SHORT COURSE 1 on CENTRIFUGAL COMPRESSORS 101



Jay M. Koch is Manager Configure to Order Engineering, Centrifugal Compressors, at Dresser-Rand, in Olean, New York. He has been employed there since 1991, working primarily in the Aerodynamics Group, before being promoted to Manager of Aero/Thermo Design Engineering in 2005. During his time in the Aerodynamics Group, his responsibilities included the development, design, and analysis of aerodynamic components of centrifugal compressors. Additionally, he was responsible for the development of software used to select and predict centrifugal compressor performance. Prior to joining Dresser-Rand, Mr. Koch was employed by Allied Signal Aerospace.

Mr. Koch holds a B.S. degree (Aerospace Engineering) from Iowa State University. He has authored or coauthored many technical papers.



Mark J. Kuzdzal is the Manager of Core Technologies at Dresser-Rand Company, Olean Operations, in Olean, New York. He is responsible for overseeing rotordynamics, aerodynaimcs, materials, welding, solid mechanics, and acoustics disciplines. He has been with the company since 1988. Mr. Kuzdzal's areas of expertise are rotordynamics, bearing performance, field vibration issue resolution, and product/process development. He has coauthored many technical papers and holds two U.S. Patents.

Mr. Kuzdzal has a B.S. degree (Mechanical Engineering, 1988) from the State University of New York at Buffalo.

on

ADVANCED RECIPROCATING COMPRESSOR DIAGNOSTICS AND DETAILED PATTERN INTERPRETATION



Warren Laible has been managing the training, contract analysis services, product testing, and equipment demonstration activities at Windrock, Inc., in Knoxville, Tennessee, for the past eight years. He has more than 34 years of compressor experience with more than 4000 mechanical condition, performance, vibration, and pulsation tests. He began his career being hired as an employee of a major gas company in South Louisiana. It was there that he started his industrial engine and compressor training and began his career as an Equipment Analyst. Beginning in 1977, 20 years of providing contract analysis services followed. In 1997, Mr. Laible accepted a position as Product Support Manager for a compressor manufacturer, packager, and leaser. Valuable experience was gained in high speed compressor package design, spectral vibration troubleshooting, and performance measurement. Mr. Laible graduated in 1970 with a B.S. degree (Industrial Technology).

George Lentek is Product Manager of process reciprocating compressors for Dresser-Rand Company, in Painted Post, New York. He is responsible for overseeing the product line and identifying enhancements that bring greater value to the end user. Mr. Lentek has worked with reciprocating compressors for 36 years at Dresser-Rand. Starting as a Project Engineer, he was responsible for the selection, performance, and application of process gas reciprocating compressors, including mechanical analysis of the frame, cylinder, and drive systems. He has also held positions in project management and as Manager of Project Development Engineering.

Mr. Lentek received a B.S. degree (Aeronautical and Astronautical Engineering, 1972) from the University of Illinois. He also works with API and ASME task forces to develop and maintain industry standards.

SHORT COURSE 3 on CENTRIFUGAL COMPRESSORS 201



Gary M. Colby presently is a Test Engineering Supervisor with Dresser-Rand Company, in Olean, New York. He is responsible for developing test methods to meet objectives for production compressors and analytical aerodynamic testing of centrifugal compressors. Mr. Colby has held several engineering positions over his 34 year career at Dresser-Rand Company. The majority of his work experience has been in the thermodynamic performance field of centrifugal compressors. He has more than 14 years of experience in testing of centrifugal compressors both in the shop and the field.

Mr. Colby studied Mechanical Technology for two years at the State University of New York at Alfred. He has authored several papers on hydrocarbon testing of compressors.



William C. Hohlweg is a Senior Engineer in the Advanced Technology Department at Elliott Company, in Jeannette, Pennsylvania. He is the Supervisor of the Aerodynamics Group and is responsible for design and development of centrifugal compressor and axial turbine staging. This includes single-stage testing, ongoing improvement of the application computer programs for the multistage product lines, and aero performance consultation. He has been with Elliott for 26 years, and has specialized in centrifugal compressor performance both in the Development and Product Engineering departments. Prior to that, he was employed at Ford Motor Company and NASA Langley Research Center.

Mr. Hohlweg received his B.S. degree (Aerospace Engineering, 1971) from the Pennsylvania State University and an M.S. degree (Flight Sciences, 1975) from George Washington University. He has authored or coauthored eight technical publications for ASME, NASA, and I Mech E.



Rainer Kurz is Manager of Systems Analysis and Field Testing for Solar Turbines Incorporated, in San Diego, California. His organization is responsible for conducting application studies, gas compressor and gas turbine performance predictions, and site performance testing. He joined Solar Turbines Incorporated in 1993 and has authored more than 70 publications in the field of turbomachinery.

