

**LIGHTNING-INDUCED VOLTAGES ON DISTRIBUTION OVERHEAD
LINES: COMPARISON BETWEEN EXPERIMENTAL RESULTS FROM A
REDUCED-SCALE MODEL AND MOST RECENT APPROACHES**

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In this paper, the coupling model by Agrawal et al. is tested versus experimental results. The calculations are performed using a computer code developed in the framework of a research collaboration between ENEL-CESI and University of Bologna, based on two already existing computer programs, namely the LIOV (Lightning-Induced OverVoltage) program, developed by the University of Bologna, the Swiss Federal Institute of Technology of Lausanne and the University of Rome, and the most popular EMTP. The measurements have been performed on reduced scale models set up at the University of São Paulo in Brazil, which reproduce a typical overhead distribution system (main feeder plus branches) including surge arresters, neutral grounding, and shunt capacitors aimed at modelling distribution transformers. Different line configurations are examined, starting from a simple single-conductor line, to arrive to a multiconductor line including surge arresters, some model transformers and periodical grounding of neutral. Overall, the agreement between theory and measurement is more than satisfactory, and, for some simple configurations, is excellent.