**DR. MEHERWAN P. BOYCE, P.E., C. Eng.**

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**SPECIFIC AREAS OF PROFESSIONAL INTEREST**

Aerodynamics

Automotive Engineering

Bio-Engineering

Cogeneration

Environmental Engineering

Fluid Mechanics

TurboMachinery

**PROFESSIONAL EXPERIENCE**

**Professor Meherwan P. Boyce, PhD, P.E., C.Eng (UK), is the managing Partner of The Boyce Consultancy Group, LLC.** He is a **Fellow ASME (USA), IMechE (UK) & IDGTE (UK)**; **NAFE (USA).** He is also a **Registered Professional Engineer** in the **State of Texas** and a **Chartered Engineer** in the **United Kingdom.** He has 50 years of experience in the field of TurboMachinery in both industry and academia. He is presently and for the past 15 years been Chairman of The Boyce Consultancy Group, LLC. His past experience covers 20 years as Chairman and CEO of Boyce Engineering International Inc., founder of Cogen Technologies Inc., and five years as a designer of compressors and turbines for gas turbines for various gas turbine manufacturers. His academic experience covers a 15 year period, which includes the position of Professor of Mechanical Engineering at Texas A&M University and Founder of the TurboMachinery Laboratories and The TurboMachinery Symposium, which is now in its forty second year. He is the author of several books such as the **Gas Turbine Engineering Handbook** (Third Edition, Elsevier)**,** **Cogeneration & Combined Cycle Power Plants** (Second Edition, ASME Press)**,** and **Centrifugal Compressors, A Basic Guide** (PennWell Books). Professor Boyce is a contributor to several Handbooks; his latest contributions are to the **Perry’s Chemical Engineering Handbook Seventh and Eight Editions** (McGraw Hill) in the areas of **Transport and Storage of Fluids, and Gas Turbines, ASME’s Energy and Power Generation Handbook, and a handbook on Combined Cycle Systems for near-zero emission power generation.**  Dr. Boyce has taught over 150 short courses around the world attended by over 3000 students representing over 400 Corporations.

**CONSULTING**

Experience assimilated over forty two years of industrial consultation covering a wide range of subjects with Aerospace, Utilities, Offshore and Petrochemical Industries, and TurboMachinery manufacturers. Project Development and Engineering throughout the world including design consultant on compressors and turbines for various manufacturers, such as Dresser, GE, Thomassen, United Technologies, Rolls Royce, and Volvo. Expertise including Heavy Fuels Combustion, Performance Evaluation of Combined Cycle Power Plants, Forensic Engineering and Expert Witness Testimony on Combustion Turbines, and Steam Turbines and Compressors.

**Research and Design on Various TurboMachinery Components**

* Blade Design
* Impeller Design
* Combustor Design
* Diffuser Design
* Environmental Systems for Aircraft

**Condition Monitoring**

Pioneer of the introduction of On-Line Performance Monitoring for Large Rotating Machinery in Petrochemical and Utility applications in the world

**Independent Power Project Development**

 Financial Analysis

 Preliminary Design

**Combined Cycle and Cogeneration Plants**

 Design

 Performance Testing

**Heavy Fuel Combustion in Gas Turbine Operation**

Wet Combustors

Dry Low NOx Combustor

**Troubleshooting Turbine and Compressor Problems**

**Educational Programs**

* Gas Turbines
* Turbine and Compressor Design, Operation and Maintenance
* Performance and Testing of Combined Cycle Power Plants
* Combined Cycle & Cogeneration Plants
* Steam Turbines
* Centrifugal Compressors

**Forensic Engineering and Maintenance Practices**

* Analysis and Expert Testimony
* Maintenance Manuals

**Consultant for Major Utilities and Independent Power Producers, including:**

BAHRAIN BAHRAIN ELECTRIC

CANADA NORTHLAND POWER

PETRO-CANADA

CHINA CHINA LIGHT & POWER

FRANCE ELECTRICITY DE FRANCE

GREECE PUBLIC POWER CORP.

INDIA TATA ELECTRIC COMPANIES

MALAYSIA TENAGA NASIONAL

MEXICO CFE

NETHERLANDS EPON

PAKISTAN WAPDA

SAUDI ARABIA SABIC

SCECO

SINGAPORE SINGAPORE POWER

TAIWAN EVERPOWER

U.A.E. DUBAI GAS & ELECTRIC

DUBAI ALUMINIUM

U.K. NATIONAL POWER

POWERGEN

THAMES POWER

U.S.A. AES WOLF HOLLOW

 AES RED OAK

AMOCO PRODUCTION COMPANY COGEN

BLACK AND VEATCH

CALPINE CORPORATION

 CENTRAL HUDSON GAS & ELECTRIC

 CRS SIRRINE ENGINEERS, INC

 DESERT POWER, L.P.

