

C41 A DIAKOPTIC APPROACH TO THE SOLUTION OF A MULTIGENERATOR  
LIMITED SCALE POWER SYSTEM

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Investigation of electrical power system by conventional means involves a solution containing time-varying inductances introduced by generators or motors, and therefore requires one or more inversions of the resulting large inductance matrix, depending on the method of integration adopted. As the size of the network increases, computer run-time increases dramatically, with the solution time required being approximately proportional to the cube of the order of the matrix. However, using Kron's concept of diakoptics which involves the tearing apart of a large scale network into smaller sub-networks, a solution can be obtained more easily. Here each sub-network is solved separately but simultaneously, and the individual networks are interconnected to give the solution to the entire network.

This paper describes a technique based on the diakoptic approach, which has been found to be extremely efficient in providing an exact solution for the numerical integration of complex network situations. The techniques developed are applied to a power system comprising 3-phase synchronous generators connected in parallel and subjected to various fault and load switching conditions.