DISCUSSION GROUP 1
on
TURBOMACHINERY OPERATION AND MAINTENANCE

Joe Moreno manages the Machinery Engineering group within the central engineering department at LyondellBasell Industries, in Channelview, Texas. The machinery group provides technical and leadership services for the chemicals, polymers, and fuels divisions worldwide. Prior to becoming Manager of the central group, he was an Engineer in the group and was directly involved with the development of the machinery strategy program and was the lead of the Machinery Tech Team and Rotating Equipment Sub Group. He has served in several technical support and advisory roles including specification, testing, and installation of critical machinery, shop and field repairs, equipment disassembly, overhaul and startup, failure analysis, and providing technical evaluations during due diligence reviews.

Mr. Moreno has a B.S. degree (Mechanical Engineering, 1989) from Texas A&M University and has worked in the petrochemical industry his entire career with a focus on rotating equipment.

Charles R. (Charlie) Rutan retired as Senior Engineering Advisor, Specialty Engineering, with LyondellBasell, in Alvin, Texas. His expertise is in the field of rotating equipment, hot tapping/plugging, and special problem resolution. He has three patents and has consulted on turbomachinery, hot tapping, and plugging problems all over the world in chemical, petrochemical, power generation, and polymer facilities.

Mr. Rutan received his B.S. degree (Mechanical Engineering, 1973) from Texas Tech University. He is a member of the Advisory Committee of the Turbomachinery Symposium, and has published and/or presented many articles.

DISCUSSION GROUP 2
on
MONITORING VIBRATION AND OTHER CRITICAL MACHINE CONDITIONS

Charles A. (Chuck) Lickteig is a Senior Engineer in Shell Global Solutions (US) Inc., in Houston, Texas. He is responsible for providing technical support for rotating and reciprocating machinery at Shell affiliated company's worldwide as well as commercial customers. Mr. Lickteig is currently developing advanced performance and condition monitoring applications. Since joining Shell in 1990, he has had assignments in projects involving specification, evaluation, systems integration, installation, commissioning, and startup of rotating equipment for existing and new process plants, as well as extensive field troubleshooting in performance and vibration analysis.

Mr. Lickteig has a B.S. degree (Mechanical Engineering, 1990) from the University of Kansas, and is a registered Professional Engineer in the State of Louisiana.

Stephen R. (Steve) Locke is a Senior Consultant with E. I. du Pont de Nemours and Company, Inc., with 37 years of turbomachinery and rotating equipment experience. He is assigned to DuPont Engineering Technology Rotating Machinery Group, in Old Hickory, Tennessee. Since 1983, Mr. Locke has consulted on turbomachinery and process machinery for repairs, reliability improvements, retrofits, new equipment specification and startups, performance modeling, and more recently on machinery Process Safety Management. In his first 11 years in DuPont, he held plant assignments in the Petrochemicals Department providing technical assistance to operations and maintenance, including the startup of several large process compressors and other rotating and process equipment.

Mr. Locke received a B.S. degree (Mechanical Engineering, 1972) from Purdue University and is a member of ASME. He has presented several papers at the Turbomachinery Symposia, the University of Virginia ROMAC, and represents DuPont on Texas A&M's Turbomachinery Research Consortium.

Charles R. (Charlie) Rutan retired as Senior Engineering Advisor, Specialty Engineering, with LyondellBasell, in Alvin, Texas. His expertise is in the field of rotating equipment, hot tapping/plugging, and special problem resolution. He has three patents and has consulted on turbomachinery, hot tapping, and plugging problems all over the world in chemical, petrochemical, power generation, and polymer facilities.

Mr. Rutan received his B.S. degree (Mechanical Engineering, 1973) from Texas Tech University. He is a member of the Advisory Committee of the Turbomachinery Symposium, and has published and/or presented many articles.

L.E. (Ed) Watson is a consultant with E.I. DuPont de Nemours & Company, Inc., located in Houston, Texas. He works in the DuPont Engineering Technologies and Research Division of DuPont Engineering. His responsibilities include the specification and repair of turbomachinery and other rotating equipment, vibration and stress analysis, predictive maintenance and equipment reliability improvement, process equipment application, and general engineering consulting on machinery and processes. Mr. Watson has been with DuPont for over 30 years and works on capital projects and engineering support of plant operations. He previously worked as a designer for Lufkin Industries and as a production engineer with Humble Oil.

Mr. Watson has a B.S. degree from Lamar University and an M.S. degree from The University of Texas at Austin (both in Mechanical Engineering). He is active in the Vibration Institute and is a past chairman of both the Triplex Chapter and Houston Chapter of the Vibration Institute.

DISCUSSION GROUP 3
on
MACHINERY PURCHASING

Kazim Akhtar is the Director for Mechanical Engineering of CB&I Lummus, in Houston, Texas. His department is involved in the specification, design, selection, shop test acceptance, and startup coordination of rotating and static (heat transfer, vessels, and material handling) equipment for major refinery, petrochemical, and oil and gas projects.

