Power Saving Iron box

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Abstract—In today’s world, the need for electricity is increasing at an alarming rate, which makes the idea of energy conservation. Thus the wasting of energy should be minimized to a possible extent. Obviously, iron box is one among the major power consuming equipments in our home. That’s why we aim at saving the power through our project which is entitled as “POWER SAVING IRON BOX”. By our project, we put forward a substitute for the ordinary iron box.

Power Saving Iron box is a new type of iron box which is capable of saving power. It saves the power by switching off the iron box while it is not in use. The idle condition of the iron box is detected by two sensors. One checks the presence of users hand and the other checks the position of the iron box.

Keywords—Iron box, energy, power saving.

I. INTRODUCTION

It is our first concern that the wasting of energy should be minimized to a possible extent. Obviously, iron box is the major power consuming equipment in our home. That’s why we aim at saving the power through our project which is entitled as “power saving iron box”. By our project, we put forward a substitute for the ordinary iron box. Here we present an automatic power saving system which senses the delay when the iron box is not in use and cut off the power supply automatically by waiting for a predetermined time delay. So even if we forgot to switch off the supply or have a long interrupt in the midst of the ironing (like a phone call, receiving guests etc.), the system won’t wait the operator, instead it will make the equipment detached from the mains. This way the proposed iron box saves the electrical energy which is highly precious.

II. OVERVIEW

The power is saved by cutting off the supply to the iron box while it is not in use. This is achieved by sensing the presence of user’s hand on the iron box and the position of iron box. The table given below explains the overall working of our project.

<table>
<thead>
<tr>
<th>Position of the iron box</th>
<th>State of the iron box</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal with hand of user on the handle</td>
<td>Remains switched on</td>
</tr>
<tr>
<td>Horizontal without hand of user on the handle</td>
<td>Gets switched off after 3 seconds</td>
</tr>
<tr>
<td>Vertical with hand of user on the handle</td>
<td>Remains switched on</td>
</tr>
<tr>
<td>Vertical without hand of user on the handle</td>
<td>Gets switched off after 4 minutes</td>
</tr>
</tbody>
</table>

The various blocks in the block diagram of power saving iron box is shown below.

Block Diagram Description

MCU is the central processing unit which controls the functions of all other blocks. Inputs fed to the MCU are from the two sensors. Depending upon the given inputs, outputs are produced accordingly. The various blocks in the block diagram are explained below.
1. **Microcontroller Unit**

MCU is the central processing unit, which controls all the functions of other blocks explained here. MCU takes or read data from the sensors and controls all the functions of the whole system by manipulating these data.

2. **Sensors**

   A). **Tilt Sensor**

   The tilt sensor used here is an accelerometer. Accelerometer is a device that measures proper acceleration. These are used to detect and monitor vibration in rotating machinery. Here it is used to check the position of iron box.

   b). **LDR**

   A photo light detectors are used to find the presence of light. Proportional to the intensity of light, its resistance varies. The use of LDR in our system is to detect the presence of user's hand.

3. **Transformer Less Power Supply**

   In most non battery applications, the power to the microcontroller is normally supplied using a wall mounted transformer, which is then rectified, filtered and regulated. In most applications, this method of generating the regulated voltage is cost effective and can be justified. But here we use transformer-less power supply inorder to reduce the weight.

4. **TRIAC**

   TRIAC, from Triode for Alternating Current, is a trade name for an electronic component that can conduct current in either direction when it is triggered (turned on).

5. **Visual Indicators**

   LED’s are used here as visual indicators. A light-emitting diode (LED) is a semiconductor light source. LEDs are used as indicator lamps in many devices, and are increasingly used for lighting.

6. **Optical Isolator**

   It is a component that transfers electrical signals between two isolated circuits by using light. Opto-isolators prevent high voltages from affecting the system receiving the signal.

### III. SOFTWARE SECTION

**Flow Chart**

![Flow Chart Image](image-url)

### IV. ADVANTAGES AND FUTURE SCOPE

It is observed that the power saving iron box meets its main objectives and has the following advantages.

- It is reduces the wastage of electrical energy due to carelessness.
- Size of the circuit is reduced as transformers are not used and hence can be embedded in an iron box easily.
V. FUTURE SCOPE

- Advanced power saving iron box can be made into an intelligent system by including a thermal sensor to maintain a constant temperature environment.
- The accelerometer arrangement used here can be replaced by an inclinometer available in the electronic market.
- Optical sensors can be replaced by a touch sensor which is more reliable.

VI. CONCLUSION

Power saving iron box has been experimented and from our project we conclude that the optical sensor can be replaced by a touch sensor which seems to be more reliable. We also came to know that photo transistor is more sensitive and reliable than photo diode. It is also found that the liquid property of mercury can be well exploited in measuring the inclinations.

Power saving iron box is a new type of iron box which is capable of saving power, it saves the power by switching off the iron box while it is not in use. The idle condition of iron box is detected by two types of sensors. One checks the presence of user’s hand and other checks the position of iron box. The idle time is mainly indicated by the absence of user’s hand. Then, it automatically cut off the supply to the iron box according to its position. In the vertical position of the iron box, the circuit waits a more time to cut off the supply.

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