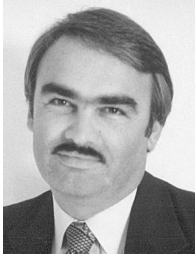


DISCUSSION GROUP 1
on
CENTRIFUGAL PUMP OPERATION, MAINTENANCE, AND RELIABILITY



John W. Silcott, Coordinator, is an Engineering Associate responsible for rotating equipment for Celanese Chemical and is located at the Clear Lake plant near Houston, Texas. His primary responsibilities are rotating equipment and maintenance, to include project review and support, problem solving, vibration analysis, repair, lubrication, and predictive/preventive maintenance programs. He also has responsibilities to the global Center for Excellence for rotating equipment. He worked for Dow Chemical from 1970 to 1974 and joined Celanese in 1974 where he has worked in technical and supervisory roles related to rotating equipment.

Mr. Silcott received a B.S. degree (Mechanical Engineering, 1970) from New Mexico State University. He is a member of the Vibration Institute, ASME, Chairperson of the Advisory Committee for the Industrial Maintenance Technology program at Texas State Technical College, and a member of the Pump Symposium Advisory Committee since 1987.



Kerry F. Gunn, Coordinator, is currently a Rotating Equipment Technologist at Sterling Chemicals, Inc., in Texas City, Texas. He is involved in technical support for machinery repair; troubleshooting of rotating equipment; and design, selection, and installation of new machinery. Prior to his current position, Mr. Gunn worked for five years at Quantum Chemicals Houston Plant as an Area Maintenance Engineer and Project Engineer. Previously, Mr. Gunn was a Senior Research Engineer at Exxon Research and Engineering for nine years. He participated in design, construction, and operation of synthetic fuels pilot plants.

Mr. Gunn received a B.S. degree (Mechanical Engineering, 1975) from Oklahoma University and an M.S. degree (Mechanical Engineering, 1977) from Purdue University. He is a member of the Vibration Institute and ASME.

Martin T. Bowling is a Rotating Equipment Engineer in the Reliability Group at BP Amoco Chemicals, in Alvin, Texas. He has held a variety of positions at BP Amoco in reliability, maintenance, and project engineering, and has worked in the Texas City and Salt Lake City Refineries. His primary focus in these positions has been optimizing pump and compressor seal performance, troubleshooting equipment problems, vibration analysis, lube oil analysis, and improving equipment performance and reliability through improved operations.

Mr. Bowling received a B.S. degree (Mechanical Engineering, 1989) from Texas A&M University and a B.S. degree (Mechanical Technology, 1985) from the University of Houston.



David W. Lawhon is a Staff Facilities Engineer for Shell International Exploration and Production, in New Orleans, Louisiana. He is responsible for the engineering, specifications, and installation of major turbomachinery for Shell's international offshore projects. He also provides consulting services on rotating equipment, vibration analysis, rotating equipment design reviews, and root-cause failure analysis.

Mr. Lawhon received his B.S. degree (Mechanical Engineering, 1985) from Texas A&I University, Kingsville, and his MBA degree from Texas A&M University, Corpus Christi (1997).



Alan S. Pyle is a Staff Engineer in the Mechanical Equipment Department of Shell Chemical's Deer Park Chemical Plant, in Deer Park, Texas. He provides rotating equipment support to the olefins units. During his 25 years with Shell, he has been in various rotating equipment support assignments in refineries, natural gas liquids processing plants, and chemical plants. Mr. Pyle is currently a member of the task force that is preparing the Fifth Edition of API 618, "Specification for Reciprocating Compressors," and is the Chairman of the task force that is writing a new API document RP688, "Tutorial on Pulsation Control," that will supplement API 618.

Mr. Pyle joined Shell in 1976 after receiving a BSME degree from West Virginia University. He is a member of ASME and SAE.



Watson Tomlinson is presently a Pump Improvement Engineer in the Flow Solutions Division of Flowserve, in Mt. Holly, North Carolina. He joined Flowserve/IDP in the fall of 1999 after more than 17 years with Duke Power Company. His present responsibilities include engineering field support for problem pumps at commercial facilities in the southeast United States and nuclear facilities throughout the U.S. Prior to IDP, Mr. Tomlinson was responsible for coordinating the nuclear pump program for Duke Power Company. His experience also included maintenance and troubleshooting of rotating equipment, where he worked in both nuclear and fossil stations.

Mr. Tomlinson has a B.S. degree (Mechanical Engineering, 1982) from North Carolina State University and is a registered Professional Engineer in the State of North Carolina.



Steve Walden is the Reliability Engineer for the Styrene Strategic Business Unit of Sterling Chemicals, Inc., in Texas City, Texas. His primary responsibilities include developing and managing the reliability program for the 5MM lb/day styrene unit. He is involved in rotating equipment troubleshooting and repair, root cause failure analysis, analysis of vibration data, training operators and machinists, project development, and other duties. He was previously with Equistar Chemicals LP, Solvay Polymers Inc., and Amoco Chemicals.

Mr. Walden has a Bachelor of Arts and Sciences (1977) from The University of Oklahoma and a BSME (1989) from Oklahoma State University.

DISCUSSION GROUP 2

on

MECHANICAL SEALS



Joseph M. Thorp, Coordinator, is an Engineering Specialist within the Technical Services Department of Aramco Services Company (ASC), in Houston, Texas. He has provided technical support for Saudi Arabian Oil Company (Saudi Aramco) projects in Europe and North America, along with supporting field activities during interim assignments in Saudi Arabia as part of the Consulting Services Department. Mr. Thorp is Saudi Aramco's designated representative to the American Petroleum Institute Subcommittee on Mechanical Equipment that includes Vice Chairmanship of API 610 (Centrifugal Pump) and Chairmanship of API 682 (Seals). He is the API mechanical equipment representative to the International Standards Coordinating Committee who interfaces with ISO, headquartered in Europe. Prior to joining ASC, he worked with Phillips Petroleum Company.

