UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF DECENTRALIZED ECONOMIC DISPATCH USING GRADIENT PROJECTION METHOD

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بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

In the name of Allah, The Beneficent, The Merciful

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ABSTRACT

In conducting this study, the primary goal of encountering Economic Dispatch Problem is to produce a secure decentralized system with minimum cost for generating using Gradient Projection Method. The method is developed to solve the economic dispatch problem by considering the constraints and fulfilling the demand. This method is independent to all individual generating unit upon the allowable sets due to the decoupled relationship. In this study, a 5 unit system is used as a test system and investigated by a numerical study. The results for all generating unit is updated simultaneously to obtain minimum total cost. Implementation of this method is able to reduce the computational complexity because it handled the generation constraints separately. It was found that the value of minimum cost are slightly different between the centralized and decentralized system and the effect of penalty coefficient to the objective function was observed. Implications of the results and future research directions are also presented

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