

Thermistors research paper example

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Abstract

The discovery of semiconductor property of a metal began the development of thermistors (Lavenuta, np). Samuel Ruben invented the first practical thermistor (Electrotechnik, np), and since then, the demands of such technology increased because it is considered cheap and reliable. Today, there are many industries, devices and instruments that use thermistors. (Ametherm, np).

History

The semiconductor property of silver sulfide (Ag_2S) was the first ever recorded NTC (Negative Temperature Coefficient) thermistor and was observed by Michael Faraday in 1833. However, because of the difficulty to produce thermistors, and its applications were less understood, the manufacturing of thermistors came only during the 1930s. During the 1940s, the Bell Telephone Laboratories improved the production of thermistors by developing techniques. Disc type thermistors were the first to be available in the market. The common application of this type of thermistor is for electronic circuits (Lavenuta, np).

Inventor

The invention of thermistor is mainly attributed to Samuel Ruben. After the discovery of the principle of thermistor by Michael Faraday, Samuel Ruben was the first to construct a practical thermistor in 1930. Since then, the production of thermistors began as demands for cheap and reliable temperature sensors rise (Electrotechnik, np).

Uses in industry

An electronic circuit usually uses thermistors. Thermistors are used for temperature compensation components, regulation of voltage, protection of circuit, and time delay and volume control components (Ametherm 1, np). Today, thermistors are used in a wide range of field. Automotive applications include truck tire curing and monitoring of engine temperature, while military applications include the use of thermistors in missiles and spacecraft. Also, thermistors are used by lots of daily equipment such as copy machines, soldering irons, plastic laminating tools, hot mold, and chemical analysis equipment. Other applications include fiber and photographic processing, and lots of research instruments. Household applications are observable in burglar and fire alarms and temperature control of air conditioning, oven and refrigerator (Ametherm, np). Needless to say, the applications for thermistors seem endless.

Theory

Thermistors are temperature sensors that use solid semiconductors that may have positive or negative temperature coefficients. In application, negative temperature coefficient (NTC) thermistors are more common. NTC thermistors use solid semiconductors that have decreasing resistance as temperature increases, and, of all temperature sensors, the most sensitive. The NTC can be large that it can detect even minute deviations in the temperature (Kester, Bryant and Jung, 16-18).

Conclusion

The application of thermistors is acceptable as a reliable temperature sensor because of its cheap production and its sensitivity to temperature. The discovery of the principles of thermistors began on 1830s, but since the production of commercial thermistors, it has been used in many applications. From the military to household equipment, thermistors pose as a very important tool and component to electronics and devices. Thus, the applications of thermistors are considered endless.

Works Cited:

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