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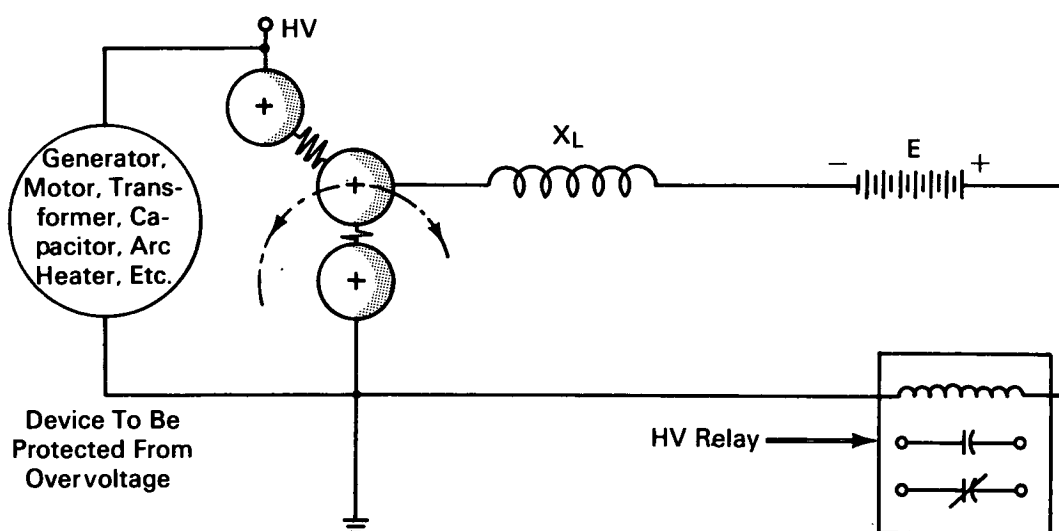
Brief 66-10557

NASA TECH BRIEF



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Trisphere Spark Gap Actuates Overvoltage Relay



The problem:

To provide a positive, fast response, high current capacity device that will sense an overvoltage condition and remove power from the circuit before insulation breakdown.

The solution:

A trisphere spark gap and high voltage relay so arranged that when an overvoltage occurs, the spark gap breaks down and conducts an actuating current to the relay which removes power from the circuit.

How it's done:

Three 1 1/4-inch copper spheres are mounted on 1/4-inch brass rods to a section of dielectric material. The center sphere is located in relation to the grounded sphere so that a constant 1/8-inch gap is maintained between them, while spacing between the

center and high voltage spheres may be varied. Connected in series between the center and grounded spheres are a high voltage relay, a battery and a small choke coil.

When the high voltage sphere (which is integral to the circuit being protected) reaches a predetermined potential, the gaps will break down and current will flow between the three spheres. Because of the choke in the relay circuit, both gaps will break down simultaneously and the ionized path between the center and grounded spheres completes the relay circuit and energizes the relay. The relay contacts remove the source of high voltage to the protected circuit and the trisphere spark gap/relay device is automatically returned to its passive condition.

(continued overleaf)

Note:

Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Ames Research Center
Moffett Field, California 94035
Reference: B66-10557

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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