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Solar Based E – Uniform for Soldiers

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***Abstract*— — Solar based E-Uniform gives better protection to the soldiers who are working in extreme weather conditions. Solar Panels are used to power up the internal circuitry of the E-uniform. A 12 V DC lead acid rechargeable battery is used for storing the energy. We are using conventional battery charging unit also for giving supply to the circuitry. AT89S52 micro controller is the heart of the circuit as it controls all the functions. A voltage sampler is interfaced with the system using ADC 0808 to get the voltage generated from battery as a display on a 16X2 LCD. The project is operated in summer mode and winter mode. By selecting the mode of operation, we are operating the H-Bridge IC such that it can drive body heater/cooler. The heater/cooler in turn will help us to provide chilling or warming effect inside the uniform which helps the soldier to bear to any kind of external environment. The metal sensor will detect the metal like bomb and intimate the soldier with a buzzer indication. We are using Zigbee Technology for monitoring the uniform, and we are using emergency button for the security of soldiers.**

I. INTRODUCTION

Soldiers are the Army's most important resource. Soldiers play a vital role to protect one's country. The term soldiers include service men and women from the Army, Air Force, Navy and Marines. They will always be the one responsible for taking and holding the duty in extreme weather conditions throughout the year. While providing security to the nation, they may face troubles in extreme hot/cold weather conditions. Both very hot and cold temperatures could be dangerous to health. In this project we are going to design an E-Uniform which gives better protection to the soldiers who are working in extreme weather conditions.This paper is gives two modes summer mode and winter mode .By selecting the mode of operation the relays drive body heater/cooler. The heater / cooler in turn will help us to provide chilling or warming effect inside the uniform which helps the soldier to bear to any kind of external environment and he can work efficiently without heat stress or cold stress

II. EXISTING SYSTEM

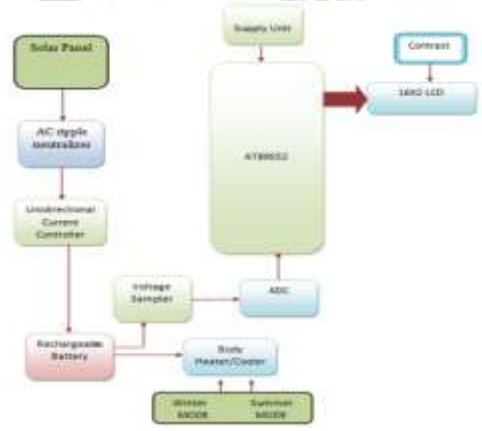
Existing system applications are limited as it provides body temperature regulation only, but nothing more than that. It does not provide any means of Security, Navigation, and Monitoring at a remote place. Copyright form and the form should accompany your final submission.

III. PROPOSED SYSTEM

Here we are using Micro controller (AT89S52) allows dynamic and faster control. Liquid crystal display (LCD) makes the system user-friendly. Here we are using LCD Display for displaying the values of present and maximum voltage values which are present in the rechargeable battery.

The project is operated in two modes summer mode and winter mode. By selecting the mode of operation such that it can drive body heater/cooler. The heater/cooler in turn will help us to provide chilling or warming effect inside the uniform which helps the soldier to bear to any kind of external environment and he can work efficiently without heat stress or cold stress. The metal sensor will detect the metal like bomb and intimate the soldier with a buzzer indication.

BLOCK DIAGRAM OF SOLAR BASED E – UNIFORM:



IV. PELTIER PLATE

The most common temperature control option for the AR rheometers is the Peltier Plate. The AR-G2, AR 2000ex and AR 1500ex Peltier plates have a temperature range of -40 to 200 ºC with a typical heating rate of up to 20 ºC /min. and a temperature accuracy of +/- 0.1 ºC. A PRT (platinum resistance thermometer) sensor positioned at the center of the plate ensures accurate temperature measurement and control.

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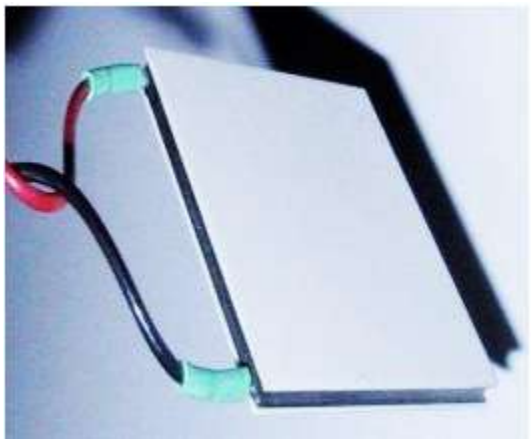

Fig: Peltier Plate

A peltier cooler is a cooler that uses a peltier element (TEC). Peltier coolers consist of the peltier element itself, and a powerful heatsink/fan combination to cool the TEC.

V. ADVANTAGES

- Protection from extremely low temperature such as 0/Minus Degree in hilly regions
- In deserts where temp is high uniform will maintains cool.
- No need to handle torch lights.
- Fit and forget system
- Reliable
- Compact size
- Affordable prize (Low cost)
- Low Maintenance

VI. APPLICATIONS

- Used in military applications.
- This uniform can be used for all the climatic applications.
- Soldiers can work in extreme climatic applications.

V. CONCLUSION

The project "Solar based E-Uniform for soldiers who work at extreme high temperature or extreme low temperature with tracking" is successfully tested and implemented. By using this project in real time applications we can help soldiers to work even in extreme climatic applications. It is a highly durable and selfrepairing solar technology, ideally suited for mobile applications.

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