Design Of An Axial Turbine And Thermodynamic Analysis And

Hydraulic Turbines
Axial Turbine Aerodynamics for Aero-engines
The Design of High-Efficiency Turbomachinery and Gas Turbines, second edition, with a new preface
Cold-air Performance of a 12.766-centimeter-tip-diameter Axial-flow Cooled Turbine
A Study on the Design of Axial-flow Gas Turbine Blades
Analysis of Geometry and Design Point Performance of Axial Flow Turbines
Aerodynamic Evaluation of Two-stage Axial-flow Turbine Designed for Brayton-cycle Space Power System
Off-design Flow Analysis and Performance Prediction of Axial Turbines
Research and Development of High-performance Axial-flow Turbomachinery: Design of turbine-compressor
An Enhanced Computational Program for Axial Turbine Design
Aerodynamic Design of Axial-flow Compressors
Off-design Performance Prediction with Experimental Verification for a Radial-inflow Turbine
Industrial Design Optimization of Small and Large Size Axial Turbines
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Development of a Multi-disciplinary Design Tool for Axial Flow Turbines [microform]
Axial and Radial Turbines
Design of an Axial-flow Air Compressor for a Gas Turbine Plant
Analysis of Geometry and Design-point Performance of Axial-flow Turbines Using Specified Meridional Velocity Gradients
Axial turbine design optimization through aerodynamic performance/mechanical stress trade-off
Aerodynamic Design of Axial Turbine
Optimum Design Criteria for an Axial Gas Turbine
Turbine Design and Application
Turbine Aerodynamics
Turbomachinery
Aerodynamic Design & Performance Predictions of a Single Stage Axial-flow Turbine
The Design and Performance Analysis of Axial-flow Turbines: Theory and practice of design
Computer Evaluation of the On-and-Off Design Performance of an Axial Air Turbine
Turbine aerodynamics : axial-flow and radial-flow turbine design and analysis
Performance Evaluation of a Two-stage Axial-flow Turbine for Two Values of Tip Clearance
Users Manual and Modeling Improvements for Axial Turbine Design and Performance Computer Code Td2-2
Computer Program for Preliminary Design Analysis of Axial-flow Turbines
Modeling Improvements and Users Manual for Axial-flow Turbine Off-design Computer Code AXOD
Preliminary Axial Flow Turbine Design and Off-Design Performance Analysis Methods for Rotary Wing Aircraft Engines. Part 2; Applications
A General Representation for Axial-flow Fans and Turbines

SOFIA PONCE

Hydraulic Turbines Independently Published
Mechanical Engineering Design and Analysis of Axlal and Radial Turbines.
Axial Turbine Aerodynamics for Aero-engines Createspace Independent Publishing Platform
An existing code for calculating axial turbine performance using multiple stream surfaces was modified and made to run on the equivalent of an HP-1000 computer system. Calculations were made for the geometry of a 485 horsepower dual-discharge air-drive turbine for both on and off-design conditions. The results were compared with available data obtained at off-design speeds. Agreement of the flow rate and horsepower to within 5% was obtained. (Author).
The Design of High-Efficiency Turbomachinery and Gas Turbines, second edition, with a new preface American Society of Mechanical Engineers
A solid blade version of a single-stage, axial-flow turbine was investigated to determine its performance over a range of speeds from 0 to 105 percent of equivalent design speed and over a range of total to static pressure ratios from 1.62 to 5.07.
Cold-air Performance of a 12.766-centimeter-tip-diameter Axial-flow Cooled Turbine CRC Press
A novel humidification dehumidification desalination system was developed at the Rohseneow Kendall Heat Transfer Laboratory. The HDH system runs by having different pressures in the humidifier and dehumidifier. One of the components that will keep the different pressures is an expander. The expander specification is to work with a pressure ratio of 1.2 while having a high efficiency. Two approaches were developed to achieve this result, one was through the design of a turbine and the second was