 DOW CHEMICAL

ELECTRIC POWER RESEARCH INSTITUTE

 E.G. & G. IDAHO

 FLORIDA POWER & LIGHT

 FOSTER WHEELER

 GAYLORD CONTAINER COGEN

 GULF STATE UTILITIES

U.S.A HARRIS GROUP, INC.

 INLAND CONTAINER COGEN

 OLSEN-BEAL & ASSOCIATES

PUBLIC UTILITIES BROWNSVILLE

PRECO TURBINE & COMPRESSOR SERVICES, INC.

 REVAK ENTERPRISES, INC.

 SALT RIVER PROJECT

 SPECIAL PROCESSES OF ARIZONA, INC.

 SOUTHWESTERN PUBLIC SERVICE

TEXAS UTILITIES ELECTRIC COMPANY

TRACTEBEL USA

U.S. DEPARTMENT OF ENERGY

 WATSON ENERGY

WESTERN ENERGY

WHEELABRATOR NORWALK ENERGY COMPANY

WICHITA FALLS ENERGY COMPANY

ZURN/NEPCO

VENEZUELA CADAFE, CARACAS

ENELBAR - BARQUISIEMENTO

 ENELVEN-MARACAIBO

**Consultant for Major Petrochemical Companies, including:**

CANADA PETROSAR

POLYSAR

FRANCE: TOTAL

INDIA: OFFSHORE NATIONAL GAS CORPORATION

INDONESIA: MOBIL OIL CORP

MEXICO: PEMEX

NORWAY: AMOCO NORWAY OIL COMPANY

 NORSK HYDRO

 PHILIPS PETROLEUM COMPANY

 STATOIL

PAKISTAN: ESSO FERTILIZER

QATAR: QATAR FERTILIZER CORPORATION

 QATAR GENERAL PETROLEUM COMPANY

 QATAR PETROCHEMICAL COMPANY

SAUDI ARABIA: ARAMCO

UNIVERSAL OIL PRODUCTION

UAE: DUBAI FERTILIZER

 DUBAI PETROLEUM

 GASCO

U.K.: BRITISH PETROLEUM

 CONOCO

HAMILTON BROTHERS

HYDROCARBONS G.B.

MARATHON OIL

SHELL CHEMICAL

SHELL OIL CO.

U.S.A.: ALLIED CHEMICAL CORPORATION

AMOCO OIL COMPANY

AMOCO CHEMICALS CORPORATION

ARCO OIL & GAS ALASKA

BRIDGELINE GAS HOLDINGS

COASTAL CHEMICAL CORPORATION

CHARTER OIL CORPORATION

COLUMBIA GAS TRANSMISSION CORPORATION COLUMBIA NITROGEN CORPORATION

DOW CHEMICALS CORPORATION

 ENERGAS, A DIVISION OF ATMOS ENERGY

 ENTERPRISE PRODUCTS COMPANY

 EXXON CHEMICAL

 KAISER AGRICULTURE & CHEMICALS

KAISER ALUMINUM

KINDER MORGAN ENERGY PARTNERS, L.P.

 OCCIDENTAL CHEMICAL

 PHILLIPS 66

PRAXAIR, INC

 ROHM & HAAS

 SUN OIL CORPORATION

 STATE OF ALASKA

 UNION CARBIDE CORPORATION

VENEZUELA: CORPOVEN

 LAGOVEN

 MARAVEN

 MENEVEN

 PEQUIVEN

**Consultant for Various Armed Forces and Civil Aviation Companies**

CANADA PEACE HELICOPTERS

SWEDEN: ROYAL SWEDISH NAVY

U.K. DEFENCE EVALUATION RESEARCH AGENCY

U.S.A.: CONTINENTAL AIRLINES U.S. ARMY

 U.S. NAVY

 U.S. AIRFORCE

**Consultant for Various Government and Trade Agencies**

U.S.A. DEPARTMENT OF ENERGY

 DEPARTMENT OF JUSTICE

 ELECTRICAL POWER RESEARCH INSTITUTE

NETHERLANDS: KEMA

SAUDI ARABIA: SABIC

**Consultant for the Major TurboMachinery Manufacturers, and Repair Facilities:**

JAPAN IHI INDUSTRIES

 KOBE STEEL

 KAWASAKI

 MITSUBISHI

NETHERLANDS: THOMASSEN

SWEDEN: VOLVO AEROSPACE

U.K.: JOHN BROWN CORPORATION

 ROLLS ROYCE CORPORATION

 RUSTON TURBINES

U.S.A.: BORGWARNER

CATERPILLAR TRACTOR CORPORATION

 DAIMLER CHRYSLER

DELAVAL TURBINES

 DRESSER CORPORATION

 HOERBIGER SERVICES LTD.

