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Penentuan Health Index Insulasi Kabel XLPE Tegangan Tinggi berdasarkan Pemantauan Kapasitansi secara In-Service
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DAFTAR PUSTAKA

[1] CIGRE WG B1.57, Update of Service Experience of HV Underground and Submarine Cable Systems, Technical Brochure 815, Paris: CIGRE, 2020.

[2] S. D. Mikkelsen and Y. Maugain, “Cable Failure Statistics every 2nd year,” CIGRE, Aug. 18, 2022.

[3] A. Ghaforian, P. Duggan, and L. Lu, “A Comprehensive Review of Cable Monitoring Techniques for Nuclear Power Plants,” Energies, vol. 18, no. 9, Art. no. 2333, 2025.

[4] X. Dong, Y. Yang, C. Zhou, and D. M. Hepburn, “Online monitoring and diagnosis of HV cable faults by sheath system currents,” IEEE Transactions on Dielectrics and Electrical Insulation, vol. 20, no. 6, pp. 2297–2306, 2013.

[5] X. Wang et al., “On-line monitoring and trending of dielectric loss in a cross-bonded HV cable system,” IEEE Transactions on Power Delivery, vol. 35, no. 5, pp. 2246–2255, Oct. 2020.

[6] M. Savin, S. Chiriac, and A. Neacsu, “May the capacitance of power cables be an aging indicator?” in Proc. IEEE Conference on Electrical Insulation and Dielectric Phenomena (CEIDP), 2011.

[7] Y. Xue et al., “Charging current in long lines and high-voltage cables — protection application considerations,” in Proc. 70th Annual Conference for Protective Relay Engineers, 2017, pp. 1–10.

[8] F. Mustafa, T. Tumiran, S. Sarjiya, N. E. Priyanto, and V. P. Utama, “Determination of High Voltage XLPE Cable Insulation Health Index Based on Online Capacitance Monitoring,” in Proc. 2025 5th International Conference on High Voltage Engineering and Power Systems (ICHVEPS), 2025, pp. 53–58, doi: 10.1109/ICHVEPS66913.2025.11351284.

[9] M. Bindi, M. C. Piccirilli, A. Luchetta, and F. Grasso, “A Comprehensive Review of Fault Diagnosis and Prognosis Techniques in High Voltage and Medium Voltage Electrical Power Lines,” Energies, vol. 16, no. 21, p. 7317, 2023.

[10] IEEE, IEEE Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems Rated 5 kV and Above, IEEE Std 400-2012, 2012.

[11] IEEE, IEEE Guide for Partial Discharge Testing of Shielded Power Cable Systems in a Field Environment, IEEE Std 400.3-2006, 2006.

[12] IEEE, IEEE Guide for Field Testing of Shielded Power Cable Systems Using Very Low Frequency (VLF), IEEE Std 400.2-2013, 2013.

[13] J. Xu et al., “Research on high voltage cable insulation online monitoring technology based on double differential CT method,” 2021. IEEE Access, vol. 10, pp. 94218–94226, 2022.

[14] Y. Han et al., “Insights into non-uniform aging effects on broadband dielectric behaviors for high-voltage XLPE cable insulation,” 2021. IEEE Access, vol. 10, pp. 20693–20706, 2022.

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[15] IEC, Power Cables with Extruded Insulation and Their Accessories for Rated Voltages Above 30 kV (Um = 36 kV) up to 150 kV (Um = 170 kV) — Test Methods and Requirements, IEC 60840, 3rd ed. Geneva, Switzerland: International Electrotechnical Commission, 2020.

[16] IEEE, IEEE Guide for the Application of Shunt Reactor Switching, IEEE Std C37.015, Piscataway, NJ, USA: IEEE, 2017.

[17] L. Boukezzi and A. Boubakeur, "Effect of thermal aging on the electrical characteristics of XLPE for HV cables," Transactions on Electrical and Electronic Materials, 2018, doi: 10.1007/s42341-018-0043-7.

[18] Y. Liu, H. Wang, H. Zhang, and B. Du, "Thermal aging evaluation of XLPE power cable by using multidimensional characteristic analysis of leakage current," Polymers, vol. 14, no. 15, Art. no. 3147, 2022, doi: 10.3390/polym14153147.

[19] Y. Wang, B. Ouyang, G. Wang, A. Wang, and J. Yuan, "A novel method for online diagnosis of the aging state of high-voltage (HV) cables based on impedance spectroscopy," Energies, vol. 18, no. 5, Art. no. 1128, 2025, doi: 10.3390/en18051128.

[20] H. Yahyaoui, J. Castellon, S. Agnel, A. Hascoat, W. Frelin, C. Moreau, P. Hondaa, D. le Roux, V. Eriksson, and C. J. Andersson, "Behavior of XLPE for HVDC cables under thermo-electrical stress: Experimental study and ageing kinetics proposal," Energies, vol. 14, no. 21, Art. no. 7344, 2021, doi: 10.3390/en14217344.

[21] PT Prysmian Cables Indonesia, Surat Informasi Ampacity Kabel UGC 150 kV dan Data Teknis Kabel 150 kV CU/XLPE/CWS/LS/PE+GR 1×1000 mm², Jakarta, Indonesia, 2021.

[22] KSO BICC–CITRA–KSI / BICC BERCA Cables, Calculation TPG for 150 kV 1×1000 mm² XLPE Insulated Underground Cable, Jakarta, Indonesia, 2021.

[23] NKT Cables, High Voltage Cable Systems: Cables and Accessories up to 550 kV, katalog teknis, khususnya data 132 kV single-core XLPE cables with copper wire screen and APL sheath, standard design.

[24] Y. Li, Z. Wang, W. Liu, Y. Chen, and Z. Xu, "Considering Moisture Intrusion Evolution Law of Insulation Performance of High-Voltage AC XLPE Cables," Energies, vol. 19, no. 1, Art. no. 138, 2026.

[25] Y. Yang, D. M. Hepburn, C. Zhou, W. Zhou, W. Jiang, and Z. Tian, "On-line monitoring and analysis of the dielectric loss in cross-bonded HV cable system," Electric Power Systems Research, vol. 149, pp. 89–101, 2017.

[26] G. C. Montanari, P. Seri, and R. E. Hebner, "A scheme for the Health Index and residual life of cables based on measurement and monitoring of diagnostic quantities," in IEEE Power and Energy Society General Meeting, 2018, pp. 1–4.

[27] C. Zhou, X. Wang, Y. Liu, and Y. Zhang, "Online multi-parameter sensing and condition assessment technology for power cables: A review," Electric Power Systems Research, vol. 210, Art. no. 108140, 2022.

[28] S. Y. Nia and A. Afshari, "Estimating the insulation health index of XLPE cables using machine learning," Scientific Reports, vol. 15, 2025.

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[29] Siemens, SIPROTEC 5 7SL87 Line Differential Protection Device Manual / Application Manual, Siemens AG.

[30] ABB / Hitachi Energy, Line Differential Protection RED670 Application Manual / Technical Manual, ABB / Hitachi Energy.

[31] GE Grid Solutions, MiCOM P543 / P54x Current Differential Protection Relay Technical Manual, GE Grid Solutions.