

Temperature Monitoring of Domestic Refrigerator by Using Bluetooth Device

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ABSTRACT: In trendy days the popularity of dominant device through phone has been increasing due to high performance and cut back work by connecting through sensible phone that's beneficial for older and physically disabled folks, administrative body will access and management the appliances by staying at some place and access them remotely without the help of others. Refrigeration is that the tactic of cooling of region, substance, or system to lower and/or maintain its temperature below the close one in several words, refrigeration suggests that artificial (human-made) cooling. Heat is way from a low-temperature reservoir and transferred to high-temperature reservoir. The work of heat transfer is historically is driven by mechanical suggests that, by heat, magnetism, electricity, laser, or different suggests that. Refrigeration cryogenics and air on. Heat pumps might use the heat output of refrigeration method, and additionally could even be designed to be reversible, however unit otherwise the identical as aircon units. This whole system occupy in device referred to as icebox. Icebox suggests that, academic degree appliance or compartment that's by artificial means unbroken cool and accustomed store food and drink. Modern icebox employed in home automation typically create use of the cooling result created once of a volatile liquid is forced to evaporate in a very sealed system during which it will be condensed back to liquid outside the refrigerator.

KEYWORDS: Refrigeration, Heat transfer, Refrigerators, Home automation.

I. INTRODUCTION

Refrigeration systems operate on a series of consecutive thermodynamic processes that form a cycle that returns the working substance to the same state. A thermodynamic refrigeration cycle removes heat from a low-temperature object (refrigeration) and rejects it at a higher temperature. A refrigerator does not cool items by lowering their original temperatures; instead, an evaporating gas called a refrigerant draws heat away, leaving the surrounding area much colder. Refrigerators and air conditioners both work on the principle of cooling through evaporation.

Refrigerator works on Vapour compression cycle as shown in fig. In the refrigeration cycle, there are five basic components: fluid refrigerant; a compressor, which controls the flow of refrigerant; the condenser coils (on the outside of the fridge); the evaporator coils (on the inside of the fridge); and something called an expansion device. Here's how they interact to cool your food. The Vapour Compression Refrigeration Cycle involves four components which are compressor, condenser, expansion valve/throttle valve and evaporator. It is a compression process, whose aim is to raise the refrigerant pressure, as it flows from an evaporator. The high-pressure refrigerant flows through a condenser/heat ex-changer before attaining the initial low pressure and going back to the evaporator. A more detailed explanation of the steps is as explained below.

II. RELATED WORK

A successful implementation of this project would available a system which provides automation and use of wireless technology in refrigeration system [1]. It would help in automatic regulation of temperature by mobile. Care will be taken visually impaired persons by input command through Bluetooth [2]. All this automation will help in reducing the electricity bill and conserving power and reduce effort [3]. So, the overall implementation cost is very cheap and is affordable by a common person [4]. In addition, user friendly android application has an alternative to remote control unit of automation system has also been established. The temperature sensor detects the surrounding temperature before transmitting it to receiver [5]. Wireless devices will be important in future to control application in Automobiles. In this

system the transmitter and receiver is used [6]. Wireless devices are the most popular application in today's consumer market, The aim of this work is to make low cost wireless temperature sensing and transmit and the data[7].In the refrigerator used in milk processing plant temperature should be maintained from 0°C to 4°C to prevent bacteria in the milk & milk products to multiply[8].To obtain this compressor should start for refrigeration effect when temperature in the refrigerator goes beyond 4°C & it should stop when temperature goes below 0°C. All android phones have Bluetooth which can be used as an input for automation in various devices. Light wave RF is a home automation system that utilizes a wireless connection between the remote control[9].Android Phone can be used as a single remote control unit to control all the devices by using Bluetooth technology as an inputLM35 sensor is used for sensing the room temperature & temperature status is transferred to mobile or device by GPRS[10].The data transfer between our smart phone & server i.e connected to temperature sensor via USB cable is done by using C2DM service.

III. METHODOLOGY

On approval of the project subject is required from the instructor which includes getting all the required details of the chosen project and approved by the instructor whether it is an appropriate project or not. Once the project's subject is approved, the data required is collected to strengthen the subject chosen. This stage also includes:

- >Collecting the Important data of this project
- >Verification of the feasibility of the project
- >Finding related works to this project.