 DRESSER RAND CORPORATION

 GENERAL ELECTRIC CORPORATION

 SIEMENS WESTINGHOUSE POWER CORPORATION

 SOLAR TURBINES CORPORATION

 UNITED TECHNOLOGIES CORPORATION

 HAMILTON STANDARD

 TURBO-POWER AND MARINE

**ACADEMIC EXPERIENCE**

**BOARD OF VISITORS - UNIVERSITY OF OKLAHOMA**

 1998- Present Department of Mechanical and Aerospace Engineering

**BOARD OF VISTORS – SOUTHWEST TEXAS STATE UNIVERISTY**

 1995-Present Department of Computer Science

**TEXAS A&M UNIVERSITY – COLLEGE STATION, TEXAS**

1972-1981 Founding Director TurboMachinery Laboratories

1972-1981 Founding Chairman TurboMachinery Symposium

1978-1981 Professor Mechanical Engineering

1973-1978 Associate Professor Mechanical Engineering

1969-1973 Assistant Professor Mechanical Engineering

**UNIVERSITY OF OKLAHOMA**

1967-1969 Instructor Aerospace and Mechanical Engineering

**INDUSTRIAL EXPERIENCE**

**THE BOYCE CONSULTANCY GROUP, LLC**

1997-Present Chairman

International Management Consultation and Development of Independent Power Projects.

Consulting and Technical Support for the Power and Petrochemical Industry.

Forensic Engineering in Rotating Equipment and Major Prime Movers.

**BOYCE ENGINEERING INTERNATIONAL, INC. – HOUSTON, TEXAS**

1977 – 1997 Chairman of the Board and Chief Executive Officer

Responsible for the overall strategy, planning and direction of the Company. Annual sales of over $ 5 million and 50 employees. Product line sold September 1997

**COGEN TECHNOLOGIES INC. – HOUSTON, TEXAS**

Founder of the company and Director of Technology. Responsible for development and engineering of Cogeneration Plants.

**FAIRCHILD HILLER CORPORATION – BAYSHORE, NEW YORK**

1966-1967 Group Leader, Aerodynamics

**CURTISS WRIGHT CORPORATION – WOODRIDGE, NEW JERSEY**

1965-1966 Group Leader, Compressor Design

**CUMMINS ENGINE CORPORATION – COLUMBUS, INDIANA**

1964-1965 Project Engineer, Turbocharger, Fuel Injection Development

**JOY MANUFACTURING CORPORATION – BUFFALO, NEW YORK**

1963-1964 Analytical Engineer

**GENERAL TURBINE CORPORATION – BUFFALO, NEW YORK**

1962-1963 Project Engineer

**AWARDS**

FELLOW AWARDS

* NATIONAL ACADEMY OF FORENSIC ENGINEERS USA, Elected Fellow January 2010
* INSTITUTION OF MECHANICAL ENGINEERS, UK Elected Fellow February 2008
* INSTITUTION OF DIESEL AND GAS TURBINE ENGINEERS, UK. Elected Fellow—July 1999
* AMERICAN SOCIETY OF MECHANICAL ENGINEERS, USA, Elected Fellow--June, 1985

AMERICAN SOCIETY OF MECHANICAL ENGINEERS

ASME Dedicated Service Award-Devotion, Leadership and Performance 2009

Best Technical Paper Award – Electric Power Committee, IGTI, 2004

Key Note Speaker ASME Joint Power Conference Phoenix Arizona June 2002

Best Technical Paper Award – Pipelines & Compressors Committee, IGTI, 1996

1974 - Recipient of the Herbert Allen Award for Excellence. Awarded for Aerodynamics and advancing the profession technically more than any other member in the Section during the previous year.

SOCIETY OF AUTOMOTIVE ENGINEERS

1973 – Recipient of the National Ralph Teetor Award for Outstanding Young Engineers and Researchers.

TEXAS A&M UNIVERSITY TURBOMACHINERY LABORATORIES

1980 Award for Outstanding Achievement

**DISTINGUISHED AWARDS**

Who’s Who in America in the South and Southwest

International Who’s Who

Distinguished Americans for Contribution in Engineering

**EXPORT AWARDS**

SMALL BUSINESS ADMINISTRATION - U S DEPARTMENT OF COMMERCE

EXPORTER OF THE YEAR AWARDS

1996

DISTRICT AWARD: HOUSTON

1996

STATE AWARD: TEXAS

1996

REGIONAL AWARD: SOUTHWEST USA

**PROFESSIONAL LICENSES**

Registered Professional Engineer: Texas No. 30135

Chartered Engineer in the United Kingdom No. 569278

**PROFESSIONAL AND SCIENTIFIC MEMBERSHIPS**

• American Society of Mechanical Engineers (Fellow)

• Institution of Mechanical Engineers (Fellow)

• Institution of Diesel and Gas Turbine Engineers (Fellow)

• The Association of Energy Engineers

• International Gas Turbine Institute

• National Society of Professional Engineers

• National Academy of Forensic Engineers (Fellow)

• Society of Automotive Engineers

• Sigma XI

• Pi Tau Sigma

• Tau Beta Pi

• Phi Kappa Phi

**COMMITTEES**

• Member, Secretary, ASME Committee on Ethical Standards & Review 2009-2011

• Member ASME Nominating Committee May 2008-2010

• Technical Program Chair Manufacturing Group ASME IMECE 2005, 2006

• Chairman, ASME, Plant Engineering and Maintenance Division- July 2003 –June 2005

