CHAPTER 49

TECHNOLOGY
MECHANICAL ENGINEERING

Doctoral Thesis

441.   SHAMAMA AHME D.
**Computer Aided Study of Gas Turbine Based Combined Cycle/
Cogeneration Power Plant**
Supervisors : Prof. P.B. Sharma
Th 14722

Abstract

Presents an outline of the basic concepts and overview of current state of art in the field of exergy and entropy generation analysis and their application to advanced thermal power systems. A detailed relevant literature for exergy and entropy generation analysis is also given Describes thermodynamic anlaysis and optimisation of these advanced thermal power systems.The second-law or exergy methodology applied in this thesis for the thermodynamic performance evaluatation of advanced thermal power systems leads the way in which they are analyzed and can be improved thermodynamically because recent studies along with this research work leads to the conclusion that exergy analysis determines the location, type and true magnitude of the work of the fuel resources and plays the central role in developing the strategies for more effective fuel use. This is real advantage of this methodology in the search for improving efficiency, because it tells us from the start how to allocate engineering efforts and resources.

Contents

1. Introduction 2. Lierature review. 3. First and second law analysis of a simple combined cyclepower plant. 4. Second law based thermodynamic performance evaluation of cogeneration system with reheat. 5. Computer aided thermodynamic analysis of multipressure cycles. 6. Performace deterioration in combined cycle powere plants. 7. Overall conclusions and further recommendations. 8. References.