through the selection and testing of a car turbocharger. The design of a turbine is given in detail and follows the process given in "Design of High- Efficiency Turbomachinery and Gas Turbines" by David Wilson. The final design of the turbine blades was sand cast. Due to the sand casting process, cavitation on the blade material was shown and testing of the blades was not pursued for fear of fast fracturing. The second option of selecting a turbocharger is shown and the process which led to its selection is explained. Through such process a K03 turbocharger was selected to be suitable to run at the low pressure ratios with a moderate efficiency. Testing of the K03 was conducted. The static-to-static isentropic efficiency calculated was 53% ± 11% for a pressure ratio of 1.2 while the total-to-total isentropic efficiency 60% ± 14% at a pressure ratio of 1.2. The high error associated with the efficiencies are due to the turbine experiencing small temperature drops in the order of 10°C or less. The K03 turbocharger is meant to run at higher pressure ratios, in the order of 2 with a manufacturer specified efficiency of 70%. Running the K03 at a pressure ratio of 1.2 decreases the efficiency since its not specified to run at those low pressure ratios. If a turbine or a turbocharger is designed for the exact specifications of the desalination system, it can work with low pressure ratios and be highly efficient.

A Study on the Design of Axial-flow Gas Turbine Blades MIT Press

Presented at the International Gas Turbine & Aeroengine Congress & Exhibition, Orlando, FL, Jun 2-Jun 5, 1997.

Analysis of Geometry and Design Point Performance of Axial Flow Turbines Springer

Addressing the optimization and design of an axial flow turbine, this volume details a method for selecting the best turbine design, taking into account a range of parameters including size, stress, and number of stages. Topics covered include basic turbine design, stage calculations, thermodynamics and blade shapes, and a design example.

Aerodynamic Evaluation of Two-stage Axial-flow Turbine Designed for Brayton-cycle Space Power System American Society of Mechanical Engineers

Turbomachinery presents the theory and design of turbomachines with step-by-step procedures and worked-out examples. This comprehensive reference emphasizes fundamental principles and construction guidelines for enclosed rotators and contains end-of-chapter problem and solution sets, design formulations, and equations for clear understanding of key

Off-design Flow Analysis and Performance Prediction of Axial Turbines Library and Archives Canada = Bibliothèque et Archives Canada

This book is a monograph on aerodynamics of aero-engine gas turbines focusing on the new progresses on flow mechanism and design methods in the recent 20 years. Starting with basic principles in aerodynamics and thermodynamics, this book systematically expounds the recent research on mechanisms of flows in axial gas turbines, including high pressure and low pressure turbines, inter-turbine ducts and turbine rear frame ducts, and introduces the classical and innovative numerical evaluation methods in different dimensions. This book also summarizes the latest research achievements in the field of gas turbine aerodynamic design and flow control, and the multidisciplinary conjugate problems involved with gas turbines. This book should be helpful for scientific and technical staffs, college teachers, graduate students, and senior college students, who are involved in research and design of gas turbines.

Research and Development of High-performance Axial-flow Turbomachinery: Design of turbine-compressor Concepts Eti

In this paper, preliminary studies on two turbine engine applications relevant to the tilt-rotor rotary wing aircraft are performed. The first case-study is the application of variable pitch turbine for the turbine performance improvement when operating at a substantially lower shaft speed. The calculations are made on the 75 percent speed and the 50 percent speed of operations. Our results indicate that with the use of the variable pitch turbines, a nominal (3 percent (probable) to 5 percent (hypothetical)) efficiency improvement at the 75 percent speed, and a notable (6 percent (probable) to 12 percent (hypothetical)) efficiency improvement at the 50 percent speed, without sacrificing the turbine power productions, are achievable if the technical difficulty of turning the turbine vanes and blades can be circumvented. The second casestudy is the contingency turbine power generation for the tilt-rotor aircraft in the One Engine Inoperative (OEI) scenario. For this study, calculations are performed on two promising methods: throttle push and steam injection. By isolating the power turbine and limiting its air mass flow rate to be no more than the air flow intake of the take-off operation, while increasing the turbine inlet total temperature (simulating the throttle push) or increasing the air-steam mixture flow rate (simulating the steam injection condition), our results show that an amount of 30 to 45 percent extra power, to the nominal take-off power, can be generated by either of the two methods. The methods of approach, the results, and discussions of these studies are presented in this paper. Chen, Shu-cheng, S. Glenn Research Center