• Chairman, ASME, Conferences Committee, July 2003 - Present

• Chairman, Gas Turbine Users Conference- April 2002-Present

• Chairman, DOE Condition Monitoring Conference- February 2002-Present

• Chairman ASME-IGTI - Electric Power Committee June 2003- Present

• Vice Chairman- IGTI - Electric Power Committee- June 2001- June 2003

• Chairman, International Power and Petrochem Consortium 2000-Present

• Member ASME PTC 55 Aircraft Engine Performance (Codes) July 2001-Present

• Member ASME- IGTI – Controls Committee

• Member ASME – IGTI- Aircraft Committee

• Member ASME – IGTI – Pipelines and Petrochemicals Committee

• Chair ASME – IGTI –Membership Committee 1990 -1996

• Program Chair ASME – IGTI Annual Expo & Conference Houston, TX 1975

• Chair ASME- IGTI- Technology Resource Committee 1974 -1978

• Member ASME – IGTI Education Committee 1970-1980

• Member ASME – IGTI -Electric Utilities and Co-generation Committee

• Member ASME – IGTI Turbomachinery Committee 1964-1980

• Texas A&M TurboMachinery Symposium–Advisory Committee Member: 1972-Present

(Appointed Life Member of the Committee in 2005)

• Co-Chairman, Standardization and Condition Monitoring Workshop-1991

• Chairman, Texas A&M TurboMachinery Symposium–Advisory Committee: 1972-1980

• International Machinery Monitoring and Diagnostic Conference-Advisory Board

• SAE Condition Monitoring

• ISO Subcommittee 5 TC 108

**EDUCATION**

• Mechanical Engineering, Ph.D.--University of Oklahoma, 1969

• Mechanical Engineering, M.S.--State University of New York at Buffalo, 1964

• Mechanical Engineering, B.S.--South Dakota School of Mines and Technology, 1962

**BOOKS**

Combined Cycle Systems for Near Zero Emissions Power Generation, Chapters 1 and 2, February 2012, Woodhead Publishing, UK

Gas Turbine Engineering Handbook, Fourth Edition, Elsevier Publisher, December 2011, Butterworth-Heinemann Publisher, December 2001, First Edition 1985 (**Sole Author**)

Energy & Power Generation Handbook, December 2011 American Society of Mechanical Engineers Chapter 27: Combined Cycle Power Plants,

Cogeneration and Combined Cycle Power Plants. Second Edition April 2010; First Edition January 2002, New York. ASME Press. **(Sole Author)**

Perry’s Chemical Engineering Handbook, Chapter 10, Transport and Storage of Fluids, 8th. edition, McGraw Hill, 2008.

The Gas Turbine Handbook US Department of Energy Office of Fossil Energy National Energy Technology Laboratory, Axial Flow Compressors Section 2.0, 2006

Centrifugal Compressor: A Basic Guide. PennWell Press February 2003 Tulsa OK. (**Sole Author**)

Gas Turbine Engineering Handbook. Third Edition, Elsevier Publisher, February 2006, Second Edition, Butterworth-Heinemann Publisher, December 2001, First Edition 1985 **(Sole Author)**

Perry’s Chemical Engineering Handbook. 7th. edition, Chapters10 and 14 on Fluid Machines and Gas Turbines., McGraw Hill: 1997.

Gas Turbine Engineering Handbook. German Edition, Springer Verlag, Berlin, Germany: 1997. **(Sole Author)**

Gas Turbine Engineering Handbook. 5th.Printing. January 1992, Houston: Gulf Publishing, 1987. **(Sole Author)**

TurboMachinery Maintenance Handbook. Houston: Boyce Engineering International, 1983 **(Sole Author)**

Centrifugal Compressor Handbook. Houston: Boyce Engineering International, 1981. **(Sole Author)**

Air Movement and Vacuum Devices. Process Equipment Series. 2 vols.

Connecticut: Technomic Publishing, 1981.

**PATENTS**

* United States Patent 3,930,742

Meherwan P. Boyce January 6, 1976

Velocity probe for compressor surge control

* United States Patent US 2008/0245052 A1

Meherwan P. Boyce October 9, 2008

Integrated Biomass Energy System

**PUBLIC SERVICE**

Board of Trustees, 2010 – Present, **Houston Symphony**, Houston, Texas.

Board of Advisors, **University of Texas Health Center**

Chair of the Advisory Council, **University of Texas Dental Branch**

President 1994 – 2006, **The Houston Galveston Stavanger Sister City Society**. Part of the City of Houston Sister City Program to assist in Developing Trade and Education through an active Student Exchange program.

President 2000 – 2005, **The Virtuosi of Houston**. A Young Artist’s Chamber Orchestra.

Chairman of the Board, 2005-Present, **The Virtuosi of Houston**. A Young Artist’s Chamber Orchestra.

