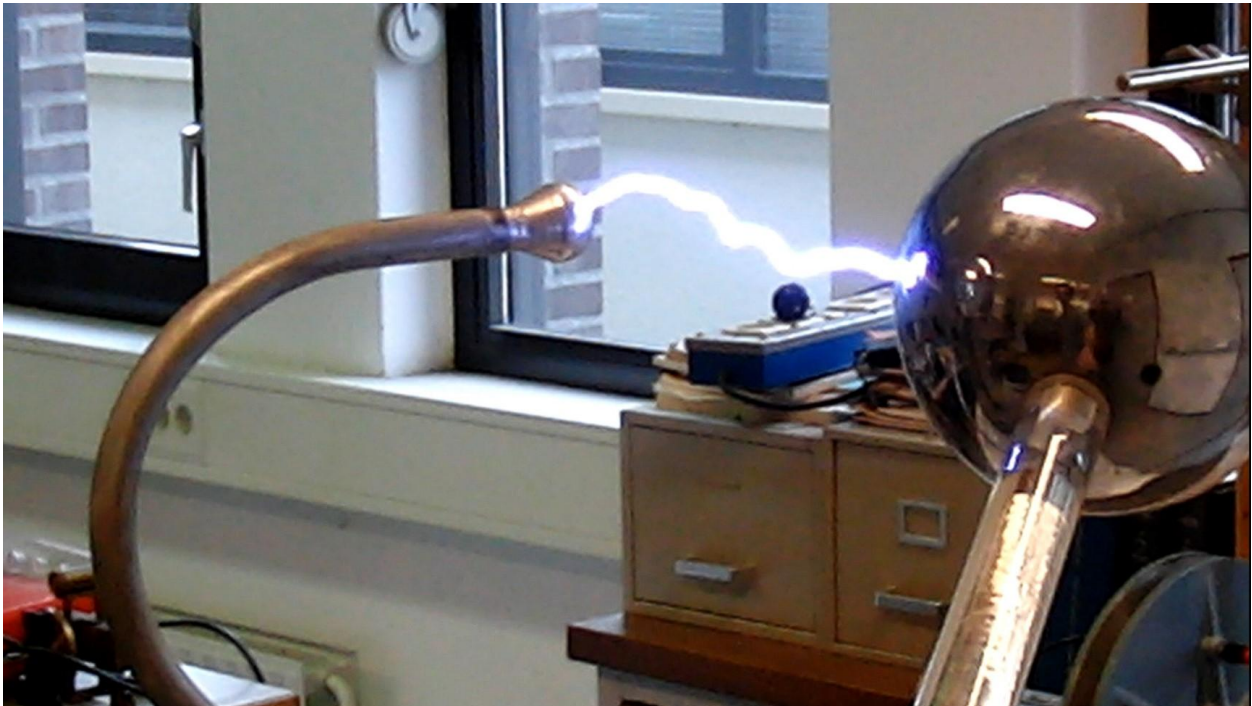


5C10.10 - LEYDEN JAR



Key words: electricity, electric field, leyden jar

Equipment List:

1. Leyden Jar
2. Special bucket
3. Van de Graaf generator
4. Power supply
5. Additional sphere

How to assemble and operate:

- Set up the Van de Graaff generator as per separate instructions including the small sphere connected to ground.
- Connect the outer bucket of the Leyden jar to the ground and place the Leyden jar close to the Van de Graaff generator, with the curved part facing the large sphere at a relatively short distance.
- Let the Van de Graaff generator run and charge the Leyden jar: discharges occur between the two. Do not let the Van de Graaff generator run for too long, because then the Leyden jar will discharge itself from inner to outer bucket.

- Once charged, move the Leyden jar away a little from the Van de Graaff generator. Slowly and gently move the small, grounded sphere towards the blunt end protruding from the Leyden jar and observe the discharge.
- Use the plastic rod to gently remove the inner bucket from the Leyden jar assembly and place it at a safe distance from the rest of the equipment. It is safe to touch and hold this inner bucket by hand (ask the audience beforehand what they think will happen when you touch it, or whether that would be safe). The electrical charge is in the dielectric (plastic) bucket. You can also take out the dielectric (plastic) bucket by hand. You may feel your arm hairs move because of the electric charge on/in the dielectric bucket. After putting the dielectric bucket back into the outer bucket, use the plastic rod to safely put the inner bucket back into place.
- The reassembled Leyden jar still has a dangerous charge. Once reassembled, you can still obtain electrical discharges from the Leyden jar. Completely discharge the Leyden jar by connecting the inner bucket (or the rod protruding from it) to ground, for instance by touching it with the small grounded sphere. Do this thoroughly, because otherwise some charge may still be left in the Leyden jar, even after one hour. See scientific literature for more details and further explanation.

Description/Theory:

This demonstration shows how the Leyden jar can store electrical charge, which can then be discharged in a visible spark. The dramatic discharge of a spark can engage audiences and stimulate interest in the science of electricity.

Comments/Notes:

WARNING: This demonstration involves dangerous voltages. Touching the charged Leyden jar (in completed form) may result in an electric shock.