

CONCEPT The Faraday Cage is an enclosure made of conductive material, such as metal, that can block external electromagnetic fields and prevent their interference with electronic devices and systems. The Faraday Cage operates on the principle of electromagnetic shielding, where the conductive material creates an electric field that cancels out or reflects incoming electromagnetic waves, keeping the inside of the cage electromagnetically isolated from the outside.

EXAMPLES

CONDUCTIVE MATERIALS: The Faraday Cage is typically made of conductive materials, such as copper, aluminum, or stainless steel, which create a conductive surface that reflects electromagnetic waves.

SHIELDED CABLES: Shielded cables are used to connect electronic devices inside the Faraday Cage to the outside world without interfering with the Faraday Cage's effectiveness.

SEALING AND GASKETS: To prevent electromagnetic waves from entering the Faraday Cage, it must be sealed tightly. Sealing materials and gaskets made of conductive materials can be used to create a secure seal and ensure complete isolation.

FILTERS: Filters are used to prevent electromagnetic interference from electrical devices located inside the Faraday Cage. These filters can be passive or active, such as capacitors or chokes, and can be designed to operate at specific frequencies.

EMI TEST EQUIPMENT: Testing equipment, such as an electromagnetic interference (EMI) receiver, can be used to evaluate the effectiveness of a Faraday Cage in blocking electromagnetic waves. This equipment measures the electromagnetic field strength inside the cage and can be used to identify weak spots or areas that need improvement.



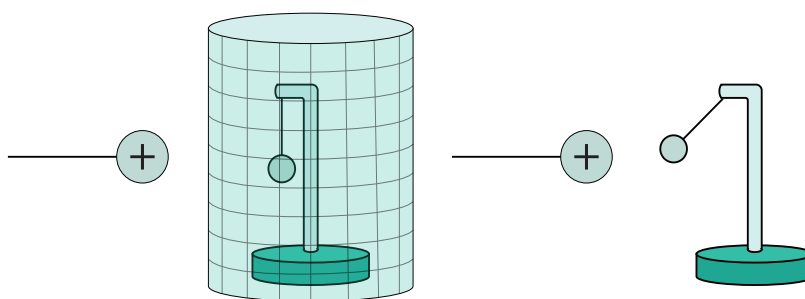
BACKGROUND

Make sure it measures up

The Faraday Cage is named after Michael Faraday, who discovered electromagnetic induction in the early 19th century. He noticed that if a conductive cage was placed around a charged object, the electric charge would not penetrate the cage, and the inside of the cage would remain electromagnetically isolated.

This discovery led to the development of the Faraday Cage, which is widely used in the field of electrical engineering to protect sensitive electronic equipment from electromagnetic interference. Faraday Cages have applications in various fields, including aerospace, telecommunications, and scientific research.

The Faraday Cage



APPLICATION

Modern Faraday Cages can be found all around the world! One of the most common examples is the microwave! You got it. The common kitchen microwave is a reverse Faraday Cage. It traps the electromagnetic radiation waves inside the microwave to heat up food and liquids.

A misconception regarding automobiles is that the rubber tires are what insulates the driver in the event of a rare lightning strike. It is actually the metal frame which shields the driver. This is the same principle that protects airplanes in flight.

Another new product is the ability to Tap to Pay with contactless credit cards. These cards are susceptible to theft if someone has the right technology to read the signal. Have you ever seen a purse or wallet that indicates it has RFID blocking technology built into it? This blocking technology can be a fabric or in the case of some men's wallets/money clips, it is a metal enclosure your cards slide into. This helps keep bad actors from going on an all-expense shopping spree on your dime!

While it might seem like something straight out of a James Bond movie, there are special enclosures where government and military personnel can go to receive private information or have confidential meetings without the threat of electronic eavesdropping. The practical applications are endless given the degree to which we utilize digital communications daily to conduct business, as well as our personal lives.



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