Dr. Kurz attended the University of the German Armed Forces, in Hamburg, where he received the degree of a Dipl.-Ing., and, in 1991, the degree of a Dr.-Ing. He was elected as an ASME Fellow in 2003 and is a member of the Turbomachinery Symposium Advisory Committee.



Jeffrey Moore is a Program Manager at Southwest Research Institute, in San Antonio, Texas. His professional experience over the last 18 years includes engineering and management responsibilities related to centrifugal compressors and gas turbines at Solar Turbines Inc. in San Diego, California, Dresser-Rand in Olean, New York, and Southwest Research Institute in San Antonio, Texas. Dr. Moore's interests include advanced compression methods, rotordynamics, seals and bearings, computational fluid dynamics, finite element analysis, controls, and aerodynamics. He has authored more than 20 technical papers related to turbomachinery and has given numerous tutorials and lectures. He is currently the vice-chair of the Oil and Gas Committee for IGTI Turbo Expo.

Dr. Moore holds B.S., M.S., and Ph.D. degrees (Mechanical Engineering) from Texas A&M University.

SHORT COURSE 4 on COMBINED CYCLE AND COGENERATION POWER



Meherwan P. Boyce is Chairman of The Boyce Consultancy Group, LLC, in Houston, Texas. He has 45+ years of experience in the turbomachinery field, with 35 years in the design of compressors and turbines. His 15 years in academia include being Professor of Mechanical Engineering at Texas A&M University, and Founder of the Turbomachinery Laboratories and the Turbomachinery Symposium. Dr. Boyce has authored more than 130 technical publications and several books, including *Gas Turbine Engineering Handbook, Cogeneration & Combined Cycle Power Plants*, and *Centrifugal Compressors, A Basic Guide*. He has taught over 150 short courses globally attended by over 4500 students representing 400 companies, and is a Consultant to the aerospace, petrochemical, and utility industries. Dr. Boyce received a B.S. and M.S. degree (Mechanical Engineering) from the South Dakota School of Mines

and Technology and the State University of New York, respectively, and a Ph.D. degree (1969) from the University of Oklahoma.

on

AN INTRODUCTION TO BABITTED BEARINGS AS USED IN INDUSTRIAL TURBOMACHINERY



Barry J. Blair is the Chief Engineer at Waukesha Bearings Corp. (WBC), in Pewaukee, Wisconsin. AT WBC, his responsibilities include bearing design, product development, developing design codes and tools, and providing training. Prior to joining WBC in 1993, he worked for another bearing manufacturer.

Mr. Blair received both his B.S. and M.S. degrees (Mechanical Engineering, 1990) from the University of Virginia. He completed requirements of both degrees concurrently. He has authored and coauthored several papers on bearings.



Scan M. DeCamillo is Manager of Research and Development for Kingsbury, Inc., in Philadelphia, Pennsylvania. He is responsible for design, analysis, and development of Kingsbury fluid film bearings for worldwide industrial and military applications. He began work in this field in 1975 and has since provided engineering support to industry regarding application and performance of hydrodynamic bearings. Mr. DeCamillo has developed performance and structural bearing analysis tools during his career, establishing design criteria used in many publications and specifications. He has patents and has authored several papers on bearing research, which is currently focused on advancing hydrodynamic bearing technology in high-speed turbomachinery.

Mr. DeCamillo received his B.S. degree (Mechanical Engineering, 1975) from Drexel University. He is a registered Professional Engineer in the State of Pennsylvania and a member of STLE, ASME, and the Vibration Institute.



John K. Whalen is Engineering Manager and President of TCE/Turbo Components and Engineering, Inc., in Houston, Texas. He spent seven years at Turbodyne Steam Turbines (Dresser-Rand) as a Product Engineer in the Large Turbine Engineering Department and as an Analytical Engineer in the Rotordynamics Group of the Advanced Engineering and Development Department. In 1988, Mr. Whalen accepted a position with Centritech, as the Assistant Chief Engineer, and in 1989, he was promoted to Manager of Engineering. In 1991, he left Centritech to help start TCE. At TCE, he is responsible for the engineering department and engineering for the product lines, which include babbitted journal and thrust bearings, labyrinth seals, and related engineering services.

Mr. Whalen received his B.S. degree (Mechanical Engineering, 1981) from the Rochester Institute of Technology. He is a member of ASME, STLE, and the Vibration Institute, and is a registered Professional Engineer in the State of Texas.

on

LARGE MOTOR AND VARIABLE SPEED DRIVE FUNDAMENTALS FOR MECHANICAL ENGINEERS

Arthur J. Smith III is Senior Vice President and Manager of the New Orleans Office Electrical Engineering Department of the consulting engineering firm of Waldemar S. Nelson and Co., Inc., in New Orleans, Louisiana. He has authored and coauthored papers on: arc-flash hazards; molded case and insulated case circuit breaker ratings and withstandability; combination motor starters; medium voltage Korndorffer type starters; and IEEE P-1458 recommended practice for the selection, field testing, and life expectancy of molded case circuit breakers for industrial applications.