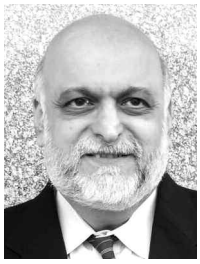
Mr. Akhtar received a B.S. degree (Mechanical Engineering) from Texas A&M University and an M.S. degree (Industrial Engineering, Management) from the University of Houston. He is an active member of API, AICHE, ASME, a registered Professional Engineer in the State of Texas, and a member of the Turbomachinery Symposium Advisory Committee.

Karl D. Bush is a Senior Principal Rotating Equipment Engineering Specialist with CB&I Lummus, in Houston, Texas. His responsibilities include supervision of staff engineers, preparation of equipment and project specifications, and technical execution of projects, including inquiry, evaluation, and purchase of rotating and packaged equipment. Mr. Bush has 37 years of experience in the oil and gas industry working with rotating equipment, including seven years in pump sales and 30 years with various EPC firms. He has been employed since 1987 by CB&I Lummus (and its predecessors).

Mr. Bush received his B.S. degree (Chemical Engineering, 1972) from the University of Tulsa.

Richard A. (Rich) Lewis is a Senior Mechanical Associate at Dow Chemical in Houston, Texas. He has over 40 years' experience in rotating equipment, and has spent the last 21 years with Dow Chemical in the rotating equipment area. Mr. Lewis is a turbomachinery subject matter expert and is Technical Resource Leader for general mechanical equipment at Dow. He works with compressors, turbines, pumps, agitators, gears, centrifuges, extruders, and other critical and noncritical rotating equipment.

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



Cyrus B. Meher-Homji is an Engineering Fellow and Senior Principal Engineer at Bechtel Corporation, in Houston, Texas. He is assigned to the LNG Technology Group and LNG Product Development Center. Mr. Meher-Homji works on the development of new concepts relating to LNG turbomachinery and supports LNG projects. His 27 years of industry experience covers gas turbine and compressor application and design, engine development, and troubleshooting.

Mr. Meher-Homji has a B.S. degree (Mechanical Engineering) from Shivaji University, an M.E. degree from Texas A&M University, and an M.B.A. degree from the University of Houston. He is a registered Professional Engineer in the State of Texas, a Fellow of ASME, life member of AIAA, and is active on several committees of ASME's International Gas Turbine Institute. He has several publications in the area of turbomachinery engineering. Mr. Meher-Homji is also a member of the Turbomachinery Symposium Advisory Committee.

Renee Perry is with Fluor, in Sugar Land, Texas.

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Brian J. Setzenfand is Product Manager, Engineered Products, with FS-Elliott Co., LLC, located in Export, Pennsylvania. In his current role, he is responsible for product line management of FS-Elliott's engineering compressor packages. Mr. Setzenfand is also responsible for marketing and product development for FS-Elliott's PAP product line. Prior to his current role, he has held various positions in business development, marketing, and application engineering of centrifugal compressors and steam turbines with Elliott Company.

Mr. Setzenfand has a B.S. degree (Mechanical Engineering) from the University of Pittsburgh and has an MBA degree from Duquesne University.

Aaron York is with Cameron, in Houston, Texas.

DISCUSSION GROUP 4
on
OVERSPEED TRIP SYSTEMS

Bruce Bayless is with Valero Energy Corporation, in Houston, Texas.

Timothy J. (Tim) Christ is a Mechanical Engineering Associate at The Dow Chemical Company, in Freeport, Texas. In this role, he assists rotating equipment engineers in the Maintenance Technical Services group as well as Reliability and Maintenance Engineers in the various businesses regarding turbomachinery issues. Mr. Christ spent most of his career in the Critical Mechanical Equipment group. However, he recently acted as a Maintenance Representative on a large-scale grass-roots plant constructed in Freeport. He is presently a member of the Dow Global Turbomachinery Technology Resource Network (TRN), which is a network of turbomachinery subject matter experts from various global sites. He was coauthor of a paper for the Twenty-Sixth Turbomachinery Symposium and presented a Case Study at the Thirtieth Turbomachinery Symposium.

Mr. Christ has a B.S. degree (Mechanical Engineering) from Texas A&M University (1978).

DISCUSSION GROUP 5
on
VERIFICATION OF PROTECTIVE AND SAFETY INTEGRATION SYSTEMS

Lil Kassie is presently Rotating Equipment Advisor for BP refining. He is located at BP's Whiting, Indiana, refinery where he has worked for 24 years. He has held positions as Rotating Equipment Specialist, Superintendent of the Rotating Equipment and Reliability Engineering Group, and Senior Rotating Equipment Consultant. In his present position, Mr. Kassie is responsible for providing machinery expertise, sharing and implementing equipment practices, and development coaching for improving equipment reliability and plant availability throughout BP. Prior to his tenure at BP, Mr. Kassie worked as Rotating Equipment Superintendent for Energy Cooperative Inc. and as a Field Service Engineer for Ingersoll Rand. He has presented technical papers at various rotating equipment conferences including the Turbomachinery Symposium and Rotating Machinery Users Council.

