

Corona Shields at Grand Coulee Dam



Grand Coulee Dam's 500kV Switchyard

A corona shield is usually made of metal and can be in the form of a ring, doughnut, or sphere. It is used on high voltage power transmission insulators and switchgear to prevent corona discharge.

Corona discharge occurs in high voltage power lines like the ones used at Grand Coulee Dam's Third Power Plant, which are rated at 525 kilovolts.

Corona discharge makes an audible noise (a sizzling sound) and has a bluish glow. It also generates radio frequency noise that sounds like static or buzzing on radios.



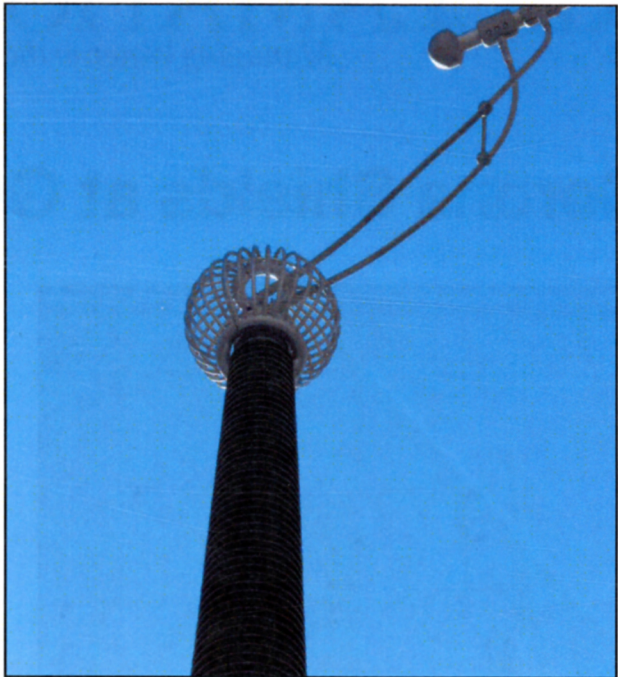
Third Power Plant Transformer Deck

Corona produces ozone gas and can cause damage to electrical transformers and equipment. It also causes a significant waste of power in transmission lines and equipment.

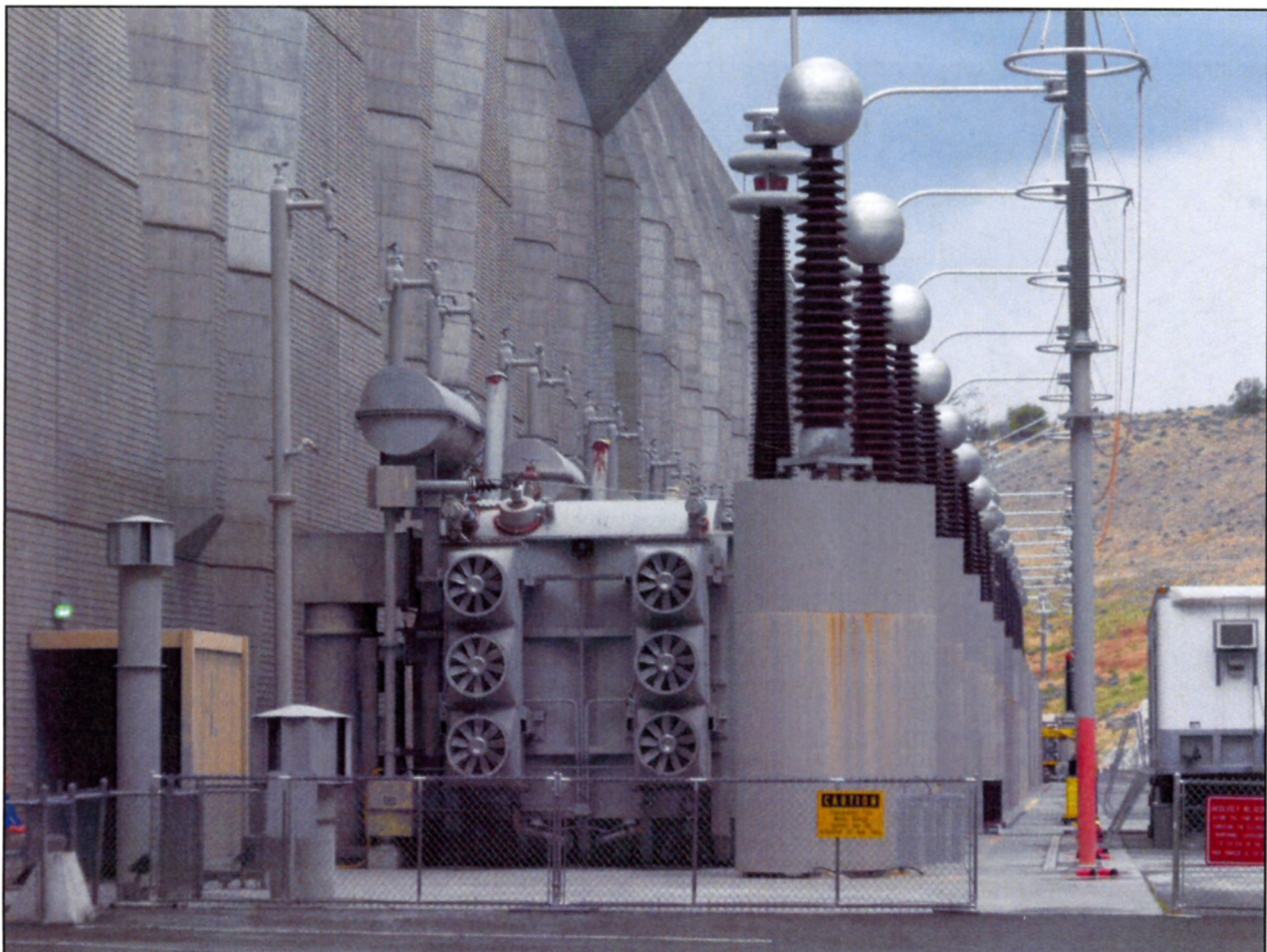
Corona discharge forms on electrodes around sharp corners, projecting points, bolts, screws, nuts, edges of metal surfaces, or small diameter wires. The corona shield helps to spread out the electric field in those areas and reduces corona discharge. Sharp-edged equipment located in the “shadow” of a corona ring is protected as if it were not so sharp edged.

In order to prevent or reduce corona, terminals on high voltage equipment are often equipped with large-diameter spheres, either made from smooth aluminum sheet or fabricated as a metal cage.

Corona also forms in naturally occurring electrical fields, such as during storms.



Corona Shield in in the 500kV Switchyard



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