Mr. Thorp holds a B.S. degree (Mechanical Engineering) from Michigan State University and an MBA from the University of St. Thomas. Mr. Thorp is a registered Professional Engineer in the State of Texas.



Roger S. Turley, Coordinator, is the Director of Engineering at Flowserve Corporation, Flowserve Pump Division, and is based in Dayton, Ohio. He has 15 years experience in the pump industry.

Mr. Turley received B.S. and M.S. degrees from Brigham Young University. He has received patents for innovations in pump design and has published several articles in leading industry publications.

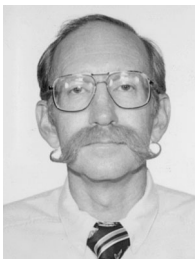
Darren P. Hebert is a Staff Engineer for the Shell Deer Park Refining Services Company, in Deer Park, Texas. He has 15 years of experience in the oil and petrochemical industry and has been involved with rotating equipment for the last 11 years. Mr. Hebert is presently assigned as the Rotating Equipment Team Leader for Projects/E&C. In this role, he provides guidance to the Project Engineering/E&C organization on rotating equipment specification, selection, installation, and field construction. He is a member of the corporate mechanical seal team and is the focal point for mechanical seals inside the refinery.

Mr. Hebert received a B.S. degree (Mechanical Engineering, 1988) from Lamar University.



Michael B. Huebner is a Staff Engineer at Flowserve Corporation, Flow Solutions Division, in Deer Park, Texas. He has more than 20 years experience in the design of mechanical seals, centrifugal and positive displacement pumps, and fluid conditioning equipment. For Flowserve, he has served in design, testing, and application functions in both the U.S. and Europe.

Mr. Huebner is a member of the International Pump Users Symposium Advisory Committee and the API 682 Task Force. He received his B.S. degree (Engineering Technology) from Texas A&M University.



Francis H. Kludt is the Associate Rotating Equipment Engineer at the Celanese, Pampa, Texas plant. His present responsibilities include maintenance engineering and technical support for all rotating equipment in the plant. This includes project review and consultation, troubleshooting, repair, lubrication, reliability improvements, and preventive/predictive maintenance programs. He worked with the Westinghouse Power Generation Service Division as Service Engineer and Advanced Reliability Engineer (1969 to 1976), and at Olin Chemical as Senior Maintenance Engineer (1976 to 1978), before joining Celanese Chemical in 1978. He has been a coauthor of papers for the Turbomachinery Symposium.

Mr. Kludt received a B.S. degree (Mechanical Engineering, 1969) from Texas A&M University and an MBA degree (Management, 1999) from Wayland Baptist University. He is a member of ASME, the Vibration Institute, and is a registered Professional Engineer in the State of Texas.



Todd Monroe is Engineering Manager for C.R. Gregg & Associates, Inc., in Houston, Texas. Before joining them in 2000, he was Senior Rotating Equipment Engineer for Equistar Chemical. He has more than 17 years' experience in the installation, commissioning, and maintenance of rotating equipment. His "hands-on" experience includes the installation and commissioning of rotating equipment on four major grass-roots petrochemical facilities. He is also the architect of C.R. Gregg & Associates' Stay-Tru™ Machinery Installation Systems.

Mr. Monroe received a B.S. degree (Mechanical Engineering, 1984) from Texas Tech University, and is a registered Professional Engineer in the State of Texas.



Faith L. Polk is a Mechanical Specialist in the Machinery Engineering Group with The Dow Chemical Company, in Plaquemine, Louisiana. She specializes in pumps and mechanical seal systems and their reliability for the site. She joined the Dow Louisiana Operations in 1988 in the Machinery Engineering Group, where she spent several years installing, troubleshooting, and specifying all types of rotating mechanical equipment. Currently, she is a member of Dow's global pump and seal specialist group that focuses on pump and seal issues, technology, shared global problem solving, troubleshooting, and general specifications.

Mrs. Polk received a B.S. degree (Mechanical Engineering, 1987) from Tennessee Technological University.

DISCUSSION GROUP 3
on
BEARINGS AND LUBRICATION



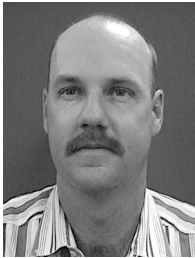
Lev Nelik, Coordinator, is President of Pumping Machinery, in Bridgewater, New Jersey. He has over 20 years of engineering, manufacturing, sales, field, and management experience in the pump industry. He has previously worked at Liquiflo, Roper Pump, Ingersoll-Rand, and Goulds Pumps.

Dr. Nelik is a registered Professional Engineer and has published over 50 papers, including a pumps section for the *Encyclopedia of Chemical Technology*, a section for the *Handbook of Fluids Dynamics*, and a book *Centrifugal and Rotary Pumps: Fundamentals with Applications*.

Dr. Nelik is a member of the International Pump Users Symposium Advisory Committee, an Advisory Board Member of *Pumps & Systems* and *Pumping Technology* magazines, and a former Associate Technical Editor of the *Journal of Fluids Engineering*. He is a full member of ASME, and a Certified APICS (CIRM). He is a graduate of Lehigh University with an M.S. degree (Manufacturing Systems) and a Ph.D. degree (Mechanical Engineering).