Mr. Kassie holds B.S. and M.S. degrees (Mechanical Engineering) from the University of Wisconsin.

Stephen R. (Steve) Locke is a Senior Consultant with E. I. du Pont de Nemours and Company, Inc., with 37 years of turbomachinery and rotating equipment experience. He is assigned to DuPont Engineering Technology Rotating Machinery Group, in Old Hickory, Tennessee. Since 1983, Mr. Locke has consulted on turbomachinery and process machinery for repairs, reliability improvements, retrofits, new equipment specification and startups, performance modeling, and more recently on machinery Process Safety Management. In his first 11 years in DuPont, he held plant assignments in the Petrochemicals Department providing technical assistance to operations and maintenance, including the startup of several large process compressors and other rotating and process equipment.

Mr. Locke received a B.S. degree (Mechanical Engineering, 1972) from Purdue University and is a member of ASME. He has presented several papers at the Turbomachinery Symposia, the University of Virginia ROMAC, and represents DuPont on Texas A&M's Turbomachinery Research Consortium.

Stanley Stevenson is a Project Manager for Siemens Demag Delaval Turbomachinery, Inc., located in Hamilton, New Jersey. He has been with the company for more than 29 years and has been involved in the design, manufacture, repair, upgrade, and testing of rotating equipment for the chemical, oil and gas, utility, and power generation markets. Mr. Stevenson has been responsible for the design and component selection for rotating equipment trains and auxiliary support systems, technical and commercial interface with customers, field service support during equipment installation, startup, and resolution of field operational problems.

Mr. Stevenson has received both B.S. and M.S. degrees (Mechanical Engineering, 1980, 1983) from Drexel University. He is a member of ASME and is a registered Professional Engineer in the State of Pennsylvania. Mr. Stevenson is a member of PMI, where he is a certified PMP.

DISCUSSION GROUP 6
on
DRY GAS SEALS

Leonardo Baldassarre is currently the Engineering Manager & Principal Engineer for Centrifugal Compressors with General Electric Oil & Gas Company, in Florence, Italy. He is responsible for all requisition, standardization, and CAD automation activities as well as for detailed design of new products for centrifugal compressors both in Florence (Nuovo Pignone) and Le Creusot (Thermodyn). Dr. Baldassarre began his career with General Electric Nuovo Pignone in 1997. He has worked as Design Engineer, R&D Team Leader for centrifugal compressors in Florence, Product Leader for centrifugal and axial compressors, and Requisition Manager for centrifugal compressors both for Florence and Le Creusot teams.

Dr. Baldassarre received a B.S. degree (Mechanical Engineering, 1993) and Ph.D. degree (Mechanical Engineering/Turbomachinery Fluid Dynamics, 1998) from the University of Florence. He has authored or coauthored 20 technical papers, mostly in the area of fluid dynamic design of 3D transonic impellers, rotating stall, and rotordynamics. He presently holds three patents.

Joe Delrahim is Marketing Segment Manager of Dry-Running Gas Seals with John Crane Inc., in Morton Grove, Illinois. Of his 24 years with John Crane, he spent 13 as an Engineer or Engineering Supervisor, in charge of designing dry-running gas sealing technology.

Mr. Delrahim holds a B.S. degree (Mechanical Engineering) from the University of Oklahoma, and an MBA from the Lake Forest Graduate School of Management, Illinois.

John G. Marta is a Senior Compressor Seal Specialist with the Flow Solutions Division of the Flowserve Corporation, located in Littleton, Colorado. He is responsible for specifying compressor seal designs and support systems, and provides related field service for turbomachinery applications. First joining the heritage company of BW/IP International, Inc., Seal Division in 1988, Mr. Marta has held various positions within Flowserve including Applications Engineer; National Flue Gas Desulfurization Systems Coordinator; Sales Engineer; and Manager, Product Marketing, with responsibilities for application and design of low emission mechanical seal technology to meet stringent clean air regulations in the chemical, paper, petrochemical, power, and refining industries.

Mr. Marta holds a B.S. degree (Mechanical Engineering) from Colorado State University. He is a member of SME and ASME.

Bernard Quoix is the Head of Total E&P Rotating Machinery Department, in Pau, France, and has held this position since November 2003. He began his career in 1979 within Total Operations in the North Sea, then from 1986 to 1989 became Head of Engineering of Turbomeca Industrial Division, a small and medium size gas turbine manufacturer. Mr. Quoix then went to Renault as Assistant Manager of the testing facilities for prototype and production engines before joining Elf Aquitaine and, eventually, Total, where he was mainly involved in all aspects of turbomachines, including conceptual studies and projects for new oil and gas field development, bringing his expertise to all Total Affiliates Operations.