Member, Board of Directors, 2004 – Present. **The Sam Houston Chapter of the Boy Scouts of America**. Holder of the Bharat Scout (India’s Equivalent to Eagle Scout)

Member, Board of Advisors. 1995-1997. **Global Children’s Foundation**. A foundation created by Nobel Peace Prize Laureate Ms. Betty Williams to create a Marshal plan to alleviate suffering for children in war torn countries

Member, Board of Directors. 1993-1999 **The US Committee of UNICEF**. Houston, Texas

Member, Executive Board. 1993 – 1995. **Wilhelm Schole International**, Houston, Texas. A unique private school dedicated to children of all communities with the belief that the entire world is one family. The school is renowned for its multi-cultural curriculum.

Member, Executive Board. 1993 – 1995. **Zoroastrian Association of Houston**. Houston, Texas. Chairman, 7th North American Zoroastrian Congress – Houston, Texas.

Vice President, 1991 – Present. **World Zoroastrian Organization**. London, United Kingdom

**PUBLICATIONS**

**TECHNICAL**

Boyce, M. P., Failures in Compressors of Advanced Gas Turbines, Modern Power Systems, Pgs 30-37 November 2012

Boyce, M. P., The Testing of Gas Turbines, ASME Power 2007, San Antonio, Texas, July 2007

Boyce, M. P., Advanced Axial Flow Turbines, March/April 2007 Turbomachinery International, Pg 40-41, July/August 2006

Boyce, M. P., Combined Cycle Power Plants, Power and Energy International, Pg 34-35 Nov/Dec 2006

Boyce, M. P., Maintaining Combustors-New Designs Reduce Emission But Require Additional Care, Turbomachinery International, Pg 34-35 Nov/Dec 2006

Boyce, M. P., Recovering Performance Compressor Operation and Maintenance is Crucial to Regaining Losses in Gas Turbine Efficiency and Output, Turbomachinery International, Pg 6-7 July/August 2006

Boyce, M. P., Performance Characteristics Of Advanced Gas Turbine Cogeneration Power Plants ASME – IMECE 2005-82325 Proceedings of International Mechanical Engineering Congress and Exposition, Orlando Florida. November 2005

Boyce, M. P., Francisco Gonzales, A Study of On-Line and Off-Line Turbine Washing to Optimize the Operation of a Gas Turbine, ASME – GT -2005-69126, Reno, Nevada. June 2005. Also published in the Journal of Turbomachinery June 2006 GTP-05-1136

Boyce, M. P., They Don’t Make ’Em Like That Anymore “Reliability, Availability, Maintainability of Advanced Gas Turbines” Turbomachinery International, September/October 2004, Vol.45 No.5 Pg. 16

Boyce, M. P., Jeffery N. Phillips, Jay Grandmont, Leonard Angelo, Simplified On-Line Performance Monitoring of Simple Cycle Gas Turbines using Spreadsheet based Calculation, ASME – GT -2004-54123, Vienna, Austria. June 2004.

Boyce, M. P., Operation of Combined Cycle Power Plants ASME Vienna Austria. June 2004.

Boyce, M. P., Long Term Service Agreements for Large Combined Cycle Power Plants, ASME Vienna Austria. June 2004.

Boyce , M. P., Operation of New Advanced Gas Turbines for Combined Cycle Power Plants ASME Power Conference Baltimore, MD. April 2004

Boyce , M. P., Long Term Service Agreements for New Advanced Gas Turbine Power Plants ASME Power Conference Baltimore, MD. April 2004

Boyce, M. P., Identification and Correction of Machinery Losses by Modeling Plant Thermodynamics of Combined Cycle Power Plants. IDGTE Gas Turbine Conference, Milton Keyes, U.K. October 2003

Boyce, M. P., Increase in Availability and Reliability of Combined Cycle Power Plants, ASM International Conference on Combustion Turbines and Hot Section Components, Conference Proceedings, Pittsburgh PA. October 2003

Boyce, M. P., Latcovich, Jr., John A., Condition Monitoring and Its Effect on the Life of New Advanced Gas Turbines, ASME -IGTI, Global Gas Turbine News Volume 42: 2002, No. 3 Page 4, November 2002

Boyce, M. P., A Compendium of Condition Monitoring for New Advanced Gas Turbines, Imperial College, October 2002

Boyce, M. P., Latcovich, Jr., John A., Condition Monitoring and Its Effect on the Life of New Advanced Gas Turbines, Gas Turbine Users Conference, Houston TX. April 2002

Boyce, M. P., Advanced Condition Monitoring For Advanced Gas Turbines, EPRI Conference, International Conference on Advances In Life Assessment and Optimization of Fossil Power Plants Orlando FL., March 2002.

Boyce, M. P., Assessments of Trends in Condition Monitoring Systems and Life Cycle Cost Management for Combined Cycle Power Plants, DOE, Advanced Gas Turbine and Condition Monitoring Conference and Workshop, February 2002.