Dennis G. Bowman, Coordinator, is a Consulting Engineer with HydroTex Dynamics, Inc., in Houston, Texas, a manufacturer and refurbisher of large centrifugal pumps serving the power utility and oil refining and pipeline industries. He has 27 years of industrial experience in centrifugal pump design, analysis, and troubleshooting. Mr. Bowman has designed pumps for nearly all safety-related services in PWR type nuclear power stations and performed the only full scale, full speed, full load flow visualization study of cavitation (8000 bhp per stage) boiler feed pumps.

Mr. Bowman has a BSME degree from California State University, Pomona, and is a registered Professional Engineer in the State of California. He has authored technical papers for ASME's Fluid Machinery Division and Texas A&Ms International Pump Users Symposium, and has been granted patents for unique pressure boundary joint designs and fabrication techniques.



Chesley Brown is Senior Engineer in the System Engineering Department for TXU Energy, Comanche Peak Steam Electric Station, in Glen Rose, Texas. CPSES is a two unit, 1150 megawatt (each), nuclear generation facility. His primary duties include coordination of both the Lubricant Analysis Program and the Lubricant Control Program, with collateral duties in vibration analysis, acoustic emission analysis, thermography, and bearing failure analysis. He joined TU Energy in 1987 as an Associate Engineer in the Maintenance Engineering Department.

Mr. Brown received a B.S. degree in Agricultural Engineering and a B.S. degree in Mechanical Engineering from Texas A&M University. He is an active member of STLE and ICML.



Joseph R. Cervassi is a Staff Engineer with Exxon Chemical Company, in Baytown, Texas. He is presently assigned to Major Projects where he is involved in specification and NPQC of both general and special purpose machinery. Until recently, he was the Section Supervisor of the Machinery Section in Exxon's Baytown Olefins plant.

Since joining Exxon in 1978, he has had several assignments in engineering with Exxon Enterprise, Exxon Chemical Bayway, and Aramco. Prior to joining Exxon, he worked for Drew Chemical Company on industrial water and fuel additives.

Mr. Cervassi received his B.A. degree (Chemistry) from Boston University, and an M.S. degree (Chemical Engineering) from New Jersey Institute of Technology.



Donald C. (Don) Ehlert has been employed with Lubrication Systems Company, in Houston, Texas, for the past 25 years. His present position is that of Sales Manager. Mr. Ehlert has been involved with lubrication equipment and system technology for a total of 34 years. His present responsibilities include product sales in North America, along with being a key account manager to several major clients.

Mr. Ehlert has field maintenance and system installation experience that spans a large number of industries. He has served as a technical sales representative and has system experience that includes troubleshooting of aviation flight control systems for the U.S. Navy, research and development of oil field land and subsea wellhead controls, and blowout preventer systems. Mr. Ehlert has authored several articles on the practical use and justification of lubrication systems, and presides over training classes and lubrication workshops for end users.



Donald H. Hastie is a Senior Project Engineer for the Torrington Company, Fafnir Bearings Division, in Torrington, Connecticut. He is responsible for design and application of ABEC 1 and ABEC 3 angular contact, double row, and radial ball bearings. He has worked for Torrington's Fafnir Division for 12 years. Prior to joining Fafnir, Mr. Hastie worked in technical positions for Barden, Barry Controls, and Armstrong Rubber.

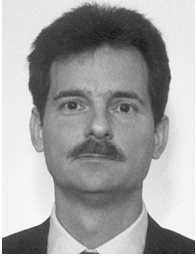
Mr. Hastie received his B.S. degree (Mechanical Engineering, 1979) from Northeastern University.



Michael Polk is the founder and President of Reliability Associates, a turbomachinery consulting firm, in Slidell, Louisiana. He retired from Mobil Oil's (formerly Tenneco) Chalmette Refinery in 1996, after 16 years of service as a Staff Reliability Specialist and Machine Shop Supervisor.

Mr. Polk has more than 30 years of experience with rotating equipment. He has had broad experience in the installation and repair of rotating equipment in oil production facilities, petrochemical plants, and other industries. Previous employers include the Elliott Company, Brown and Root, Inc., Melamine Chemicals, Bernard and Burke, and Chevron, USA.

Mr. Polk has written for several technical publications, and is affiliated with the Vibration Institute (past officer) and Gulf South Compression Conference. He has a technical degree from Nashville Auto-Diesel College.



Patrick Stepchinski is a Machinery Engineer for GDS Engineers, Inc., in Baytown, Texas. His responsibilities include machinery bid/purchase specification writing and analysis of machinery problems for petrochemical clients in the Houston/Texas City area.

Mr. Stepchinski was previously employed by Exxon Company, USA, at the Baytown Refinery for 16 years. His assignments included: oil mist lubrication system design and troubleshooting; vibration and failure analysis of pumps, motors, fans, compressors, gearboxes, steam turbines, and gas turbines; specification writing and bid evaluation of new machinery; commissioning of new pumps, motors, compressors, steam turbines, and gas turbines.

Mr. Stepchinski graduated with a B.S. degree (Mechanical Engineering, 1976) from the University of Houston. He is a member of ASME, has Vibration Specialist Level II certification from the Vibration Institute, and is a registered Professional Engineer in the State of Texas.

DISCUSSION GROUP 4
on
COUPLINGS, ALIGNMENT, AND PIPESTRAIN

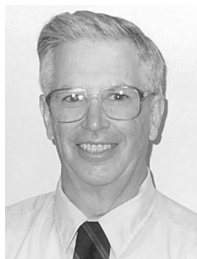


Michael W. Johnson, Coordinator, is a Pipe Stress Engineer in the Reliability Engineering Department of Reliant Resources, in Houston, Texas. Mr. Johnson graduated from the University of North Dakota (1980) and is a registered Professional Engineer in the State of Texas.



