

TESLA COIL DEMO

ACTIVITY TYPE

Presentation

SCIENTIFIC CONCEPT

Electromagnetism

ACTIVITY LOCATION

It's Electric / Tesla Coil

ITEMS NEEDED

Tesla Coil Demo Script

Tesla Coil Key

HOW TO

NOTE

- Tesla Coil demos can be performed by SciGuides, VSA staff, and anyone else that has been trained to use it.
- Once you trigger the Tesla Coil to fire it will turn off after five seconds and won't be able to fire again for ten seconds.

OPENING PROCEDURE

1. Get the key needed for the demonstration from the front ticket counter.
2. Ask the person at the scanning station to make a PA announcement that there will be a Tesla Coil demo in five minutes.
3. Start a timer on your phone or watch for five minutes.
4. Go to It's Electric and use the key to unlock and open the black box on the wall to the left of the Tesla Coil. Grab the remote for the Tesla Coil. Turn on the switch on the power strip. A red light on the switch should turn on if it is powered. If the power doesn't come on contact MOD or your supervisor for assistance.
5. Undo the latches on the brown box to access the microphone. Unwrap the cable on the hook and turn the microphone on.
6. One minute prior to starting the presentation, make an announcement using the microphone that a Tesla Coil Demo will be happening in It's Electric in one minute.

PA ANNOUNCEMENT

Note: This is to be read by the VSA attendant at the scanning booth, not by the demo presenter.

Greetings Museum Guests, may I have your attention please? Please join us in It's Electric on the first-floor for our Tesla Coil demonstration, starting in five minutes. Keep in mind that due to the high voltage and currents the demonstration can be quite loud. Once again, please join us in It's Electric on the first floor for our Tesla Coil demonstration, starting in five minutes. See you there! Thank you.

SCRIPT

Hello, everyone! Welcome to the Fleet Science Center, my name is _____. Who wants to see something cool?!

Has anyone here ever heard the name Tesla before?

[Let a few people answer]

Most people will probably think of the electric car company. Do you know why those cars have that name?

[Let a few people answer]

They were named to honor a Serbian-American scientist and inventor named Nikola Tesla who was a pioneer that advanced our understanding of electricity over a hundred years ago.

He invented and developed technology that we use every day including: AC motors, electrical systems, and radio remote controls.

One of his most famous inventions is this device here, the Tesla Coil.

[Point to the Tesla Coil]

Do you all want to see it in action?!

Ok, I am going to turn it on but I need to warn you that it is very loud. If you are sensitive to loud sounds please cover your ears.

Can you all help me count down from five?

[Count down from five and then press the button on the remote.]

Cool, right?

So, does anyone have a guess about what this machine was meant to do besides create a cool lightning show?

[Let a few people answer]

The Tesla Coil was designed to transmit electricity wirelessly by creating an electromagnetic field that can power electrical devices.

Imagine being able to charge your phone or car simply by passing within range of a Tesla Coil. You would never have to look for a power cable ever again!

Ok, so how powerful do you think our Tesla Coil is? How many volts do you think it produces?

[Let a few people answer]

We estimate our Tesla Coil produces between 300,000 to 1,000,000 volts.

Want to see it again!? Alright, let's count down from five!

[Count down from five and then press the button on the remote.]

So, you may be wondering why we don't use Tesla coils today. Unfortunately, the Tesla coil ran into a couple of issues that prevented it from fulfilling our electrical needs.

The first issue is that the electromagnetic field it generates gets weaker the further away you are from the Tesla Coil. For example, to provide power to your neighborhood you would need a Tesla Coil about the height of a 10-story building on every street corner.

The second issue is that it they can be extremely loud. Imagine trying to work or sleep with 10-story Tesla Coils going off all around your neighborhood.

Even though the Tesla Coil failed to deliver wireless power to the world, Tesla's invention revolutionized how we think about and use electricity. In fact, modified versions of the Tesla Coil led to the development of the radio towers which send and receive the signals that allow us to make phone calls, send texts, and browse the internet on our cell phones.

Do you want to see it one more time?! Let's count down!

[Count down from five and then press the button on the remote.]

Thank you all for visiting the Fleet Science Center! Enjoy the rest of your day!

[End]

CLOSING PROCEDURE

1. Turn off the microphone, wrap the cable on the hook, and tuck the microphone in the brown box. Close the brown box and latch it.
2. In the black box, turn OFF the power strip and make sure the red light on the switch turns off. Place the remote into the box. Close the box and lock it.
3. Return the keys and script to the front ticket counter.