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# Comparative Analysis

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# Open Corona Ring and Closed Corona Ring

Current corona ring applied to composite insulator can be divided into two categories of "Open" ring and "Closed" ring, the only distinction between the two rings is that "Open" ring leaves a discharge opening on the ring body. No explicit difference can be seen between to two as far as voltage-sharing effect is concerned. Due to strong field intensity at the opening of the "Open" ring, thus equipped with strong arc strike, once overvoltage appears within the circuit and at a critical state, the opening helps to discharge, shorten discharge time and protect the umbrella skirt surface from burned damage. Almost all corona ring used with composite insulator are open corona ring among overseas manufacturers for composite insulator. In addition, one distinct difference between "Open" ring and "Closed" ring is that discharge happens in direction of the opening on "Open" ring, whereas "Closed" ring shows no evident rule.

Protection for insulator surface during transmission line operation is valued highly in some developed countries, a device of "Discharge Gap" is designed and installed to some transmission lines even with porcelain or glass insulator, this device consists of a pair of metal bar, each positioned correspondingly up and down, on one side of the insulator string, length of the metal rod is decided based on requirement on discharge voltage by the circuit. Apparently, discharge voltage is lower for insulator strings installing "Discharge Gap" device compared to insulator string without the device, yet with better protection to the insulator surface, by reason that once voltage discharge occurs in the circuit, it will certainly happen at the discharge gap instead of the insulator surface.

Open corona ring is in fact equipped with both functions of voltage-sharing and "Discharge Gap", much more effective than closed corona ring.