Using Genetic Algorithm for Fuel Consumption Optimization of a Natural Gas Transmission Compressor Station

Abstract

In this study the goal is to optimize the compressors' fuel consumption through manipulating the compressors' affecting parameters as well as the operating condition parameters of the turbines and the air coolers within a gas compression station unit in operation phase by using Genetic Algorithm. The simulation part is written in a custom-built computer program and is checked by known software and optimization is through the use of Genetic Algorithm. By considering the complexity of these systems, GA is used to do the optimization part in a proper manner. The results show that in compressor stations with same turbo compressor packages which are designed in recent years, despite nonlinear relations, linear load sharing will be the most optimized choice (the effect of air coolers and line pack has been studied too). And also Genetic Algorithm optimization method is a good one for optimization of gas transmission systems.

References

- Osiadacz, A. J, 1994, Dynamic optimization of high Pressure gas Networks using
hierarchical systems theory, 26th annual meeting of Pipeline Simulation Interest Group, 13-14 October, San Diego, USA.


Index Terms

Computer Science
Artificial Intelligence
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