John B. Stokes, Coordinator, is a Principal Machinery Engineer for Lyondell-Citgo Refining LP, in Houston, Texas. In his current assignment, he provides technical support for the design, installation, operation, and maintenance of the machinery in the FCCU and oil movements areas.

Mr. Stokes received a BSME from Louisiana Tech University in 1978. He is a member of ASME and is a registered Professional Engineer in the States of Louisiana and Texas.



Donald B. (Don) Cutler is Technical Service Manager for the Thomas Flexible Disc Coupling Operations of Rexnord Corporation, in Warren, Pennsylvania. He spent five years as a field service supervisor with Dresser Clark. During this period, he developed an optical hot alignment check system for the rotating equipment along with graphical analysis of reverse indicator alignment. He then served eight years leading up to Head Contract Engineer for Dresser Clark, before joining Rexnord as Manager of Engineering.

In the past, Mr. Cutler has been a tutorial speaker on coupling hydraulic mounting at the Turbomachinery Symposium. He holds a patent on coupling balancing. He also serves on active committees with both API and AGMA in coupling specification development.

Mr. Cutler graduated from the University of Vermont with a B.S. degree (Mechanical Engineering, 1954). He went to graduate school at New York University in Meteorology while with the United States Air Force.



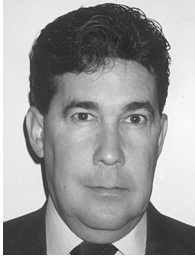
David W. (Dave) Diehl manages training and marketing at COADE Engineering Software, in Houston, Texas. Prior to joining COADE in 1986, he developed his skills in pipe stress analysis by providing technical support to users of AUTOFLEX and DYNAFLEX. At COADE, Mr. Diehl brings his 25 years of experience in pipe stress analysis by training CAESAR II users around the world and specifying and testing program improvements to COADE's piping and pressure vessel analysis programs. He authored an article entitled "Improve Pump Load Evaluation," published in the April 1998 issue of Hydrocarbon Processing.

Mr. Diehl is a registered Professional Engineer in the State of Texas, sits on the Board of Directors of the Society of Piping Engineers and Designers (SPED), and is a member of ASME B31.3 Subgroup on Activities.



Jon R. Mancuso is Director of Engineering with Kop-Flex Inc., Emerson Power Transmission Corporation, in Baltimore, Maryland. He has more than 30 years experience in the coupling field and is author of many papers on couplings for various publications, societies, and symposia. Mr. Mancuso is also author of a book on couplings, *Coupling and Joints: Design, Selection, and Application*, and editor and author of several chapters in *Mechanical Power Transmission Components Handbook*. He has been involved with many design, research projects relating to couplings, and is coinventor of several patents with couplings and clutches.

Mr. Mancuso graduated from Gannon University with a B.S. degree (Mechanical Engineering), and has an M.S. degree (Engineering Science) from Pennsylvania State University. He is chairing the ASME Committee on Couplings and Clutches. In addition, he is a member of the AGMA Coupling Committee, and also serves on the API Committee on Couplings for Special Purpose Applications.



C. Richard Massey is the President of A-Line Manufacturing Company, Inc., a manufacturer of precision reverse alignment tools, located in Liberty, Texas. He gained 16 years of experience with the Atlantic-Richfield Houston refinery as a machinist. After being granted a patent on the alignment tools he now manufactures, he took early retirement from ARCO and founded A-Line Manufacturing in 1985.

Mr. Massey is a member of ASME, the Vibration Institute, International Maintenance Institute, and the Pacific Energy Association.



Christopher P. (Chris) Rackham is Engineering Manager for John Crane Flexibox, in Houston, Texas. He has been with Flexibox, Inc., since receiving a B.S. degree in Engineering from Pennsylvania State University (1979). Prior to his current position, he served as Design Engineer and Applications Engineer. His responsibilities include design specifications, application reviews, quality assurance, and field support for power transmission couplings, mechanical seals, and ancillary equipment.

Mr. Rackham has served on the API Manufacturers Subcommittee on Couplings (671) and consultant to API Manufacturers Subcommittee on Mechanical Seals (610).



Robert (Bobby) Vega is Senior Mechanical Inspector with Shell Chemical Company, at the Norco Refinery, in Norco, Louisiana. He began his career in 1972 as a machinist, serving a four-year apprenticeship in the New Orleans area. He joined Shell Chemical Company in 1978 as a Machinist, performing routine maintenance work on turbines, pumps, gearboxes, etc. In 1990, he began his career as a Mechanical Inspector for Project Engineering, which is largely new construction.

In addition to being a Mechanical Inspector, Mr. Vega also handles all the pipe stress analysis for Shell Chemical Company at the Norco facility. He began doing stress analysis in 1997. As a Mechanical Inspector, he can relate to the importance of pipe alignment to mechanical equipment when he is doing a stress analysis.

DISCUSSION GROUP 5
on
VERTICAL PUMP PROBLEMS AND SOLUTIONS

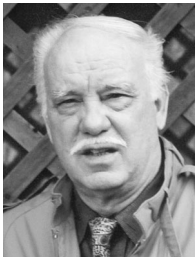


Herman A.J. Greutink, Coordinator, formerly Vice President and Technical Director, is now Consultant to Johnston Pump Company, in Brookshire, Texas. Mr. Greutink has demonstrated his engineering expertise on large vertical pump projects worldwide, and he is internationally acknowledged as one of the pump industry's long standing experts on vertical pump design, testing, and application. He frequently conducts pump seminars for the engineering personnel of customers and for consulting and construction firms throughout the world.