Mr. Quoix graduated from Ecole Nationale Supérieure d'Electricité et de Mécanique (1978), in Nancy, and then completed his engineering education with one additional year at Ecole Nationale du Pétrole et des Moteurs, in Paris, specializing in internal combustion engines.

Peter C. Rasmussen is Chief Machinery Engineer for ExxonMobil's upstream companies. Over the past 30 years he has held various positions in ExxonMobil upstream organizations working machinery solutions and reliability issues. He currently leads machinery research efforts at the ExxonMobil Upstream Research Company in Houston.

Mr. Rasmussen received his B.S. degree (Ocean Engineering, 1974) from Florida Atlantic University, Boca Raton. He is a registered Professional Engineer in the State of Texas, and is a member of the Turbomachinery Symposium Advisory Committee.

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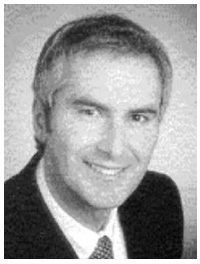


Michael Sattler is Head of Product Field Compressor Seals for Burgmann Industries GmbH & Co. KG, in Wolfratshausen, Germany. He has 19 years of professional experience comprising all aspects of dry gas seals and seal control units for compressors such as marketing, engineering, commissioning, and troubleshooting. In 2006, he took over the position of the head of the compressor seals division at Eagle Burgmann.

Mr. Sattler took the exam as an Industrial Engineer (1989) at the Technical University in Munich, and he joined Burgmann upon completion.

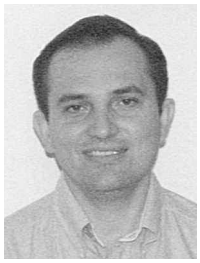
John S. Stahley is presently the Manager of New Equipment Operations at Dresser-Rand Company, in Olean, New York. He has been employed by Dresser-Rand for more than 19 years, holding various positions in manufacturing, marketing, project engineering, and commissioning engineering. In his present position, he is responsible for project execution, assembly, testing, and field support of Dresser-Rand turbomachinery from receipt of order throughout the equipment warranty period.

Mr. Stahley received a B.S. degree (Engineering, 1989) from the Rochester Institute of Technology and an MBA degree from St. Bonaventure University (1994).

DISCUSSION GROUP 7
on
GAS TURBINE OPERATION AND MAINTENANCE

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.



Francisco J. Gonzalez is Senior Director of Mechanical Reliability and Maintenance Optimization for Enterprise Products Co., in Houston, Texas. He currently operates machinery over 3.1 MM installed horsepower in natural gas and NGL processing plants. He has more than 20 years of experience in the operations and maintenance of rotating equipment, 14 years at Enterprise and six years with Amoco Chemical at Texas City. The Reliability Department at Enterprise is primarily responsible for providing technical support to operation and maintenance, which includes rotating equipment vibration monitoring, aerothermal performance monitoring, troubleshooting, overhaul, performance testing, and gas turbine and compressor optimization, as well as evaluating short-term and long-term reliability improvements for all rotating equipment. Mr. Gonzalez has coauthored several technical papers for the Turbomachinery Symposium and ASME Power Gen, as well as articles on improving reliability in various publications.

Mr. Gonzalez has a B.S. degree (Mechanical Engineering, 1990) from the University of Houston.

DISCUSSION GROUP 8
on
COUPLINGS AND ALIGNMENT

Thomas R. (Tom) Davidson is Chief Mechanical Engineer, Global Operations Reliability Support for Linde, Inc., in Pasadena, Texas. His primary responsibility is developing and implementing equipment reliability improvement programs for both rotating and fixed equipment. Mr. Davidson is also responsible for assisting in machinery selection, overhauls, and developing and implementing design improvements to enhance equipment reliability and availability. He has more than 30 years of experience in the petrochemical and process gas industry, in the field of equipment reliability, maintenance management, and turnaround planning and scheduling.

Mr. Davidson received a B.S. degree (Mechanical Engineering, 1978) from the University of Houston. He is a member of ASME, NSPE, the Vibration Institute, and he serves on the Turbomachinery Symposium Advisory Committee. Mr. Davidson is also a registered Professional Engineer in the State of Texas.

Terry L. Roehm is a Corporate Reliability Engineer for Marathon Oil, in Houston, Texas. He specializes in rotating equipment and his responsibilities focus on improvement of the reliability of rotating equipment for the upstream of Marathon. In addition, Mr. Roehm is involved with the specification, selection, procurement, installation, startups, troubleshooting, and turnaround planning for the rotating equipment. He has had various positions in maintenance and engineering with the downstream portions of Marathon Petroleum and Ashland Oil for more than 30 years.

