

# **Profit Based Unit Commitment (PBUC) considering emission constraint using Symbiotic Organism Search (SOS) algorithm**

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**Abstract** Problem of profit-based unit commitment (PBUC) is one of the most important issues in power system operation that can be investigated in the different aspects. One of the most important aspects is the method of solving this problem. In this thesis, definition of the PBUC problem, methods of solving, constraints and aims of this Problem is analyzed. Also, a new intelligent optimization algorithms called symbiotic organisms search (SOS) algorithm is used to solve the problem of PBUC. However, one of the main causes of air pollution is power stations. For this reason, in addition to economic objectives, environmental issues are of particular importance in the problem of PBUC. Meanwhile, the problem of profit-based unit commitment (PBUC) taking into account the constraints related to pollution is studied. The problem is simulated in MATLAB software and the results will be discussed.

**Keywords :** Key words: Air pollution, Symbiotic Organisms Search (SOS) algorithm, profit-based unit commitment (PBUC), Power system operation

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