

TRANSFER FUNCTION ESTIMATION FROM FREQUENCY RESPONSE MEASUREMENTS OF POWER TRANSFORMERS

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The high frequency response measurement of power transformers is important in transient response studies in power systems and high frequency modeling of transformers. The curve fitting method called vector fitting by pole relocation was used to estimate the transfer function from measured frequency response data with sharp resonant peaks. These estimated transfer functions could be used to build transformer models for transient studies and diagnostic purposes.

Frequency sweep method was used for transformer response measurements. In this study, two power transformers were selected for the measurements. A network analyzer (MS 4630A) and an impedance analyzer (HP 4192A) were used for the frequency response measurements. Both instruments were interfaced with a computer via a General Purpose Interface Bus (GPIB).

A user-friendly Matlab programme was developed to formulate the transfer function directly from the measured frequency response data, and transfer functions were synthesized for the two transformers.

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