He was educated at the Mechanical Engineering College in Enschede, The Netherlands. From 1951-58, Mr. Greutink was Project Engineer for Aramco, Oil Handling Facilities, Dhahran, Saudi Arabia. Since 1958, he has been in engineering management at Johnston Pump Company. He is a member of the Hydraulic Institute and ASME.



Morgan M. (Morg) Bruck currently works for Marathon Ashland Petroleum in the Engineering Standards and Technical Support group that supports Marathon Ashland Pipeline and Marathon Ashland Petroleum's Light Products and Asphalt Terminals. He has worked with the specification, installation, and maintenance of rotating equipment as an engineer since January 1970. Mr. Bruck has had responsibility for the specification, installation, and maintenance of rotating equipment since 1985.



Ronald F. (Ron) Grayson has been employed with Johnston Pump Company, in La Porte, Texas, since 1977, in the position of Sales and Service Representative. His duties are the application of new vertical pumps, retrofitting existing equipment, and the modification of any brand of vertical pump to meet the customer's specifications. He has extensive experience in vertical pump installation, field troubleshooting of systems, and modifications of pumps.



Thomas R. Smith leads the plant Rotating Equipment/Equipment Reliability Team at the DC Cook Nuclear Plant, for American Electric Power, in Bridgman, Michigan. As a whole, the nuclear power industry is placing an important emphasis on equipment reliability, to promote longevity of its fleet of aging power plants. At DC Cook, equipment reliability is second only to the safe operation of the facility. Mr. Smith's professional expertise has been in the area of plant engineering. Specifically, his focus has been on component and maintenance engineering. He has spent 20 years in the nuclear power industry, and previously spent 12 years in the petroleum, pulp, and paper industry.

Mr. Smith graduated from Arkansas Technical University (1994), and is a member of ASME, EPRI, and the Welding Society.

DISCUSSION GROUP 6
on
PUMP VIBRATION MONITORING AND ANALYSIS



Thomas R. (Tom) Morton, Coordinator, is Vice President for Engineering for Sulzer Pumps (U.S.) Inc., in Portland, Oregon. His current responsibilities include direction of Design, Order Related Engineering, Field Engineering, Hydraulics Department, and CAD. He has been with Sulzer Bingham (formerly Bingham Willamette Company) since 1969, serving in managerial/leadership positions.

Mr. Morton was born, raised, and educated in Scotland at Stow College, Glasgow. Before leaving Scotland, he was employed at G&J Weir Pump Company, Glasgow.

Mr. Morton is a member of ASME and the International Pump Users Symposium Advisory Committee.



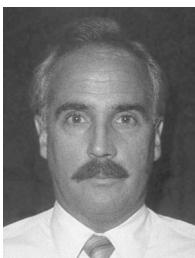
Vernon L. (Vern) Maddox, Jr., Coordinator, is Senior Engineering Advisor with Equistar Chemicals LP, Channelview, Texas. In this capacity, he serves as a consultant to all Equistar facilities on machinery engineering, condition monitoring, and vibration analysis for new and existing equipment. Mr. Maddox also provides services to new projects in the area of equipment selection, specifications, and installation and startup of rotating and reciprocation equipment. He has more than 35 years of experience in machinery engineering, troubleshooting, and condition monitoring. Prior to his current assignment, he was in charge of reliability engineering and condition monitoring operations at the Equistar facilities at Clinton, Iowa, and LaPorte, Texas.

Mr. Maddox has a B.S. degree (Mechanical Engineering) from the University of Texas, Austin. He is a member and former Director of the Vibration Institute and is a registered Professional Engineer in the State of Texas.



Mark Cooper is a Senior Machinery Engineer with Equistar Chemicals LP, in the Central Machinery and Reliability Engineering Department, in Channelview, Texas. He has been involved for the past 10 years with machinery reliability, root cause failure analysis, and machinery design improvements for polymer, chemical, and olefins units within Equistar Chemicals.

Mr. Cooper received a B.S. degree (Mechanical Engineering) from Lamar University in (1991).



Patrick J. Gonzales is presently Senior Vibration Specialist for the Pump Division of Flowserve Corporation, in Vernon, California. He is responsible for establishing generic rotordynamic and structural signatures for new designs, and for furnishing technical assistance in diagnosing rotating equipment vibration problems.

Mr. Gonzales has been associated with the Pump Division for 35 years in the areas of design, testing, and field problems involving vibration, fluid pulsation, and noise. He was directly involved in the development of the Byron Jackson feedpump expert diagnostic software program, which diagnoses vibration and flow related problems on horizontal type feed pumps.

Mr. Gonzales graduated from East Los Angeles College with an A.A. degree (Engineering Technology, 1966).



Terry Hernandez is the Rotating Equipment Engineer supervisor at Lyondell Chemical, in Channelview, Texas. He supervises technicians responsible for the vibration and lube oil predictive maintenance programs along with the mechanical inspection and quality control on outside machinery repairs. Mr. Hernandez also provides technical machinery support to maintenance and operation personnel, manages turnaround execution on major machinery repair overhauls or upgrades, troubleshoots equipment problems, evaluates equipment repair techniques, generates machinery repair work scope and bid packages, develops maintenance procedures, develops machinery design changes, revises machinery specifications, and installs machinery upgrades. He prepares specifications, evaluates bids, purchases, and installs machinery for project activities.

Mr. Hernandez graduated from McNeese State University with a B.S. degree (Mechanical Engineering, 1974) and has worked since then in turbomachinery installation, maintenance, performance and troubleshooting, vibration analysis and field balancing, and mechanical seals. He is also active in professional development seminars with the

ASME South Texas Chapter.



Malcolm E. Leader is a Turbomachinery Consultant and Owner of Applied Machinery Dynamics, in Dickinson, Texas. He is currently involved in the design, testing, modification, and installation of rotating equipment. He spends time doing theoretical design audits and working in the field implementing changes and overseeing installations.

