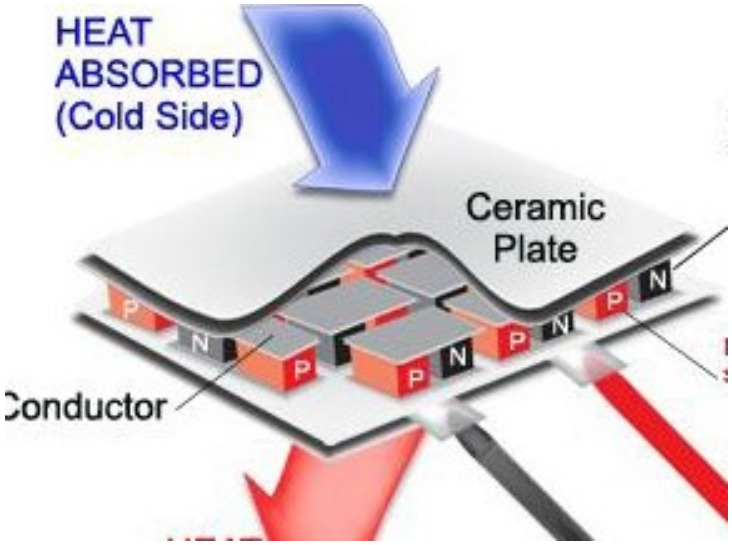
Climate circumstances are becoming uncommon for individuals nowadays. Some of these circumstances caused amazing passages when left unchecked. Because of this, individuals need to concentrate on circumstances like atmosphere, conveying a umbrella despite being in the summer or spring season. We may feel uneasy while conveying these things. We present Battery Powered Warming and Cooling Suit to maintain away from this problem.These suits can save us from vibrant insults linked to temperature, such as heat stroke, summer season of heat rash. Spring and stormy seasons frostbite, hypothermia, and others. So these suits will keep individuals in any season more protected and pleasant. Naturally, this suit can maintain the particular temperature inside the suit in case it is extremely warm inside the suit to lower the temperature; it starts the fan attached to the suit. As the temperature reaches the predefined level, the fan has therefore swapped off.For example, if the temperature inside the suite is too low, the radiator can be switched on to increase the temperature inside the coat. The radiator must be swapped off at the stage where the temperature scopes to the predefined stage.

KEYWORDS: Climate, Battery, Suit

INTRODUCTION

Both very cold and very warm temperatures may pose health risks[1]. Excessive heat exposure is known as heat stress, and unnecessary cold exposure is known as cold stress. The most severe problem in a very warm setting is heat stroke. The most severe problem at very cold temperatures is the risk of the body's hypothermia or hazardous overcooling[2]. The suggested scheme is a heating and cooling jacket for battery power, in which the user can control the jacket temperature through his phone. The wearable

coat temperature is measured according to the surroundings of the person after initialization temperature sensor[3].The jacket is operated through mobile app using Wi-Fi. The mobile app displays the present body temperature and is equipped with instruments to change the jacket temperature as required by the user[4]. As required, we can carry out both heating and cooling activities. In manual or automated mode, the jacket can operate. The coat reads the temperature via temperature sensor in automatic mode, sends the information to the raspberry pi, the raspberry performs the logical operation, while either heat or cool signals the peltier[5].



Raspberry Pi: Raspberry Pi is a series of single-board credit card pcs created by the Raspberry Pi Foundation in the United Kingdom with the intention of promoting the teaching of fundamental computer science in schools and developing nations[6]. In several board settings, the initial Raspberry Pi and Raspberry Pi 2 are produced. All models feature a chip-based Broadcom system (SOC) that contains an ARM-compatible CPU and a chip-based GPU (VideoCore IV) graphics processing unit. The velocity of the CPU ranges from 700 MHz to 1.2 GHz for Pi 3 and between 256 MB and 1 GB RAMS on board[7].

Peltier Effect: Using the Peltier effect, thermoelectric cooling creates a heat flux between the intersections of two distinct material kinds. A Peltier cooler, heater or thermoelectric heat pump is a solid-state active heat pump that transfers heat from one

side of the device to the other, with electrical energy usage depending on the present direction[8]. It can either be used for heating or cooling, although the primary application is cooling in practice. It can also be used as a heating or cooling temperature controller.

CONCLUSION

The integration of fresh techniques, providing ease of maintenance, is described in this paper and provides system with multiple characteristics for distinct apps. The wearable, washable and mobile jacket is used by applying this project to monitor and retain the user's body temperature circumstances according to the user's surrounding settings. And we can also improve this project for medical apps in the future and monitor the individual with GPS assistance.

REFERENCES

[1] G. Paul, E. Gim, and D. Westerfeld, "Battery powered heating and cooling suit," in *2014 IEEE Long Island Systems, Applications and Technology Conference, LISAT 2014*, 2014.

[2] S. Narayanan *et al.*, "Thermal battery for portable climate control," *Appl. Energy*, 2015.

[3] R. A. Taylor, C. Y. Chung, K. Morrison, and E. R. Hawkes, "Analysis and testing of a portable thermal battery," *J. Therm. Sci. Eng. Appl.*, 2014.

[4] S. Narayanan, X. Li, S. Yang, I. S. McKay, H. Kim, and E. Wang, "Design and performance analysis of an advanced thermal battery for electric vehicle climate control," in *Proceedings of the 15th International Heat Transfer Conference, IHTC 2014*, 2014.

[5] N. Surith, V. Vishnu, K. Raam, P. Sai, and K. Ramya, "Photovoltaic Driven Dual Purpose Thermoelectric Refrigerator for Rural India," *Int. J. Adv. Res. Technol.*, 2013.

[6] M. Lelie, S. Rothgang, M. Masomtob, M. Rosekeit, R. W. De Doncker, and D. U. Sauer, "Design of a battery system for a fuel cell powered UPS

application with extreme temperature conditions.," in *INTELEC, International Telecommunications Energy Conference (Proceedings)*, 2013.

[7] G. F. Abdullah, W. Saman, D. Whaley, and M. Belusko, "Optimization of Standalone Solar Heat Fired Absorption Chiller for Typical Australian Homes," in *Energy Procedia*, 2016.

[8] D. Wu and W. Wu, "Battery powered portable thermal cycler for continuous-flow polymerase chain reaction diagnosis by single thermostatic thermoelectric cooler and open-loop controller," *Sensors (Switzerland)*, 2019.