



METHODS OF SIMULATION OF INPUT CURRENT WAVEFORMS TO THYRISTOR CONTROLLED LOCOMOTIVE

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Abstract:

In this paper various input current waveforms for a thyristor controlled locomotive are discussed. A simulated input waveform may be used to study the harmonic effects when the locomotive operates on a traction supply system. This is especially suitable at the design stage when detailed locomotive parameters are available. A comparison of the harmonic spectrums of the simulated input waveform and an equivalent approximate input waveform indicates that the equivalent approximate input waveform can be satisfactorily used to study the harmonic effects in the autotransformer traction supply system in the absence of the detailed locomotive parameters. It is demonstrated that, with the help of a computer program developed for the purpose, the equivalent approximate input waveform can be obtained with only partial availability of locomotive parameters. Situations when the harmonic effects are to be studied with only a knowledge of rated power and input power to the locomotive may also arise. A computer program has been developed and discussed in this paper that determines the parameters of the approximate input waveform under such conditions. Other programs have also been developed which simulate and determine the waveform parameters under a variety of conditions of the availability of locomotive data. The resulting harmonic spectrum can then be used by the simulator like the one developed by the author [3], to determine the harmonic effects on the power supply system.

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