

ABSTRACT

A laptop cooler, cooling pad, cooler pad or chill mat is an accessory for laptop computers intended to reduce their operating temperature when the laptop is unable to sufficiently cool itself. Laptop coolers are intended to protect both the laptop from overheating and the user from suffering heat related discomfort. A cooling pad may house active or passive cooling methods and rests beneath the laptop. Active coolers move air or liquid to direct heat away from the laptop quickly, while passive methods may rely on thermally conductive materials or increasing passive airflow.

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LIST OF ABBREVIATIONS

S.No ABBREVIATION EXPANSION

1. CPU Central Processing Unit

2.	USB	Universal Serial Bus
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ii CHAPTER 1

INTRODUCTION

1.1 Introduction

A major problems in the operation of laptop computers is overheating since it can affect the performance and stability, sometimes leading to system crash and hardware fatality. The proposed cooling system contained a thermoelectric device that reduced the intake air temperature into the laptop internal cooling system. An external exhaust blower, located at the exhaust air outlet of the laptop, was mounted to ensure sufficient air flow rate delivered by the cooling system.

1.2 Necessity

Overheating of laptop computers is common especially if operated in rooms or areas with high ambient temperatures. This can lead to disruptions and, even worse, it can cause data and system failure. In addition, such a problem may lead to costly repairs or replacements of major hardware components. Common related symptoms of over heating are lagging and freezing in operation while performing computing tasks. Although, by default, a laptop computer is equipped with an internal cooling mechanism, the system is often not capable in maintaining

appropriate operating temperature.

1.3 Scope of the work

Heat lowers conductivity in processors and other internal components thus requiring more electricity, thus parts need to work harder thus more heat. Removing excess heat allows for better performance and a longer life for your laptop, it also reduces heat related problems for the user.

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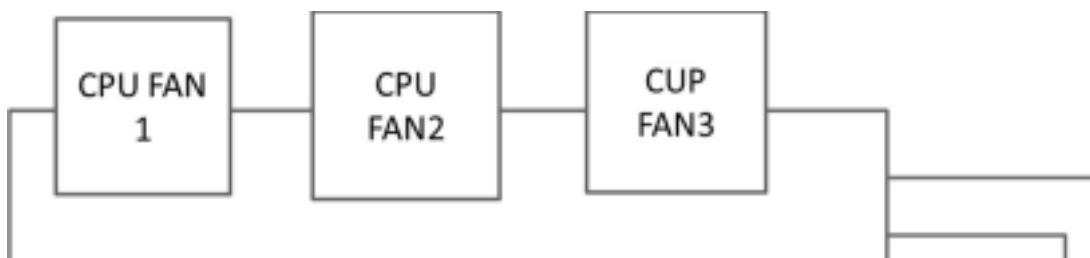
CHAPTER 2

SYSTEM MODEL

2.1 Introduction

- ☐ Laptop cooling pads regulate heat emitted by laptops and prevent them from overheating. This way, serious damage on a laptop's internal components is prevented and battery life is preserved.
- ☐ Build up of heat in laptops are reduced by as much as 20 percent when they are placed at an angle as compared to laptops in flat positions.

2.2 Block Diagram



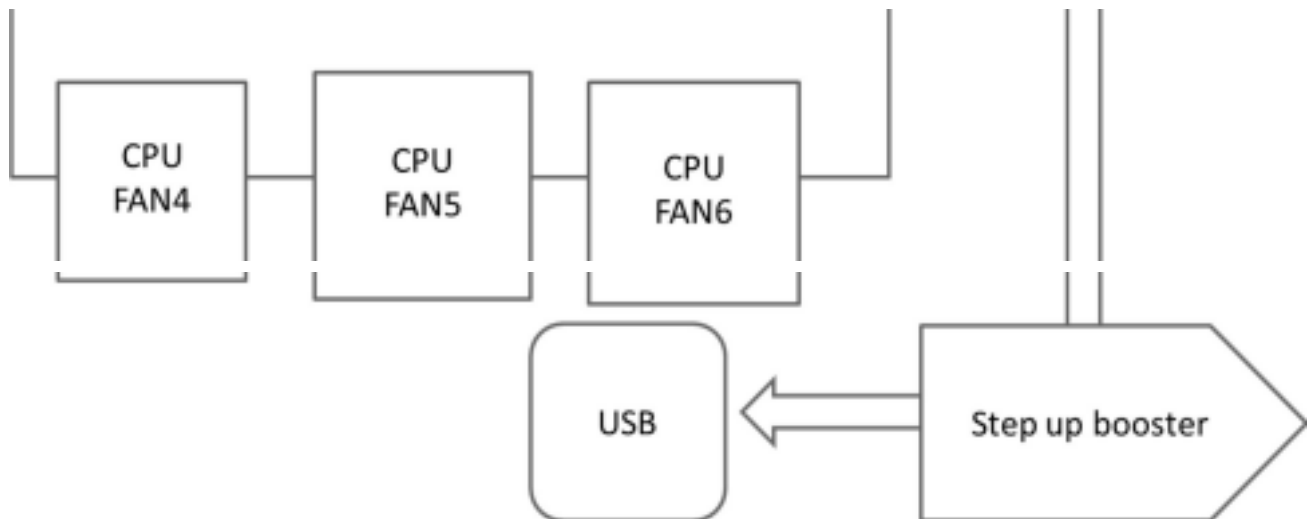


Figure 2.1 Block diagram of the system

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2.3 Description of Various blocks

CPU FAN

- 🚗 CPU fan is used to cool the CPU (central processing unit) heatsink. Effective cooling of a concentrated heat source such as a large-scale integrated circuit requires a heatsink, which may be cooled by a fan.

