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# CONCLUSIONS

In this project, a new procedure has been presented to determine the optimal locations and sizes of DGs and capacitors with two different objective functions; total power loss minimization and TVD minimization. The AOA algorithm has been utilized to find the optimal locations and sizes of DGs and capacitors according to two different single objective functions while satisfying the security and operational constraints. The obtained results are compared with other methods. Through the comparative study, it can be found that:

* Efficient and accurate proposed procedure has been introduced to find the optimal placement of DGs and capacitors using AOA compared with other techniques.
* The optimal results using the proposed procedure have been compared with other methods and have proved the capability of the proposed procedure to find the optimal solution of the objective function with voltage profile and power factor improvement.
* AOA gives convergence curve with more accurate and efficient optimal placement of DGs and capacitors in distribution systems.
* The proposed AOA mathematical model is very simple since it has few parameters.
* The BFS load flow algorithm has been used successfully for the load flow calculations.
* The proposed procedure represents a potential tool to reduce the system losses and improve the voltage profile.
* The proposed procedure has been tested on 34-bus radial distribution system. Moreover, a real distribution system of the East Delta Network (EDN) as a part of the UEN has been used to show the capability of proposed procedure.