

**Abstract:**

Centrifugal compressors are widely used in industrial fields especially in oil and natural gas processes. One of the major control problems associated with this type of compressors is the pressure fluctuation or the surge. Many methods and techniques were recently designed to control the operating point of a compressor to prevent the surge phenomena and make the system operate in the stable region with maximum performance under the optimization of the compression system by new techniques. The objective function on the compressor showed numerous local extreme values in the design space. If a gradient-based method is applied to this problem, the result could be a local maximum or minimum. In order to avoid this undesirable result, a genetic algorithm GA has been applied. In this paper we have used the genetic algorithm method in order to maximize the pressure developed by the compressor for a minimum suction flow.