Boyce, M. P., Assessments of Trends in Condition Monitoring Systems and Life Cycle Cost Management for Combined Cycle Power Plants, DOE Morgantown December 2001

Boyce, M. P., Turbomachinery in the Next Millennium, Gas Turbine Symposium, Sponsored by the Institute of Diesel and Gas Turbine Engineers, Milton Keynes, England, UK, September 2001

Boyce, M. P., New Trends In Gas Turbines a Seminar Naval Post Graduate School, Monterey CA, July 2001

Boyce, M. P., Reliability, Availability, and Maintainability Program for Advanced Gas Turbines in Combined Cycle Applications, US. DOE. Next Generation Turbine Stakeholder Meeting, April 9-10, 2001

Boyce, M. P., “Turbo Machinery in the next Millennium” ASME – IGTI January 2001

Boyce, M. P., Advanced Cycles for Combined Cycle Power Plants, Russia Gas Turbo-Technology Publication, November-December 2000

Boyce, M. P., Turbo-Machinery for the Next Millennium, Russia Gas Turbo-Technology Publication, September-October 2000

Boyce, M. P., Gonzales F.J. " Solutions to Field Problems of a Gas Turbine-Axial Flow Chemical Process Compressor Train based on Computer Simulation of the Process" Proceedings of the 28th. TurboMachinery Symposium, Texas A & M University, September, 1999. pp 89-104.

Boyce, M. P. " Managing Power Plant Life Cycle Costs", Russia Gas Turbo-Technology Publication, January - February 2000

Boyce, M. P. “Performance Characteristics of a Steam Turbine in a Combined Cycle Power Plant" Proceedings of the 6th. EPRI Steam Turbine Generator Workshop August 1999.

Boyce, M. P. “Cutting Edge Turbine Technology” Middle East Electricity October/November 1999

Boyce, M. P. “Condition Monitoring of Combined Cycle Power Plants” Asian Electricity July/August 1999, pp35-36

Boyce, M. P. “Managing Power Plant Life Cycle Costs" International Power Generation, July 1999, pp21-23.

Boyce, M. P. "Performance Monitoring of Large Combined Cycle Power Plants" Proceedings of the ASME 1999 International Joint Power Generation Conference, July 1999, San Francisco CA. Volume 2 pp183-190.

Boyce, M. P. “How to Identify and Correct Efficiency Losses through Modeling Plant Thermodynamics" Proceedings of the CCGT Generation Power Conference, March, 1999, London U.K.

Boyce, M. P. "Total Performance Condition Monitoring Of Major Petrochemical Facilities” Presented at the Materials, Selection and Application in the Chemical Process Industry Seminar, London, UK, Sponsored by The Institute of Materials, and co-sponsored by Institute of Chemical Engineers, and the Institute of Corrosion, November 1998.

Boyce, M.P. “The Economics of Captive Power Plants.” – Presented at Power in the Gulf conference in December 1997.

Boyce, M.P. and Cox, William M. “Condition Monitoring Management-Strategy.” – Presented at The Intelligent Software Systems in Inspection and Life Management of Power and Process Plants in Paris, France, August 1997.

Boyce, M.P. and Venema, J. Condition Monitoring and Control Center – Presented at the Power Gen Europe in Madrid, Spain, June 1997.

Boyce, M.P. “Improving Performance with Condition Monitoring” – Power Plant Technology Economics and Maintenance, March/April 1996, pp. 52-55.

Boyce, M.P. “Control and Monitoring an Integrated Approach.” Presented at Middle East Electricity, December 1994, pp. 17-20.

Boyce, M.P., Meher-Homji, C.B, Lakshminarasimha, A.N., gas Turbine and Combined Cycle Technologies for Power and Efficiency enhancement in Power Plants ASME 94-GT-435

Boyce, M.P., Gabriles, G.A. and Meher-Homji, C.B. “Enhancing System Availability and Performance in Combined Cycle Power Plants by the Use of Condition Monitoring.” Presented at the European Conference and Exhibition Cogeneration of Heat and Power. Athens, Greece. 3-5 Nov. 1993.

Boyce, M.P. and Herrera, G. “Health Evaluation of Turbine Engines Undergoing Automated FAA Type Cyclic Testing.” Presented at the SAE International Ameritech ’93. Costa Mesa, CA, 27-30 Sept. 1993. SAE Paper No. 932633.

Meher-Homji, C.B., Boyce, M.P. Lakshminarasimha, A.N., Whitten, J.A. and Meher-Homji, F.J. Condition Monitoring and Diagnostic Approaches for Advanced Gas Turbines.” Proc. ASME Cogen Turbo Power 1993. 7th Congress and Exposition on Gas Turbines in Cogeneration and Utility. Sponsored by ASME in participation of BEAMA. IGTI-Vol. 8 Bournemouth, United Kingdom. 21-23, Sept. 1993. pp. 347-55.