An Enhanced Computational Program for Axial Turbine Design

This paper discusses the possibility of integrating optimization techniques with the design and analysis codes normally utilized in the industrial turbine design works. The mathematical minimization procedure presented by the Authors in previous works is coupled here with industrial design codes of multistage axial flow turbines (small and large size) utilized by two Italian Companies. The new industrial optimization procedures allow increases in the efficiency of the turbines to be obtained without the need for modifications in the industrial technology normally utilized to build the machines. The assumed initial turbine design is generally coincident with the conventional -- non mathematically optimized -- industrial project. In all cases the optimization is achieved by utilizing the blade profiles or "Masters" of the Companies. The results obtained for the optimization of multistage turbines are presented; the advantages concerning the design time and the usefulness of the procedures are discussed.

Aerodynamic Design of Axial-flow Compressors

The program method is based on a mean-diameter flow analysis. Input design requirements include power or pressure ratio, flow, temperature, pressure, and speed. Turbine designs are generated for any specified number of stages and for any of three types of velocity diagrams (symmetrical, zero exit swirl, or impulse). Exit turning vanes can be included in the design. Program output includes inlet and exit annulus dimensions, exit temperature and pressure, total and static efficiencies, blading angles, and last-stage critical velocity ratios. The report presents the analysis method, a description of input and output with sample cases, and the program listing.

Off-design Performance Prediction with Experimental Verification for a Radial-inflow Turbine

This book provides a thorough description of actual, working aerodynamic design and analysis systems, for both axial-flow and radial-flow turbines. It describes the basic fluid dynamic and thermodynamic principles, empirical models and numerical methods used for the full range of procedures and analytical tools that an engineer needs for virtually any type of aerodynamic design or analysis activity for both types of turbine. The book includes sufficient detail for readers to implement all or part of the systems. The author provides practical and effective design strategies for applying both turbine types, which are illustrated by design examples. Comparisons with experimental results are included to demonstrate the prediction accuracy to be expected. This book is intended for practicing engineers concerned with the design and development of turbines and related machinery.

Industrial Design Optimization of Small and Large Size Axial Turbines

The second edition of a comprehensive textbook that introduces turbomachinery and gas turbines through design methods and examples. This comprehensive textbook is unique in its design-focused approach to turbomachinery and gas turbines. It offers students and practicing engineers methods for configuring these machines to perform with the highest possible efficiency. Examples and problems are based on the actual design of turbomachinery and turbines. After an introductory chapter that outlines the goals of the book and provides definitions of terms and parts, the book offers a brief review of the basic principles of thermodynamics and efficiency definitions. The rest of the book is devoted to the analysis and design of real turbomachinery configurations and gas turbines, based on a consistent application of thermodynamic theory and a more empirical treatment of fluid dynamics that relies on the extensive use of design charts. Topics include turbine power cycles, diffusion and diffusers, the analysis and design of three-dimensional free-stream flow, and combustion systems and combustion calculations. The second edition updates every chapter, adding material on subjects that include flow correlations, energy transfer in turbomachines, and three-dimensional design. A solutions manual is available for instructors. This new MIT Press edition makes a popular text available again, with corrections and some updates, to a wide audience of students, professors, and professionals.

Axial Turbine Aerodynamics for Aero-engines

Computer code TD2 computes design point velocity diagrams and performance for multistage, multishaft, cooled or uncooled, axial flow turbines. This streamline analysis code was recently modified to upgrade modeling related to turbine cooling and to the internal loss correlation. These modifications are presented in this report along with descriptions of the code's expanded input and output. This report serves as the users manual for the upgraded code, which is named TD2-2. Glassman, Arthur J. Unspecified Center NAG3-1165; RTOP 505-69-50...

Steam Turbine Design

A general representation of fan and turbine arrangements on a single classification chart is presented which is made possible by a particular definition of the stage of an axial-flow fan or turbine. Several unconventional fan and turbine arrangements are indicated and the applications of these arrangements are discussed.

Design of an Axial Turbine and Thermodynamic Analysis and Testing of a K03 Turbocharger

Aerodynamic Design of Axial Flow Compressors

Analysis of Geometry and Design Point Performance of Axial Flow Turbines

Turbine Design

Users Manual and Modeling Improvements for Axial Turbine Design and Performance Computer Code TD2-2