Mr. Roehm has a B.S. degree (Mechanical Engineering) from Purdue University. He is a registered Professional Engineer in the State of Kentucky, past Chairman of the API Subcommittee on Mechanical Equipment, active on several API task forces, and a member of ASME.

DISCUSSION GROUP 9
on
COMPRESSOR PERFORMANCE TESTING

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.

Douglas (Doug) Petrie is an Account Executive for GE Oil and Gas, based in Houston, Texas. He joined GE in 2002, and, prior to that, he worked for Elliott Turbomachinery and Dresser Industries. Mr. Petrie has more than 30 years of experience in the rotating equipment industry where he has held various jobs in both operations and sales.

Mr. Petrie has a B.S. degree (Mechanical and Industrial Engineering) from Clarkson University.

DISCUSSION GROUP 10
on
GEARS

Kenneth O. (Ken) Beckman is Chief Engineer of the Power Transmission Division of Lufkin Industries, Inc., in Lufkin, Texas. Since college graduation he has been in gear engineering with Lufkin Industries. He previously served as a Design Engineer in high-speed gearing, and in 1985 he was promoted to Chief Engineer responsible for the engineering on all gears including low-speed through high-speed, marine, and repair. Mr. Beckman has spent a considerable portion of his time working with users and service departments to solve gearing problems. The Quality Assurance Department and the Test Stand area were added to his responsibilities in 1998.

Mr. Beckman received a B.S. degree (Mechanical Engineering, 1972) from Montana State University. He is an active member of AGMA and API. He is currently on the Advisory Board for the University of Louisiana at Lafayette.

Clifford P. (Cliff) Cook retired from ChevronTexaco and is President of CVC Engineering, in Houston, Texas. He provides turbomachinery consulting services to the process industries with 42 years' experience. He is a ChevronTexaco Fellow, Emeritus, and is Chairman Emeritus and past Vice Chairman of the API Subcommittee on Mechanical Equipment and member of its Steering Committee. He is Chairman of API RP 687 and API SOME Standard Paragraphs, and past Chairman of API 613 and 677. Mr. Cook is a member of API 617, 616, 614, and past member of API 610, 684 Tutorial. He has been a member of the Texas A&M Turbomachinery Symposium Advisory Committee since 1993.

Mr. Cook has a B.S. degree from the U.S. Merchant Marine Academy, Kings Point, and an M.S. degree (Mechanical Engineering) from Lehigh University.

DISCUSSION GROUP 11
on
RECIPROCATING COMPRESSORS

Bruce Bayless is with Valero Energy Corporation, in Houston, Texas.

Bruce McCain is Senior Engineering Advisor with Oxy Permian, in Brownfield, Texas. He provides worldwide technical support on both rotating and stationary equipment with a primary focus for the past several years on reciprocating equipment. He consults on many aspects of reciprocating compressor problems including foundation strengthening and grouting, bolting and torquing, installation and maintenance, vendor surveillance, pulsation and vibration, and forensics. Mr. McCain has worked for Amoco, Rohm and Haas, Altura, and Oxy. He has contributed to various trade publications and presented at ASME functions.

Mr. McCain has a B.S. degree (Mechanical Engineering, 1987) from Texas Tech University. He is a registered Professional Engineer in the State of Texas and a Certified API 510 Pressure Vessel Inspector. He is on the Steering Committee of the Plant Engineering and Maintenance Technical Chapter of the South Texas Section of ASME, West Texas Boiler Safety Association, and Texas Tech Academy of Mechanical Engineers.

Donald R. Smith is a Senior Staff Engineer at Engineering Dynamics Inc. (EDI), in San Antonio, Texas. For the past 40 years, he has been active in the field engineering services, specializing in the analysis of vibration, pulsation, and noise problems with rotating and reciprocating equipment. He has authored and presented several technical papers. Prior to joining EDI, he worked at Southwest Research Institute for 15 years as a Senior Research Scientist, where he was also involved in troubleshooting and failure analysis of piping and machinery.

Mr. Smith received his B.S. degree (Physics, 1969) from Trinity University. He is a member of ASME and the Vibration Institute.

DISCUSSION GROUP 12
on
STEAM TURBINE DESIGN, OPERATION, AND MAINTENANCE

Gampa I. Bhat is Chief Machinery Engineer for ExxonMobil Chemical Company, in Baytown, Texas. As Lead Specialist, he acts as the focal point for the ExxonMobil Chemical Worldwide Machinery Network and is involved with the development of machinery strategies for new and upgrade projects. He is also involved in the selection, operation, maintenance, and troubleshooting of machinery systems.

Mr. Bhat received his B.S. degree (Mechanical Engineering) from Karnataka University in India, and an M.S. degree from West Virginia College of Graduate Studies. He is a member of ASME.

