



# Combined-Cycle Gas & Steam Turbine Power Plants

*3rd Edition*

Rolf Kehlhofer  
Frank Hannemann  
Franz Stirnimann  
Bert Rukes

# Contents

1. Introduction	1
2. The Electricity Market	5
3. Economics	11
4. Thermodynamic Principles of the Combined-Cycle Plant	35
5. Combined-Cycle Concepts	45
6. Applications of Combined Cycles	135
7. Components	165
8. Control and Automation	211
9. Operating and Part Load Behavior	225
10. Environmental Consideration	261
11. Developmental Trends	277
12. Integrated Gasification Combined Cycle	287
13. Carbon Dioxide Capture and Storage	321
14. Typical Combined-Cycle Plants	349
15. Conclusion	389
Appendix A: Conversions Table	393
Appendix B: Calculation of the Operating Performance of Combined-Cycle Installations	403
Appendix C: Symbols Used	405
Bibliography	407
Index	413
About the Authors	433