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DIGITAL SIMULATION OF A DC MOTOR FED BY A 3-PHASE FULL-WAVE BRIDGE CONVERTER

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Power conversion from AC to DC is often achieved by static converters using thyristors for controlled rectification. This paper describes a means of simulating both uncontrolled and controlled bridge converters, using a tensor approach developed by Kron, to define the various circuit equations resulting from the varying conduction patterns. The system considered comprises a bridge converter supplied from a stiff 3-phase supply through a short length of cable. The programme developed, handles automatically any changes in the network topology and assembles the relevant differential equations which are solved by a fourth order Runge-Kutta algorithm. The numerically predicted waveforms are verified against that obtained experimentally on a fractional horsepower DC motor fed by a laboratory-scale bridge converter, for which close correlation is evident.