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DEFENSE PROPOSAL

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ABSTRACT

This Final Year Project (FYP) is to design and fabricate a temperature sensor on aluminium using tilting furnace. The main purpose of this study is to develop and manufacture a temperature sensor using a tilting furnace on aluminum. Thermal sensors have been intensively developed and used in a wide range of applications, from monitoring of industrial processes to environmental control. The wire will be connected to the temperature sensor. When the temperature of the molten aluminum in impact reaches a high temperature, it allows it to make a warning sound. The sensor will detect temperature changes and provide an output on the monitor. Heat is produced by the movement of molecules and atoms, and the greater the movement, the more heat is produced. Temperature sensors detect the quantity of heat energy or even coldness generated by an object or system, allowing us to detect temperature changes. This temperature sensor can be used in industries like foundries and metal casting.

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1.0 Introduction

1.1 Background of Study

There are many types of sensors, such as contact temperature sensor and non-contact temperature sensor.

Figure 1: Contact temperature sensor

These individuals must contact the thing whose temperature they are measuring, whether it be a solid, liquid, or gas. They only measure their own temperature, but we deduce that any temperature they come into touch with is in thermal equilibrium (i.e. are the same temperature). Thermocouples, RTDs, thermistors, thermostats, and semiconductor temperature sensors are all common forms of contact temperature sensors. When you can create excellent thermal contact between the gadget and what you're monitoring, you should utilize them. Contact thermometers also make continuous monitoring and data collecting much easier.

Figure 2: Non-contact temperature sensors

These measure the thermal radiation emitted by an item or heat source to calculate temperatures from a distance. These are frequently used in high-temperature or dangerous conditions where you must keep a safe distance from a specific body.The most common noncontact temperature sensors are thermal imaging and infrared sensors, which are used when the target object is moving (such as on a conveyor belt or within moving machinery), if it's a long distance away, if the surrounding environment is dangerous (such as high voltages), or at extremely high temperatures where a contact sensor would fail.

Sensors are everywhere, and there are many sensors and their applications around the world. There are various types of sensors around us, such as offices, gardens, shopping malls, homes, cars, toys, and so on. These sensors make our lives very easy and convenient, starting with applications such as lighting, fans, turning on TVs (TVs). Automatic room temperature adjustment by air conditioner (AC), fire alarm, obstacle detection when moving backward, thumbprint, etc.

Figure 3:Type of Sensor

A sensor is a device that receives a signal and responds to the signal or stimulus. The stimulus signal can be challenged by the perceived level, characteristics, or condition. We also can say that a sensor is a translator that converts a nonelectrical value to an electrical value. The output signal of a sensor may be in the form of voltage, current, or charge. A sensor has many forms of input properties and electrical output properties. If there is small change in the sensed quantity, it will cause a small change in the electrical output and the changes can be detected with their measuring capabilities. All the sensors are categorized on the basis of their uses, applications, material used and some production technologies. Some sensors are classified also by their characteristics such as cost, accuracy or range of sensor. There are two main types of sensors: passive sensor and active sensor. A passive sensor does not require any extra energy source and electric signal is produced directly in reply to stimulus of external sources. This means that the sensor converts input energy to output signal energy. Examples of passive sensors include photographic, thermal, electric field sensing, chemical, infrared and seismic. The active sensors need external sources of energy for their response, known as excitation signal. To produce the output signals, sensors adopt necessary changes to these input signals.