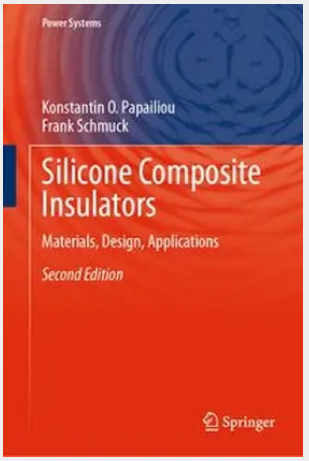
Papailiou / Schmuck

Silicone Composite Insulators

Materials, Design, Applications



This professional book provides a comprehensive and up-to-date presentation of composite insulators with a special focus on silicone elastomers as housing material. Composite insulators have been used successfully for more than fifty years in electric power transmission applications up to the highest voltage levels. The state of the art for the selection of manufacturing processes and materials is explained and proven rules for the dimensioning of insulators and their corona and arc protection fittings are presented. Individual and special applications are discussed in detail, with operating examples in the sections on long rods insulators, compact lines, phase spacers and hollow core insulators. Best practices in evaluating insulators taken from service are also discussed. An overview of current standards and test methods complete the content. The selection of topics and their presentation is characterized by the more than fifty years of know-how of the authors in the industry, which was accompanied by a long collaboration in IEC standardization committees and in CIGRE working groups. This second edition has not only been updated, but also expanded to include chapters on the mechanics of composite materials, on the performance of polymer insulators under polluted conditions as well trends on composite insulator technology. In the latter, current topics such as interface behavior of composite insulators, DC assessment and application, coatings and superhydrophobicity are addressed including an outlook for overhead line technology.

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