Boyce, M.P., Gabriles, G.A., Meher-Homji, C.B., Lakshminarasimha, A.N. and Meher-Homji, F.J. “Case Studies in Turbomachinery Operation and Maintenance using Condition Monitoring.” Proc. of the 22nd Turbomachinery Symposium. Dallas, TX. 14-16 Sept. 1993. 101-12.

Boyce, M.P. “Principles of Operation and Performance Estimation of Centrifugal Compressors.” Prod. of the 22nd Turbomachinery Symposium. Dallas, TX. 14-16 Sept. 1993. 161-78.

Boyce, M.P., Meher-Homji, C.B., and Lakshminarasimha, A.N. “Evolution of a Unified Turbomachinery Condition Monitoring System and its Application to Gas and Steam Turbine Utility Plants.” Proc. of 3rd EPRI Steam Turbine/ Generator Workshop. Albany, NY. 20-23 July 1993.

Boyce, M.P. “Turbomachinery Condition Monitoring Systems for the Hydrocarbon Processing Industry.” Hydrocarbon Technology International Magazine. 26-27 June 1993.

Boyce, M.P., Lakshminarasimha, A.N., and Meher-Homji, C.B. “Design and Implementation of an advanced Multi-Machine Gas Turbine Train Condition Monitoring and Control system.” Presented at the Third Congress of Turbomachinery. Queretaro, Mexico. Dec. 1992.

Lakshminarasimha, A.N., Boyce, M.P. and Meher-Homji, C.B. “Modeling and Analysis of Gas Turbine Performance Deterioration.” Presented at the 37th ASME International Gas Turbine and Aeroengine Congress and Exposition. Cologne, Germany. 1-4 June1992. ASME Paper No. 93-GT-395.

Boyce, M.P. “Performance Monitoring of Cogeneration Facilities.” Presented at the 1st International POWER Technology Exposition and Conference. McCormick Place, Chicago. Oct. 31-Nov. 2, 1989.

Boyce, M.P. and Echegaray, L.E. ‘’Aerothermal Analysis Improves Efficiency and Availability of TurboMachinery.” Plant Services Handbook of Computerized Maintenance Management and Predictive Maintenance. Oct. 1989, pp.102-104.

Barnes, G., Boyce, M.P., Wooldridge, B. and Meher-Homji, C.B. “On-Line Condition Monitoring of Two Westinghouse CE 352 Gs Turbine Compressor Sets.” Proc. of the 8th NRCC Symposium on Industrial Application of Gas Turbines. Ottawa, Canada, 24-27 Sept. 1989. 85-98.

Boyce, M.P., Bhargava, R.K. and Chinoy, R. “On-Line Condition Monitoring of TurboMachinery.” Proc. of the 1st International Machinery Monitoring and Diagnostic Conference. Las Vegas, NV. 11-14 Sept. 1989. 419-27.

Boyce, M.P., Meher-Homji, C.B. and Wooldridge, B. “Condition Monitoring of Aeroderivative Gas Turbines.” Presented at the Gs Turbine and Aeroengine Congress and Exposition. Toronto, Canada. 4-8 June 1989. ASME Paper No. 89-GT-36.

Boyce, M.P., Meher-Homji, C.B. and Mani, G. “A Diagnostic Methodology for Condition Monitoring of High Speed TurboMachinery.” Presented at the Society of Tribologists and Lubrication Engineers Conference. Atlanta, GA. 1-4 May 1989. Publication No. STLE SP-27.

Boyce, M.P. “Rerating of Centrifugal Compressors-Part II.” Diesel and Gas Turbine Worldwide.

Jan.-Feb. 1989. 8-20.

Unsal, R. and Boyce, M.P. “Experience with On-Line Condition Monitoring System.” Proc. of the 17th TurboMachinery Symposium. Dallas, TX. 8-10 Nov. 1988. pp.57-66.

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The Basics Of Gas Turbine Technology-Short Course, Sole Instructor, New Orleans La., Sponsored by ASME- IGTI June 1 – June 2, 2001

“Condition Monitoring for Advanced Gas Turbines” Invited Lecturer, Department of Energy Sponsored Conference on Advancing The Gas Turbine Power Industry, December 4-6, 2000. Washington, D.C.

“Advanced Control System Technology”, Invited Lecturer by the Department of Energy, at their sponsored Workshop “The Aerospace/Power Industry Control System Technology Transfer” November 16, 2000, Orlando, Florida.

“New Techniques in Condition Monitoring” Department of Energy Sponsored Workshop, November 13, 2000 – Orlando, Florida.

TurboMachinery for the Energy Industry- Sole Instructor for a Two Day Short Course- November 2000 – Sponsored by PowerGen, Orlando Florida

TurboMachinery for the Energy Industry- Sole Instructor for the Five Day Short Course-October-November 2000 – Sponsored by the Institute of Diesel and Gas Turbine Engineers, - London U. K.

International Power and Petrochem Consortium- Chairman and Invited Lecturer October 2000 at DERA, Farnborough, U.K.

