

Experience and long term performance of 132kV overhead lines gapless-type surge arrester

ABSTRACT

The Transmission Division of Tenaga Nasional Berhad (TNB), Malaysia manages and operates the 132kV, 275kV and 500kV transmission systems that form an integrated network known as the National Grid. TNB's National Grid system spans the whole of Peninsular Malaysia that represents the backbone of the electricity industry and the Transmission Division is responsible for the safe, adequate, reliable and economical operation of the grid system in conformance to the Malaysian Grid Code. As to assure that TNB is always conformed to the Malaysian Grid Code, TNB Transmission Division together with TNB Research Sdn. Bhd. has conducted a pilot study on the use of Gapless Transmission Line Arresters (TLA) as an alternative to Gapped TLA in mid-2005. Externally Gapped Line Arrester (EGLA) has been used in TNB Transmission System since 1995 and in general it was proven that the installation of EGLA on transmission lines has improved the overhead lines performance by decreasing the number of lightning outages on the lines. However, due to high cost of the Gapped Type TLA, TNB has explored on the alternative LPS and proposed Gapless Type TLA. Three manufacturers participated in the pilot project and 148 units of Gapless TLA were installed on a 12 km 132kV lines from Balakong to Serdang Substation. The arresters and line performance were monitored intensively for a year and continuously monitored for years to come. The successful pilot study has given valuable experiences and knowledge to TNB Engineers on the selection of lightning protection equipment for overhead line system and enhancing the technical specification for the 132kV arresters.

Keyword: Surge arrester; EGLA; Gapless TLA; OHL; Lightning; Line performance