

Contents

1. Introduction	3
2. Design Requirements and Optimization	6
3. Aerodynamic Design	15
3.1 Basic Definitions	15
3.2 Preliminary Design	21
3.3 Airfoil Design	24
3.4 Aerodynamic Design Methodology	36
4. Stability	43
4.1 Stability Requirements	43
4.2 Tip Clearance Design	46
4.3 Casing Treatments	48
5. Mechanical Design	52
5.1 Casings Systems	53
5.2 Variable Vane Systems	56
5.3 Rotor System	59
5.4 Blades and Vanes	64
6. Future Trends	77
Conclusion	80
Acknowledgements	80
Nomenclature	81
References	82