

C1 Power Factor Measurement of Resistance-Graded Bushings ⁽¹⁾

The best method of measuring the C_1 power factor of Resistance-Graded bushings is to lift the top conductive clips and to ground the surface of the RG porcelain using conductive foils or bands, and then measure C_1 with the UST measurement method. The result is a C_1 power factor value very close to the intrinsic C_1 power factor of the bushing core with an accuracy of $\pm 0.3\%$ or $\pm 15\%$ of the measured value, whichever is greater.

Due to the difficulty in grounding the entire surface of the porcelain, an alternate method of grounding only the flat areas of the porcelain body between the petticoats was analyzed. Because this method could possibly have influenced the electrical field distribution significantly, an electrical field analysis was conducted. The findings revealed that the electrical field distribution on the porcelain grounded with this method is almost the same as that with the whole surface grounded. Therefore, grounding the porcelain only between the petticoats should not cause significant deviation in the C_1 power factor measurement.

Special care should be taken to ensure there is good contact between the porcelain body and the grounding foils or bands. Testing revealed poor contact with the RG surface can cause the measured C_1 power factor value to be less than the actual C_1 .

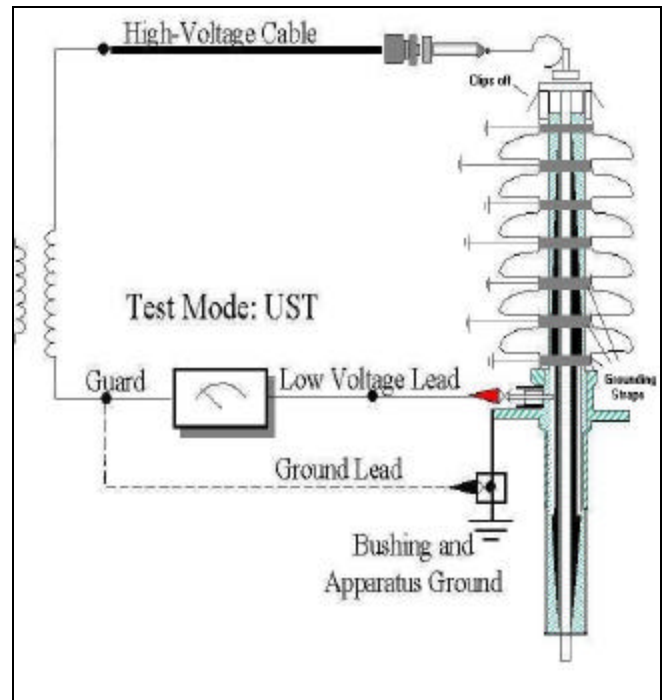


Figure 1 – Recommended Double UST hook-up for RG Bushings.

(1) This summary is derived from Lapp Insulator Company technical paper titled 'An Improved Method of Measuring C_1 Power Factor of Resistance-Graded Bushings' by Daxiong Zeng, submitted December 5, 1997. Summary by Chris Monoski.