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.



Steven M. Schultheis is a Consulting Engineer in the Specialty Engineering group of Lyondell Chemical Company, in Channelview, Texas. His specialty is the analysis of machinery dynamics problems, especially in the areas of vibration and pulsation. He is also a specialist in data acquisition and condition monitoring. In his current position, he is responsible for troubleshooting machinery problems, providing corporate direction for condition monitoring, plant startup assistance, shop acceptance testing, and project engineering support. His current major assignment is technical support for the engineering and construction of two grass roots chemical plants in the Netherlands.

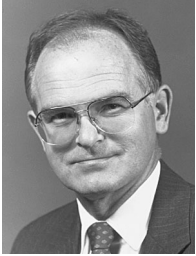
Mr. Schultheis has a B.S. degree (Mechanical Engineering) from New Mexico State University. He is a registered Professional Engineer in the State of Texas, and is a certified Vibration Specialist Level III. He is a member of ASME and the Vibration Institute.



Donald R. Smith is a Senior Project Leader at Engineering Dynamics Incorporated (EDI), in San Antonio, Texas. For the past 30 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.

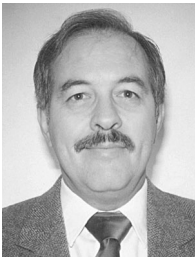
Mr. Smith received his B.S. degree (Physics, 1969) from Trinity University. He is a member of ASME and the Vibration Institute.

DISCUSSION GROUP 7
on
SEALLESS PUMPS



William J. (Bill) Mabe, Coordinator, is the Director of Technology Development and Quality Assurance for Sundyne Corporation, in Arvada, Colorado. He is primarily responsible for coordinating technology and product development for Sundyne's business units. Mr. Mabe joined Sundyne in 1974 as a Senior Engineer involved in high speed centrifugal pump design. Previous turbomachinery experience includes six years at Rocketdyne, Liquid Rocket Division of Rockwell International, where he was a member of the technical staff responsible for the analysis and design of the space shuttle turbo pumps. He has several patents related to pumping equipment.

Mr. Mabe holds a B.S. degree (Mechanical Engineering) from the University of Missouri at Rolla and a Masters of Business Administration and Technology Management from the University of Phoenix. He also serves on the corporate advisory board for the Colorado School of Mines.



Julien LeBleu, Jr., Coordinator, is the Principal Engineer for Rotating Equipment for Lyondell Chemical, in Lake Charles, Louisiana. He is responsible for all rotating equipment in the Lake Charles facility and has more than 30 years of experience in the field of rotating equipment. He has worked for General Electric Company as a technical director for the installation and maintenance of large steam turbine and generator sets. Mr. LeBleu is a licensed aircraft mechanic and has worked on both reciprocating and jet aircraft engines. He is a member of the International Pump Users Advisory Committee, has authored several articles, and has lectured at Pump Symposia.

Mr. LeBleu received his B.S. degree from the University of Florida (1974).

DISCUSSION GROUP 8

on

PIPELINE APPLICATIONS



Bruce Weber, Coordinator, is the Operations Manager for Best Equipment, in Houston, Texas. As Operations Manager, his duties include supervision of the pump repair facility, consulting with clients concerning pumping systems, and pump troubleshooting. Other areas include failure analysis, pump modifications, bearings, high pressure mechanical seals, and lubrication systems. Prior to joining Best Equipment, Mr. Weber was associated with Koch Hydrocarbon, in Medford, Oklahoma, for 18 years. His responsibility as Maintenance Supervisor included 10,000 miles of pipelines that employed 2300 pumps. He also served as a consultant for Koch's four light hydrocarbon processing plants.

Mr. Weber is currently enrolled at the University of Oklahoma, working toward a B.S. degree.



Ronald B. (Ron) Adams is Global Portfolio Manager, HPI, with Sulzer Pumps (US) Inc., in Houston, Texas. He has been with Sulzer since 1991 and has held various sales management and alliance management positions with them. Previously, he was with Ingersoll-Rand Pumps from 1973 to 1991, where he held various positions in applications, sales, and marketing of centrifugal, reciprocating, and magdrive pumps.



Gary Daileda is currently Director of Project Engineering for TEPPCO, in Houston, Texas. Since joining TEPPCO in 1982, he has held a variety of positions in engineering, operations, maintenance, and business development. He is responsible for the overall project management and engineering design functions for the company's capital improvement projects. He has been involved with numerous capacity expansion projects with TEPPCO, encompassing the hydraulic rerate of existing centrifugal pumps as well as the sizing and selection of new pumping equipment. As District Superintendent for Operations and Maintenance from mid-1989 through mid-1991, he was involved on a daily basis with field technicians responsible for maintenance and repairs to rotating equipment.

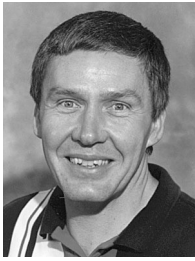
Mr. Daileda received a B.Sc. degree (Water Resources Engineering Technology) from Pennsylvania State University.



Ralph Dickau is an Engineering Specialist in Pumps and Rotating Equipment with Enbridge Pipelines Inc. (formerly Interprovincial Pipe Line), in Edmonton, Alberta, Canada. His responsibilities include pumping equipment specifications, selection, installation, and startup. He was team leader for several large pump and motor replacement and rerate programs on the pipeline system. Mr. Dickau is also responsible for troubleshooting pump and motor operating problems including administration of the vibration monitoring and analysis program. He has presented seminars on pump technology for company employees and for other pipeline companies through the Enbridge training subsidiary. He has been with the company for 15 years.