Vinod Patel is a Chief Technical Advisor, Machinery Technology, for KBR, in Houston, Texas. In his assignment, he is responsible in the preparation and auditing of specifications, equipment evaluation, engineering coordination, and testing and installation startup of rotating and special equipment. He has worked in various applications of rotating machinery in the petrochemical and refinery processes including ammonia, LNG, olefins, cat-cracking, and hydrotreating for domestic and international projects.

Mr. Patel received B.S. and M.S. degrees (Mechanical and Metallurgical Engineering) from Maharaja Sarajirao University and Youngstown University, respectively. He is a registered Professional Engineer in the State of Texas.

Stanley Stevenson is a Project Manager for Siemens Demag Delaval Turbomachinery, Inc., located in Hamilton, New Jersey. He has been with the company for more than 29 years and has been involved in the design, manufacture, repair, upgrade, and testing of rotating equipment for the chemical, oil and gas, utility, and power generation markets. Mr. Stevenson has been responsible for the design and component selection for rotating equipment trains and auxiliary support systems, technical and commercial interface with customers, field service support during equipment installation, startup, and resolution of field operational problems.

Mr. Stevenson has received both B.S. and M.S. degrees (Mechanical Engineering, 1980, 1983) from Drexel University. He is a member of ASME and is a registered Professional Engineer in the State of Pennsylvania. Mr. Stevenson is a member of PMI, where he is a certified PMP.

DISCUSSION GROUP 13
on
MAGNETIC BEARINGS

Gary S. Davis is the Manager, Industrial Power Generation Group at The Elliott Group, in Jeannette, Pennsylvania. He has more than 30 years of experience working with rotating equipment. Previous roles include Project Engineer, Lead Project Engineer, Project Manager, Systems Application Engineer, Manager Air Separation, and Eastern Zone Sales Manager prior to entering into the Power Generation role in 2009. He is responsible for supporting the technical and commercial efforts in providing steam turbine-generator packages worldwide.

Mr. Davis has a B.S. degree (Mechanical Engineering, 1979) from Virginia Tech.

Jeffrey Moore is a Program Manager at Southwest Research Institute, in San Antonio, Texas. His professional experience over the last 20 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 chair of the Oil and Gas Committee for IGTI Turbo Expo and a member of the Turbomachinery Advisory Committee.

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

Hans P. Weyermann is a Principal Rotating Equipment Engineer in the Drilling and Production Technology department of ConocoPhillips Upstream Company, in Houston, Texas. In his current position, he supports all aspects of turbomachinery for existing business units and grass roots capital projects. He is also responsible for overseeing corporate rotating machinery technology development initiatives within the ConocoPhillips Upstream Company.

Mr. Weyermann received a B.S. degree (Mechanical Engineering, 1978) from the College of Engineering in Brugg-Windisch, Switzerland. He joined Sulzer Escher-Wyss Turbomachinery in Zurich as an Application/Design Engineer in the turbocompressor department. Prior to joining the ConocoPhillips Company, he was the Supervisor of Rotating Equipment at Stone and Webster Engineering in Houston. Mr. Weyermann is a member of ASME, the API SOME, and serves on several API Task Forces.

DISCUSSION GROUP 14
on
WET AND DRY SCREW COMPRESSORS

Jigger Jumonville is a Senior Consulting Engineer for Atlas Copco, in Santa Maria, California. He has been associated with them since 1990 and has held many titles including Chief Engineer. Mr. Jumonville is currently involved in mechanical, aerodynamic, and magnetic bearing product upgrades, as well as troubleshooting unusual field problems. Previously, he worked for 10 years at the Dow Chemical Company in Plaquemine, Louisiana. Five of those years were spent as the Rotating Equipment Engineer in a world scale ethylene plant, where he first gained hands-on experience operating and redesigning cryogenic turboexpanders.

Mr. Jumonville received his B.S. degree (Mechanical Engineering, 1979) from Louisiana State University. He is a part-time professor at Cal Poly in San Luis Obispo, where he teaches a senior level Mechanical Engineering course in Turbomachinery. Mr. Jumonville is a registered Professional Engineer in the State of Louisiana.

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.

Donald R. Smith is a Senior Staff Engineer at Engineering Dynamics Inc. (EDI), in San Antonio, Texas. For the past 40 years, he has been active in the field engineering services, specializing in the analysis of vibration, pulsation, and noise problems with rotating and reciprocating equipment. He has authored and presented several technical papers. Prior to joining EDI, he worked at Southwest Research Institute for 15 years as a Senior Research Scientist, where he was also involved in troubleshooting and failure analysis of piping and machinery.

Mr. Smith received his B.S. degree (Physics, 1969) from Trinity University. He is a member of 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.