Gas Turbine Short Course—One Day, Sole Instructor, Texas A&M University sponsored course at the TurboMachinery Symposium September, 2000, Houston, Texas

“Condition Monitoring of Large Combined Cycle Power Plants” Invited Lecturer, Department of Energy, Power Producers and Petrochemical Users of Advanced Gas Turbines- Workshop, June 6-7, 2000, Washington D.C.

TurboMachinery for the Energy Industry- Sole Instructor for the Five Day Short Course-May 2000 - Sponsored by the Institute of Diesel and Gas Turbine Engineers,- London U. K.

TurboMachinery for the New Millennium- Chairman and Invited Lecturer May 2000 at DERA, Farnborough, U.K.

TurboMachinery for the Energy Industry- Sole Instructor for the Five Day Short Course-December 1999-Singapore.

Combined Cycle Power Plants-- Sole Instructor for the Five Day, Short Course September 1999-London, U.K.

TurboMachinery for the New Millennium –Key Note Speaker TurboMachinery Symposium September 1999

New Developments in Gas Turbines- Invited Lecturer at the Naval Post Graduate School Monterey CA.-July 1999.

Optimizing Condition Monitoring, and Modeling of Plant Aerothermodynamics for Improved Plant Availability, Maintainability and Efficiency Short Course - March, 1999.

Combined Cycle Power Plant Operation, Berlin, Germany, December 1996.

Gas Turbines in Utility Service, Berlin, Germany, January 1996.

Gas Turbines and Centrifugal Compressors Operation and Maintenance, Warrick, U.K., May 1996.

Combined Cycle Power Plant and High Technology Gas Turbines, For National Power, November, 1995. Swindon U.K.

Combined Cycle Power Plants, Arnhem, The Netherlands, September 1995.

Gas Turbines and Centrifugal Compressor Technology, Dubai, April 1995.

Gas Turbines for Utilities – Arnhem, The Netherlands, September 1995.

Gas Turbines and Compressors for the North Sea, Oslo, Norway, Short Course presented annually from 1991-1994.

Gas Turbine and Centrifugal Compressor, Margarita Island, Venezuela, April 15-18, 1991.

Gas Turbines and Centrifugal Compressors, United Kingdom, presented annually 1990-1996.

Operation and Maintenance of Gas Turbines. Cranfield School of Mechanical Engineering, January 8-12, 1990, Cranfield, England.

Design Operation and Maintenance of TurboMachinery, Aberdeen, Scotland, May, 1988.

Design, Operation and Maintenance of TurboMachinery Short Course, Dubai, U.A.E., February, 1988.

Gas Turbine-Centrifugal Compressor Short Course, Norway, November, 1987.

General TurboMachinery Course, London, England, June, 1987.

New Developments in On-line Diagnostics for TurboMachinery. Lecture at Cranfield University. Cranfield, England, 1987.

Short Course on TurboMachinery, Anchorage, Alaska, March 1987.

Operation and Maintenance of Gas Turbines and Centrifugal Compressors, Boyce Engineering/Nico International, DUBAI, U.A.E., January, 1987.

Gas Turbine and Centrifugal Compressor Short Course, Houston, Texas, November, 1986.

Gas Turbine and Centrifugal Compressors, Houston, Texas, May, 1986.

Gas Turbine and Centrifugal Compressor Course, London, England, May, 1986.

Rotating Machinery Short Course. Short Course, Anchorage, Alaska, February, 1986.

New Developments in TurboMachinery Design, Lecture at University of Houston, 1986.

Gas Turbine and Centrifugal Compressor Short Course, Houston, Texas, November, 1985.

Short Course on Centrifugal Compressors, London, England, October, 1985.

Gas Turbine and Centrifugal Compressor Short Course, Houston, Texas, - October 1984.

General TurboMachinery Short Course, Houston, Texas, April, 1984.

Maintenance and Reliability Improvement Short Course, Houston, Texas, April, 1984.

Gas Turbine Short Course, S.A. Meneven, Caracas, Venezuela, October, 1981.

TurboMachinery Short Course, Boyce Engineering International, Inc. facilities, Houston, Texas, September, 1981.

Maintenance of Rotating Machinery Short Course. Boyce Engineering International, Inc. facilities, Houston, Texas, July, 1981.

Short Course on Gas Turbines and Centrifugal Compressors, Phillips 66, Stavanger, Norway, March 1981.

Gas Turbines Short Course, S.A. Meneven, Caracas, Venezuela, October, 1980.

Surge Characteristics in Centrifugal Compressors sponsored by ASME Houston, Chapter, September, 1978.

Spectrum Analysis for Surge Control. A Lecture sponsored by the Engineering Foundation at New England College, Hoenecker, New Hampshire, July, 1978.

Spectrum Analysis, A Look in TurboMachinery Maintenance. Invited Lecturer, Nicolet Scientific, June, 1977.

Cavitation Problems and Pump Sizing. Invited Lecturer at Pump Symposium sponsored by Chemical Engineering, January, 1977.