Mr. Dickau received a B.Sc. degree (Mechanical Engineering, 1978) at the University of Alberta and is a registered Professional Engineer in the Province of Alberta.

Gary Dyson is Manager of European Reengineering for David Brown Union Pumps Ltd., in Penistone, England. He specializes in the hydraulic modifications and design of pumps to match customers' changing duty requirements. He has more than 20 years of experience in the pump industry with Mather and Platt Pumps, Weir Pumps, and David Brown Union Pumps Ltd. Mr. Dyson is the author of four papers and books on modern methods in pump design, and is spearheading David Brown Union Pumps Ltd. research into shutoff head prediction methods. He advises customers worldwide on the operation and modification of centrifugal pumps, and has carried out training courses in Europe, the Middle East, and North America.



William R. (Bill) Litton is the Pump Initiative Manager with Williams Companies, in Tulsa, Oklahoma. He is an experienced professional engineer with 23 years of experience in the petroleum industry. He has ability and experience in mechanical equipment, prime mover economics, power optimization, and pipeline system hydraulics. Mr. Litton also has project engineering ability and experience in handling pipeline expansions, pipeline pump stations, refineries, fractionators, gas and processing facilities and crude oil, refined products, NH₃, and propane terminals (brine cavern and excavated caverns). He also has experience in maintaining mechanical equipment company-wide to provide reliable and economical service. This includes rerating of pumps and pump modifications to reduce resonant and nonresonant vibration levels.

Mr. Litton has a B.S. degree (Mechanical Engineering, 1979) from Kansas State University and a B.S. degree (Mathematics, 1978) from Emporia State University. He is a registered Professional Engineer in the State of Oklahoma.



George J. Maddox is the Manager of Engineering for the PumpWorks division of Best Equipment Service and Sales, located in Tyler, Texas. He has more than 23 years experience in a variety of engineering design and engineering management positions. Mr. Maddox is currently involved in the remanufacture, repair, rerating, and packaging of centrifugal pumps. His responsibilities include the hydraulic and mechanical design and design evaluations of centrifugal pumps and pump units.

Mr. Maddox has a BSME degree from the University of Texas at Arlington and an MBA from Amber University. He is a registered Professional Engineer in the State of Texas.

DISCUSSION GROUP 9
on
POSITIVE DISPLACEMENT PUMPS—MAINTENANCE, OPERATION, RELIABILITY



Lev Nelik, Coordinator, is President of Pumping Machinery, in Bridgewater, New Jersey. He has over 20 years of engineering, manufacturing, sales, field, and management experience in the pump industry. He has previously worked at Liquiflo, Roper Pump, Ingersoll-Rand, and Goulds Pumps.

Dr. Nelik is a registered Professional Engineer and has published over 50 papers, including a pumps section for the *Encyclopedia of Chemical Technology*, a section for the *Handbook of Fluids Dynamics*, and a book *Centrifugal and Rotary Pumps: Fundamentals with Applications*.

Dr. Nelik is a member of the International Pump Users Symposium Advisory Committee, an Advisory Board Member of *Pumps & Systems* and *Pumping Technology* magazines, and a former Associate Technical Editor of the *Journal of Fluids Engineering*. He is a full member of ASME, and a Certified APICS (CIRM). He is a graduate of Lehigh University with an M.S. degree (Manufacturing Systems) and a Ph.D. degree (Mechanical Engineering).



James R. (Jim) Brennan is Projects Manager for Imo Pump, in Monroe, North Carolina. His responsibilities include worldwide marketing and technical support for pumping applications. He has more than 30 years of service with Imo Industries. Engineering manager for five years, Mr. Brennan has spoken at a number of conferences worldwide and has published more than three dozen technical articles and papers.

Mr. Brennan is a 1973 graduate of Drexel University in Philadelphia and a member of the Society of Petroleum Engineers.



Terry Hernandez is the Rotating Equipment Engineer supervisor at Lyondell Chemical, in Channelview, Texas. He supervises technicians responsible for the vibration and lube oil predictive maintenance programs along with the mechanical inspection and quality control on outside machinery repairs. Mr. Hernandez also provides technical machinery support to maintenance and operation personnel, manages turnaround execution on major machinery repair overhauls or upgrades, troubleshoots equipment problems, evaluates equipment repair techniques, generates machinery repair work scope and bid packages, develops maintenance procedures, develops machinery design changes, revises machinery specifications, and installs machinery upgrades. He prepares specifications, evaluates bids, purchases, and installs machinery for project activities.

Mr. Hernandez graduated from McNeese State University with a B.S. degree (Mechanical Engineering, 1974) and has worked since then in turbomachinery installation, maintenance, performance and troubleshooting, vibration analysis and field balancing, and mechanical seals. He is also active in professional development seminars with the ASME South Texas Chapter.



Luis Rizo is the Senior Reliability Engineer with GE Plastics, in Selkirk, New York. He is responsible for plant reliability upgrades and long term service factor improvements. Mr. Rizo provides support in improving the process that yields long-term equipment reliability plantwide as well as support for intraplant issues.

Previous rotating equipment experience includes 10 years of reliability engineering at Exxon, and three years of design, development, and application of pumps at Worthington Pumps. At these positions, Mr. Rizo was involved in all facets of machinery design, testing, installation, and specification of rotating equipment.

Mr. Rizo has a B.S. and an M.S. degree (Mechanical Engineering) from the New Jersey Institute of Technology. He is a member of ASE and was a member of the *Pumps & Systems* Magazine User's Advisory Board.