IV. EXPERIMENTAL RESULTS

A microprocessor unit (MCU for microcontroller unit) is a small computer on a single metal-oxide-semiconductor (MOS) integrated circuit (IC) chip. In modern terminology, it is similar to, but less sophisticated than, a system on a chip (SoC); so may include a microcontroller as one of its components. A microcontroller contains one or more CPUs (processor cores) along with memory and programmable input/output peripherals. Program memory in the form of ferroelectric RAM, NOR flash or OTP ROM is also often included on chip, as well as a small amount of RAM. Microcontrollers are designed for embedded applications, in contrast to the microprocessors used in personal computers or other general purpose applications consisting of various discrete chips.

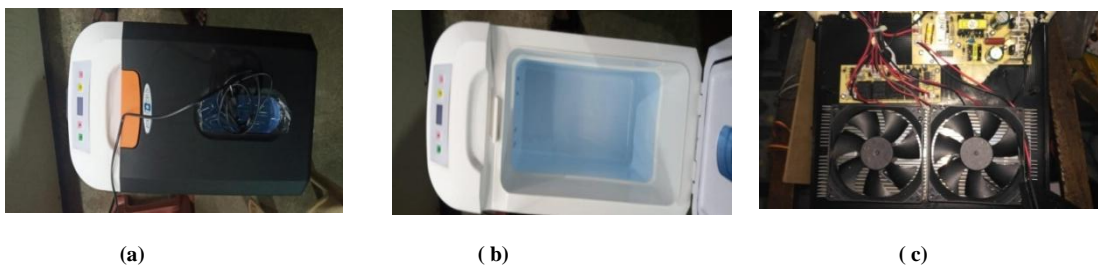


Fig shows. Top view of project model (a) Inside view of model image (b) Image of mirror view of actual model (c)image using patch size 4 x 4 and search window size 81 x 81I.e. image after disassembled project model

Microcontrollers are used in automatically controlled products and devices, such as automobile engine control systems, implantable medical devices, remote controls, office machines, appliances, power tools, toys and other embedded systems. By reducing the size and cost compared to a design that uses a separate microprocessor, memory, and input/output devices, microcontrollers make it economical to digitally control even more devices and processes. Mixed signal microcontrollers are common, integrating analog components needed to control non-digital electronic systems. In the context of the internet of things, microcontrollers are an economical and popular means of data collection, sensing and actuating the physical world as edge devices.

V. CONCLUSION

A successful implementation of this project would available a system which provides automation and use of wireless technology in refrigeration system. It would help in automatic regulation of temperature by mobile. Care will be taken visually impaired persons by input command through Bluetooth. All this automation will help in reducing the electricity bill and conserving power and reduce effort. So, the overall implementation cost is very cheap and is affordable by a common person. In addition, user friendly android application has an alternative to remote control unit of automation system has also been established.

REFERENCES

- [1] Mukul Mittal, Smart Home Automation Using Bluetooth And Infrared,,Volume-7,Issue-4,Year-April 2017.
- [2] Quingshah Shan, Wireless Temperature Sensor Using Bluetooth, ,Dept. of Creative Technologies, Portsmouth University,UK
- [3] Wei Boon, Design and analysis of Wireless Temperature monitoring System, RSM, March 2014
- [4] Shubhankar Chatteraj, Smart Automaton Based on different Sensor and Arduino as the master controller, Volume-5,Year-Oct.2015
- [5] Folasade Osisanwo, Internet Refrigerator, 3rd International Conference on Advances in Engineering Sciences & Applied Mathematics (ICAESAM'2015) London (UK), March 23-24, 2015
- [6] K Sindhiv, Temperature based automation in refrigeration of milk processing plant, International Journal of Pure and Applied Mathematics Volume 117 No. 16 2017.
- [7] Mohamad HafisIzran Ishak, Bluetooth-Based Home Automation System Using an Android Phone, Edition-39, Year-Sept.2014.
- [8] Prof Dr.Yusuf Mulge, Remote temperature monitoring using LM35 sensor and intimate Android user via C2DM service, IJCSMC, Vol. 2, pg.32 – 36, Issue. 6, June 2013
- [9] Senthikumar, D. Pamela, Remote temperature monitoring & recording using Bluetooth wireless technology, IJERT, Published (First Online): 25-11-2013
- [10] Mohammad Hafiz Izran Ishak, Bluetooth based home automation using an Android phone, International Journal of Scientific & Engineering Research, Volume 5, Issue 5, May-2014