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E – MILITARY JOCKET WITH CLIMATE ADJUSTABLE SUIT

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ABSTRACT

Nowadays the uncertain and insecurity conditions occur at any time that means the war has been cultivated at any cause. At the same time the soldier's participation in army is very less. In this critical occasion we have to protect our soldier's lives. To increase the soldier's lives we have created a solution based on embedded systems using IOT. Here we provide the advanced techno suit for our army soldier's. While happening of war some people of the soldiers are missed at that time the military heads has confused about that missing soldier whether he was dead or alive.

For avoiding this problem, we have found this suit and it is multi purposed suit. It is providing the location and injuries of the soldiers though IOT data bases. In some times the soldiers were needed to be stayed at harmful weather conditions, for this problem we provide the temperature control system using Peltier plate. It reduces the body temperature automatically high to normal body temperature and low to normal body temperature. It helps the soldiers to maintain his body conditions in a sustainable manner.

Keywords: Internet of things, Multipurpose suit, Maintain body condition, Peltier Plate

I. INTRODUCTION

Indian soldiers are the most important resource of our country. They play a very important role to protect the country and the peoples livening in the country. Army, Air Force, Navy and Marines all comes under the term soldiers they are always ready to take and hold their duties in extreme weather conditions.The specially designed E-Jackets will give better production to the soldiers working in extreme weather conditions. This E-Jacket will operate in twomodes: summer mode and winter mode. Depending upon the threshold value setting, the mode of the operation will be decidedalso, by operating the SPDT relay it can drive body to heat/cool. The heater/cooler in turn which helps to provide cold or warming effect inside the uniform which helps the soldiers to bear any kind of external environment and he can efficiently work without heat stress or cold stress.

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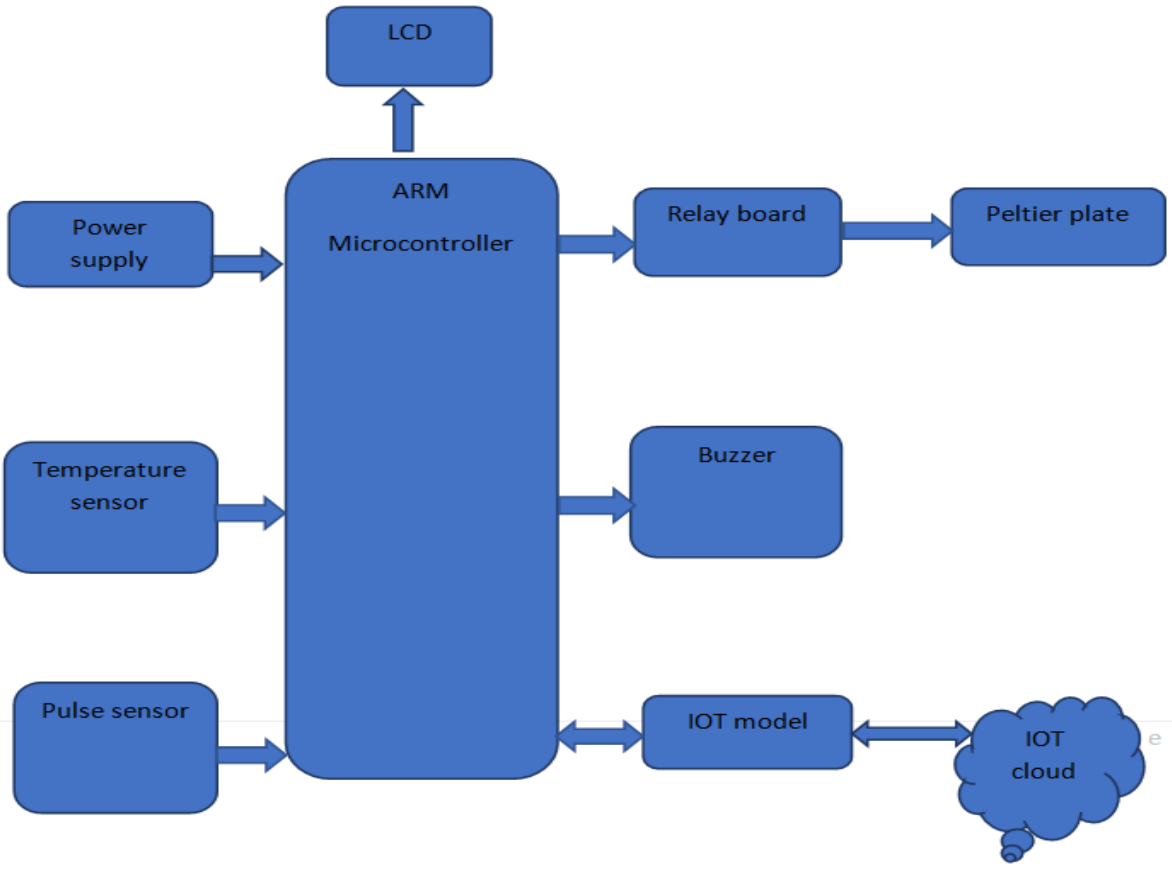
In the field of high heat protection, most workers die due to high heat environment causes the heart disease resulting from the heat stress. The heat-protective clothing can provide a protection for their safety from the external climatic conditions. Although there is no obvious damage to the outer fabric of heat-protective clothing, the skin of the workers will still suffer from burning. It is found that when the workers are exposed to the external high heat environment for a long time, a certain amount of heat will be accumulated in the air between the clothing and the body, and it will still remain for a period of time after the thermal exposure. The accumulated heat will be released naturally or forced to release by the pressure on the clothing, which will result in the skin burn.