DISCUSSION GROUP 15
on
TURBOMACHINERY BEARINGS AND ANNULAR SEALS

Thomas R. (Tom) Davidson is Chief Mechanical Engineer, Global Operations Reliability Support for Linde, Inc., in Pasadena, Texas. His primary responsibility is developing and implementing equipment reliability improvement programs for both rotating and fixed equipment. Mr. Davidson is also responsible for assisting in machinery selection, overhauls, and developing and implementing design improvements to enhance equipment reliability and availability. He has more than 30 years of experience in the petrochemical and process gas industry, in the field of equipment reliability, maintenance management, and turnaround planning and scheduling.

Mr. Davidson received a B.S. degree (Mechanical Engineering, 1978) from the University of Houston. He is a member of ASME, NSPE, the Vibration Institute, and he serves on the Turbomachinery Symposium Advisory Committee. Mr. Davidson is also a registered Professional Engineer in the State of Texas.

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Mr. Leader obtained his B.S. (1977) and M.S. (1978) degrees from the University of Virginia. While there, he worked extensively on experimental rotordynamics and hydrodynamic bearing design. He has written several papers on the subjects of experimental rotordynamics, bearing design, design audits for rotating equipment, and practical implementation of rotordynamic programs. Mr. Leader is a member of ASME, Sigma Xi, the Houston Chapter of the Vibration Institute, and is a registered Professional Engineer in the State of Texas.

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.

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DISCUSSION GROUP 16
on
INTEGRALLY GEARED COMPRESSORS

Bradley Addison is a Senior Consulting Engineer in the Rotating Machinery Group of DuPont Engineering Research and Technology, in Wilmington, Delaware, and has worked in the turbomachinery field for 25 years. Prior to joining DuPont, he worked as a Maintenance Engineer at Air Liquide, responsible for machinery maintenance for plants in the Northeast US. Prior to that, he was a Validation Project Manager and Senior Machinery Engineer at MG Industries, responsible for turbines, compressors, pumps, expanders, and cooling systems at plants in the US and abroad. The first part of his career was with Pratt & Whitney Aircraft's commercial gas turbine division, where he was responsible for powerplant performance analysis and aerodynamic design.

Mr. Addison has a B.S. degree (Mechanical Engineering, 1982) from Lafayette College and an M.S. degree (Mechanical Engineering, 1986) from Rensselaer Polytechnic Institute.

Kenneth O. (Ken) Beckman is Chief Engineer of the Power Transmission Division of Lufkin Industries, Inc., in Lufkin, Texas. Since college graduation he has been in gear engineering with Lufkin Industries. He previously served as a Design Engineer in high-speed gearing, and in 1985 he was promoted to Chief Engineer responsible for the engineering on all gears including low-speed through high-speed, marine, and repair. Mr. Beckman has spent a considerable portion of his time working with users and service departments to solve gearing problems. The Quality Assurance Department and the Test Stand area were added to his responsibilities in 1998.

Mr. Beckman received a B.S. degree (Mechanical Engineering, 1972) from Montana State University. He is an active member of AGMA and API. He is currently on the Advisory Board for the University of Louisiana at Lafayette.

Carl L. Schwarz is Chief Engineer, Turbomachinery for Praxair at the Praxair Technology Center, in Tonawanda, New York. He is responsible for the design and development of specialized turbomachinery. Previously, Mr. Schwarz was with Atlas Copco Compressors Inc. for 16 years where his responsibilities were with design, development, manufacturing, and testing of integrally geared compressors for the air and process gas industries. Positions previous to this were with Sulzer Turbosystems and Pratt and Whitney Aircraft.

Mr. Schwarz graduated from Union College, Schenectady (1975), and has been active on the API 617 Task Force (Seventh Edition) as well as the European Industrial Gas Association (EIGA) committee for revising the Code of Practice for Oxygen Compressors (Sixth Edition).

Stanley Stevenson is a Project Manager for Siemens Demag Delaval Turbomachinery, Inc., located in Hamilton, New Jersey. He has been with the company for more than 29 years and has been involved in the design, manufacture, repair, upgrade, and testing of rotating equipment for the chemical, oil and gas, utility, and power generation markets. Mr. Stevenson has been responsible for the design and component selection for rotating equipment trains and auxiliary support systems, technical and commercial interface with customers, field service support during equipment installation, startup, and resolution of field operational problems.

Mr. Stevenson has received both B.S. and M.S. degrees (Mechanical Engineering, 1980, 1983) from Drexel University. He is a member of ASME and is a registered Professional Engineer in the State of Pennsylvania. Mr. Stevenson is a member of PMI, where he is a certified PMP.

DISCUSSION GROUP 17
on
ADVANCED TOPICS IN CENTRIFUGAL COMPRESSOR DESIGN

Leonardo Baldassarre is Engineering Manager & Principal Engineer for Compressors & Expanders with General Electric Oil & Gas Company, in Florence, Italy. He is responsible for all requisition, standardization, and CAD automation activities as well as detailed design of new products for centrifugal compressors, reciprocating compressors, and turboexpanders both in Florence (Nuovo Pignone), Le Creusot (Thermodyn), and Oshkosh (AC). Dr. Baldassarre began his career with General Electric Nuovo Pignone in 1997. He has worked as Design Engineer, R&D Team Leader for centrifugal compressors, Product Leader for centrifugal and axial compressors, and Requisition Manager for centrifugal compressors both for Florence and Le Creusot teams.