USB

- 🚗 USB was designed to standardize the connection of peripherals to personal computers, both to communicate with and to supply electric power.
- 🚗 It establishes specifications for cables, connectors and protocols for connection, communication and power supply (interfacing) between computers, peripherals and other computers.

STEP UP BOOSTER

- 🚗 Step-up regulators, also known as boost regulators, are used to step up

an input voltage to the desired higher output level.

- 🚚 They are typically used in portable equipment where the power supply is provided by a battery.

CHAPTER 3

HARDWARE DESCRIPTION

3.1 Introduction

- 🚚 Laptop cooling pad is an accessory for laptop computers that helps reduce their operating temperature, which is normally used when the laptop is unable to sufficiently cool itself
- 🚚 To use, they are usually put under laptops and connected through USB ports. 🚚 Laptop cooling pads are made up of fans to dispel heat, as well as vents to direct the heat outwards
- 🚚 Cooling pads basically works on the principle of blowing air. It cools down the laptop by blowing air around the body of the laptop by making use of fan 🚚 Some cooling pads are made to draw heat away from a

laptop from its underside while others function oppositely by blowing air towards the laptop. 🚗 Cooling pad fans come with adjustable speeds to create different airflow rates based on temperature and can range from 1800 rpm to 2800 rpm

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3.2 Circuit Diagram

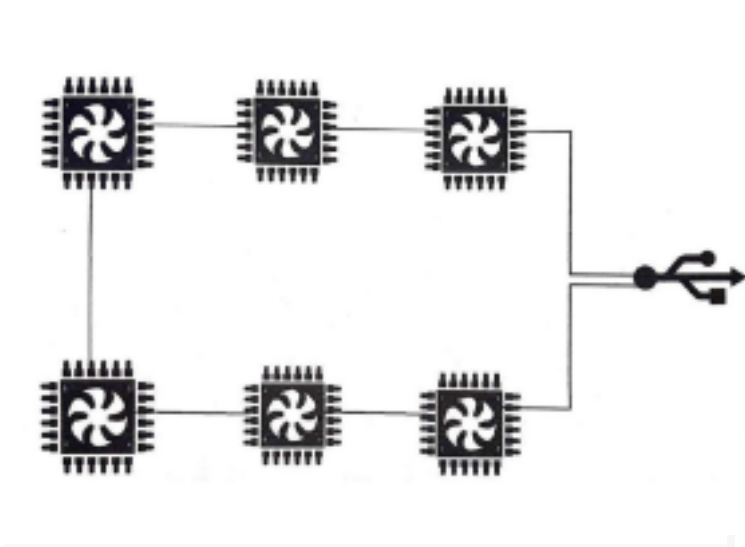


Figure 3.1 Circuit diagram of the system

3.3 Hardware Components

S.No Components Used No. Cost in Rs.

1 12V CPU fan 1 Rs.450

2 USB 1 Rs.150

3	Coneecting wires	As required	Rs.150
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TOTAL = Rs.750 Table 3.1 Hardware Components and its Cost

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CHAPTER 4

RESULT AND DISCUSSION

4.1 Hardware Implementation



Figure 4.1 Experimental Setup

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4.2 Working of Project model

- ☞ The basic thermodynamic principle behind CPU cooling is convection. ☞ A hot object transfers some of that heat to the air molecules near its surface, cooling slightly in the process.
- ☞ If the air is moving, then these heated molecules will float away, allowing cooler air to replace them and absorb more heat.
- ☞ Using a fan forces the air to move, providing a constant stream of cooler air to absorb heat from the object and significantly increasing the rate of cooling.

- ☞ Laptop cooling pad is an accessory for laptop computers that helps reduce their operating temperature, which is normally used when the laptop is unable to sufficiently cool itself.
- ☞ To use, they are usually put under laptops and connected through USB ports.

7 CHAPTER 5

CONCLUSION AND FUTURE SCOPE

5.1 Conclusion

- ☞ If the laptop is used for gaming then definitely recommend a cooling pad, and they are a good just to make your computer live a long life.
- ☞ Another reason you might need a cooling pad, is if you upgrade an older laptop with better components. Then its more powerful, but often still at the same level when it comes to dissipating heat.

5.2 Future Scope

- 📖 Global Laptop Cooling Pads Market Research Report 2020 (Covid-19 Version) is latest research study released by Report Consultant evaluating the market, highlighting opportunities, risk side analysis, and leveraged with strategic and tactical decision making support.
- 📖 The study provides information on market trends and development, drivers, capacities, technologies, and on the changing investment structure of the Global Laptop Cooling Pads market.

5.3 Applications

- 📖 It cool down the overheat laptop and keep the computer cool.
- 📖 Build up of heat in laptops are reduced by as much as 20 percent when they are placed at an angle as compared to laptops in flat positions.

8 REFERENCES

CONTENT SOURCE

https://en.m.wikipedia.org/wiki/Laptop_cooler

VIDEO SOURCE

<https://youtu.be/QtDc0amasgw>