The proposed system is adaptable jacket based on climate conditions using ARM microcontroller, by which the people/user can easily control the temperature of the jacket. The Peltier plate temperature automatically adjusts accordingto the condition of the relay circuit. The user wears a climate adaptable jacket as a dress, and also there is a facility to switch on TEC and observe the temperature status in the LCD, which is placed in this jacket.

II. ARCHITECTURE AND FRAMEWORK



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WORKING PRINCIPLE

We are going to control the temperature at the region of army persons, in this 6-volt battery is used throughout the circuit as power supply. The temperature sensor and pulse sensor are connected to the microcontroller (ATMEGA 328P). The allows dynamic and faster control. Liquid crystal display (LCD) makes the system user-friendly. Here we are using LCD display for displaying value of temperature sensor and pulse sensor. The LED also displaying value of Peltier plate. Thermoelectric cooler operates according to the Peltier effect. The effect creates a temperature difference by transferring heat between two electric junctions. The relay are simple switches which are operated both electrically and mechanically. The buzzer used to indicate the dangerous sound at risk time of the soldiers. The IOT module (Node MCU) is connected to the microcontroller. It is used to share and track location of the soldiers.

III. SYSTEM SPECIFICATIION

INTERNET OF THINGS (IOT)

The **internet of things** (**IoT**) is the network of physical devices, vehicles, buildings and otheritems—embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. In 2013 the Global Standards Initiative on Internet of Things (IoT-GSI) defined the IoT as "the infrastructure of the information society." The IoT allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit. When IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, smart homes, intelligent transportation and smart cities. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure.

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PELTIER PLATE

In this project TEC-12706 is used. The Peltier plates work on the principle of Peltier effect. The Peltiereffect is defined as creating a temperature difference by applying a voltage between two electrodes connected to asemiconductor material. This phenomenon is very much useful when it is necessary to transfer heat from onemedium to another on a small scale. The Peltier effect is one of three types of thermoelectric effect. In a Peltier-effect device, the electrodes are typically made up of a metal with excellent electricalconductivity. The semiconductor material between the electrodes creates two junctions between dissimilar materials,which in turn, create a pair of thermocouple. Voltage is applied to the electrodes to pass electrical current throughthe semiconductor, thermal energy flows in the direction of the charge carriers.

IV. PROPOSED SYSTEM

In the proposed system, Soldier's status, current location and weather condition can monitor on IOT system.The suit will be adjusting the inside weather condition to maintain the body health of the soldiers we alert them with emergency sounds. We only share the location after they are in dangerous like heart attack which show in map so we can easilyidentify because which shows in app.

V. CONCLUSION

The project "Adaptable jacket based on climatic conditions using ARM microcontroller" is successfully implemented. This system is smaller, less weight and having low power consumption, so it is very efficient. It helps the soldiers to work even in extreme climatic conditions. For the future expansion, this uniform can easily power by a small portable solar panel and echo friendly too. The use of solar panel gives continuous power output. We can also include rain drop sensors, humidity sensors for working purposes. These jackets can be wearable in all weather

conditions. We can utilize this jacket to shield us from over-heating & cooling. We can also place heart beat sensor in the jacket.

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