Dr. Baldassarre received a B.S. degree (Mechanical Engineering, 1993) and Ph.D. degree (Mechanical Engineering/Turbomachinery Fluid Dynamics, 1998) from the University of Florence. He has authored or coauthored 20+ technical papers, mostly in the area of fluid dynamic design of 3D transonic impellers, rotating stall, and rotordynamics. He presently holds four patents.

Michael J. Drosjack is a Senior Principal in the Rotating Equipment Department at Shell Global Solutions (US) Inc., in Houston, Texas. He is responsible for providing technical support for rotating and reciprocating machinery to Shell and Shell affiliated companies worldwide, as well as commercial customers. Since joining Shell in 1975, he has had assignments on projects involving specification, evaluation, installation, and startup of machinery along with extensive field troubleshooting, particularly in the area of vibration measurement, vibration analysis, and rotordynamics.

Dr. Drosjack received his B.S. degree (Mechanical Engineering, 1970) from Carnegie-Mellon University, and his M.S. (1971) and Ph.D. (1974) degrees (Mechanical Engineering) from The Ohio State University. He is a member of ASME, the Vibration Institute, the Machinery Subcommittee of the Ethylene Products Committee, participates in API task forces, and has been a speaker and panelist for NPRA. He has been a Turbomachinery Symposium Advisory Committee member since 1986.

Wolfgang Faller is Program Manager, Industrial Technology, with Concepts NREC, in Woburn, Massachusetts. Prior to employment in the US, he worked for an automotive subsupplier and at various Sulzer divisions for 16 years: marine propellers, hydraulic turbines, and integral gear compressors. During his time as Head of Engineering at Sulzer Turbo in Ravensburg, Germany, Dr. Faller was directly involved in the development of the compressor described in this paper. Prior to his industrial employment, he worked at his former university and in India.

Dr. Faller graduated with a diploma in Naval Architecture from the Technical University of Berlin (1983), after completing his studies both in Berlin and at the University of Michigan, Ann Arbor. He finished his doctorate while working at Sulzer (1989) in the field of marine propellers. He has presented several papers both on hydrodynamics and on thermal turbomachinery related issues in Europe, Japan, and the US.

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.

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

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Mr. Pettinato received his B.S. (Mechanical Engineering, 1989) and M.S. (Mechanical Engineering, 1992) degrees from the University of Virginia. He has coauthored more than 10 technical papers, and holds one U.S. Patent, and is a registered Professional Engineer in the State of Pennsylvania. Mr. Pettinato serves on the API 684 rotordynamics task force, and is a member of both ASME and STLE. He is a former Chairman of the Pittsburgh Section of STLE.

James M. (Jim) Sorokes is a Prinicipal Engineer with 34 years of experience at Dresser-Rand Company, in Olean, New York. He is involved in centrifugal compressor research and development testing. He previously spent 28 years in the Aerodynamics Group, becoming the Supervisor of Aerodynamics in 1984 and promoted to Manager of Aero/Thermo Design Engineering in 2001. During Mr. Sorokes' time in the Aerodynamics Group, his primary responsibilities included the development, design, and analysis of all aerodynamic components of centrifugal compressors. His professional interests include: aerodynamic design, aeromechanical phenomenon (i.e., rotating stall), and other aspects of large centrifugal compressors.

Mr. Sorokes graduated from St. Bonaventure University (1976). He is a member of AIAA, ASME, and the ASME Turbomachinery Committee. He has authored or coauthored more than 35 technical papers and has instructed seminars and tutorials at Texas A&M and Dresser-Rand. He currently holds two U.S. Patents and has two other patents pending.

Alberto Tesei is a consultant for GE Oil&Gas, in Firenze, Italy. He has been involved in the turbomachinery industry for more than 40 years. His career at Nuovo Pignone and GE Oil&Gas has covered various management positions, such as Centrifugal Compressor Chief Engineer, General Manager Gas Turbines, and General Manager Midstream Division.

Mr. Tesei graduated (Mechanical Engineering) from the University of Rome.

Norbert G. Wagner is Head of Component Development within Siemens Energy Sector, Oil & Gas Division, Compressor Product Development, in Duisburg, Germany. In this capacity, he is responsible for the basic technologies. He has worked in particular on dynamic coefficients of labyrinth seals and he has authored several papers on rotordynamics of high-pressure applications.

Dr. Wagner received his Diplom degree in 1981 from the University of Duisburg and his doctorate from Technical University of Darmstadt in 2000.