Mr. Smith received his BSEE (1978) from Tulane University, and began his career with Waldemar S. Nelson in 1975, while attending Tulane. He is a registered Professional Engineer in the States of Alabama, Alaska, California, Louisiana, Mississippi, and Texas. He is also a member of IEEE, IEEE-IAS, NFPA 70 National Electrical Code, CMP-11, and he is Secretary of IEEE Standards Correlating Committee SCC-18.

on

ROOT CAUSE FAILURE ANALYSIS IN INDUSTRIAL TURBOMACHINERY



Andrea Masala is a Senior Engineer, with the GE Oil&Gas Advanced Technology Rotordynamic team, in Florence, Italy. In his current position, his area of activity is on AMB's integration in GE Oil&Gas machines. He has had assignments on the rotating machinery and centrifugal compressor NPI teams as turbomachinery rotordynamic specialist. He is a member of ISO TC108/SC2/workgroup for ISO14839-4 issue.

Mr. Masala earned his MSc. degree (Mechanical Engineering, 1999) from the University of Cagliari and joined GE in 2002.



David L. Ransom is a Principal Engineer at Southwest Research Institute, in San Antonio, Texas. His professional experience over the last 10 years includes engineering and management responsibilities at Boeing, Turbocare, and Rocketdyne. Mr. Ransom's research interests include rotordynamics, structural dynamics, seals and bearings, finite element analysis, and root cause failure analysis. He has authored 12 technical papers in the field of rotordynamics, thermodynamics, and root cause failure analysis.

Mr. Ransom received his B.S. degree (Engineering Technology, 1995) and M.S. degree (Mechanical Engineering, 1997) from Texas A&M University. He is also a licensed Professional Engineer in the State of Texas.



David Seib is a Principal Metallurgical Engineer for Dresser-Rand Company, in Olean, New York. He has been with them since 1989. Previously, Mr. Seib spent four years working at the Marine Corps Depot, Cherry Point, North Carolina, as a civilian Materials Engineer.

Mr. Seib has a B.S. degree (Materials Engineering, 1984) from North Carolina State University.



Harold R. Simmons leads diagnostics projects to resolve turbomachinery dynamics problems with Southwest Research Institute, in San Antonio, Texas. He joined SWRI in 1974 in the Mechanical and Fluids Engineering Division, where he leads projects to resolve turbomachinery dynamics problems for clients in power generation, oil and gas transmission, and petrochemical industries. Mr. Simmons is skilled in structural dynamics testing and thermal cycle analysis as applied to gas turbine problem evaluation. He has developed special diagnostic tools for evaluating the mechanical dynamics root causes of blade high cycle fatigue, hot section thermal failures, rotor vibration, and combustion stability. Mr. Simmons was previously employed by Pratt & Whitney Aircraft as a jet engine designer and as a structural dynamics analysis engineer.

Mr. Simmons has a BS. degree (Mechanical Engineering) and 44 years of professional experience in turbomachinery problem diagnosis and gas turbine design.

SHORT COURSE 8 on API 614 (ISO 10438) FIFTH EDITION



Glenn Bredder is the Vice President of International Sales for Howard Marten Company, in Palmyra, Virginia. For the past 20 years, he has held various engineering, management, and sales positions in lubrication system manufacturing. Mr. Bredder has a B.S. degree (Mechanical Engineering, 1976) from Stevens Institute of Technology. He is a registered Professional Engineer.



Kevin Kisor is an Applications and Sales Engineer in MAN Turbo's Houston office. He has held various sales and application engineering positions with Sundyne, A-C Compressor, Nuovo Pignone, and GHH Borsig, and has served on the API 614 Task Force.

Mr. Kisor has a B.S. degree (Industrial Technology) from Ohio University.



Richard A. (Rich) Lewis is a Mechanical Associate at Dow Chemical in Houston, Texas. He has over 30 years' experience in rotating equipment, and has spent the last 13 years with Dow Chemical in the rotating equipment area. He works with compressors, turbines, pumps, agitators, gears, centrifuges, extruders, and other critical and noncritical rotating equipment. Before joining Dow Chemical, he was Test Engineer, Senior Compressor Application Engineer, and Manager of Zone Engineering with Elliott Company.

Mr. Lewis received a BSME from Penn State University, and is a registered Professional Engineer in the State of Texas. He is a member of the ASME B73 committee, PIP Machinery Function Team, API Mechanical Steering Team, API Subcommittee on Mechanical Equipment, and has served on API Task Forces 619, 674, and 617, where he has served as both a manufacturer's representative and as a user. He is currently Chairman of the API 614 Task Force.