

CONTENTS

| | |
|--|----|
| GOALS OF THE PH.D. THESIS | 5 |
| INTRODUCTION | 6 |
| 1 TURBOCHARGING | 7 |
| 2 BASELINE TURBINE FITTING METHOD..... | 10 |
| 2.1 Pre-Processing of Input Data | 10 |
| 2.2 Fitting the Optimum Blade Speed Ratio | 10 |
| 2.3 Fitting the Maximum Efficiency | 12 |
| 2.4 Fitting the Normalized Efficiency..... | 13 |
| 2.5 Fitting the Optimum Corrected Mass Flow Rate | 13 |
| 2.6 Fitting the Normalized Mass Flow Rate | 14 |
| 2.7 Optimization..... | 15 |
| 3 NEW TURBINE FITTING ALGORITHM..... | 17 |
| 3.1 Radial Equilibrium..... | 17 |
| 3.2 Ideal Nozzle Analogy..... | 17 |
| 3.3 Optimum Corrected Speed Limitation..... | 19 |
| 4 VALIDATION OF THE PROPOSED METHODOLOGY | 21 |
| 4.1 Engine Performance Simulation – Steady State | 22 |
| 4.2 Engine Performance Simulation – Transient | 23 |
| CONCLUSION | 25 |
| REFERENCES | 27 |
| AUTHOR’S CV | 29 |
| ABSTRACT | 30 |