Paul Rose is presently the Director of Sales, Engineering Projects, for Warren Rupp, Inc., out of Mansfield, Ohio. He has been employed at Warren Rupp for the last five years in a variety of positions relating to product design, applications, and sales. He has experience designing and installing waterflood projects for the oil field, and was responsible for significant design improvements in a high-speed mixer design used in the wastewater treatment industry. Mr. Rose has been involved in the application and sales of a variety of pump designs including canned motor, gear, self-priming centrifugal, mag drive, and progressing cavity prior to his present position. He has presented papers relating to the proper application of progressing cavity drilling motors and the potential for air operated double diaphragm pumps in the chemical process industry.

Mr. Rose has an A.S. degree from Temple Junior College and a B.S. degree (Petroleum Engineering) from Texas A&M University.



Andrew Shelton is Engineering Manager for the Myers/Aplex Industrial Pump Division, part of the Pentair Pump Group, in Ashland, Ohio. He is responsible for the new product design and existing product upgrades for both the Myers and Aplex brand of reciprocating pumps.

Mr. Shelton has a B.S. degree (Mechanical Engineering, 1991) from Texas A&M University.



Lez Warren is a Director of Cat Pumps (U.K.) Limited, manufacturers of high pressure triplex pumps, in Hampshire, England. He runs their European Technical Centre and has been responsible for a number of unique developments within the high pressure pumping industry.

Mr. Warren graduated from Loughborough England with first class honors in Aeronautical Engineering. He then joined the British Ministry of Defence as an Aerospace Research Scientist, specializing in materials and heat transfer. He then worked for two specialist material suppliers before joining Cat Pumps some 26 years ago.

DISCUSSION GROUP 10
on
PUMP SUPPORT ON THE INTERNET



William J. (Bill) Mabe, Coordinator, is the Director of Technology Development and Quality Assurance for Sundyne Corporation, in Arvada, Colorado. He is primarily responsible for coordinating technology and product development for Sundyne's business units. Mr. Mabe joined Sundyne in 1974 as a Senior Engineer involved in high speed centrifugal pump design. Previous turbomachinery experience includes six years at Rocketdyne, Liquid Rocket Division of Rockwell International, where he was a member of the technical staff responsible for the analysis and design of the space shuttle turbo pumps. He has several patents related to pumping equipment.

Mr. Mabe holds a B.S. degree (Mechanical Engineering) from the University of Missouri at Rolla and a Masters of Business Administration and Technology Management from the University of Phoenix. He also serves on the corporate advisory board for the Colorado School of Mines.



Daniel W. (Dan) Wood is Manager of Advanced Technology for Flowserve Corporation, in Irving, Texas. His group is responsible for sensors, data acquisition, diagnostics and prognostics, reliability analysis, and reliability improvement tools. He began his career at Flowserve Corporation in 1991 in Product Development and, more recently, has served as a technology transfer channel between Flowserve and DuPont while on special assignment in Wilmington, Delaware.

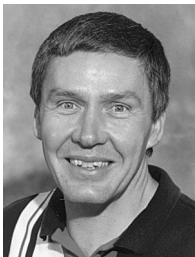
Mr. Wood graduated from the University of Cincinnati (BSME, 1991). He is a member of ASME and the Hydraulic Institute. He is also a certified Level III Vibration Analyst.

DISCUSSION GROUP 11
on
IMPROVING MEAN TIME BETWEEN PUMP FAILURES



John P. Joseph II, Coordinator, is an independent consultant with Rotating Equipment Systems Technical Associates, in Houston, Texas. He was previously with BP Amoco where he provided technical and maintenance support for rotating equipment systems to existing asset organizations in BP Amoco, and to Project Management on new projects. Prior to that, Mr. Joseph was with the Amoco Petroleum Products Refinery, in Texas City, Texas. He supervised the rotating equipment engineers and the rotating equipment specialists for the refinery. Mr. Joseph spent six and one half years as Superintendent of Central Shops and three years in Amoco's Refining and Transportation Engineering Department, in Chicago, Illinois. Previous assignments at the Amoco Texas City refinery also included the Rotating Equipment Consulting Group, the Project Engineering Group, and as a Maintenance Engineer on the Hydrocracking Unit.

Mr. Joseph received his B.S. degree (Mechanical Engineering, 1972) from the University of Texas at El Paso.



William R. (Bill) Litton, Coordinator, is the Pump Initiative Manager with Williams Companies, in Tulsa, Oklahoma. He is an experienced professional engineer with 23 years of experience in the petroleum industry. He has ability and experience in mechanical equipment, prime mover economics, power optimization, and pipeline system hydraulics. Mr. Litton also has project engineering ability and experience in handling pipeline expansions, pipeline pump stations, refineries, fractionators, gas and processing facilities and crude oil, refined products, NH₃, and propane terminals (brine cavern and excavated caverns). He also has experience in maintaining mechanical equipment company-wide to provide reliable and economical service. This includes rerating of pumps and pump modifications to reduce resonant and nonresonant vibration levels.

Mr. Litton has a B.S. degree (Mechanical Engineering, 1979) from Kansas State University and a B.S. degree (Mathematics, 1978) from Emporia State University. He is a registered Professional Engineer in the State of Oklahoma.



Jeffrey A. (Jeff) Wenzell is Chief Project Engineer at Explorer Pipeline Company, in Tulsa, Oklahoma, where he has been employed the past 11 years. He oversees the Mechanical and Civil Engineering Group and has direct responsibility for pipeline hydraulic design, pump performance, and major pump repairs on the company's 28 inch and 24 inch petroleum products pipeline system.

Mr. Wenzell began his pipeline career in 1976 during construction of the Trans Alaska Pipeline, after receiving his B.S. degree (Civil Engineering, 1975) from Northeastern University.

DISCUSSION GROUP 12
on
SEAL USER/MANUFACTURER ALLIANCES

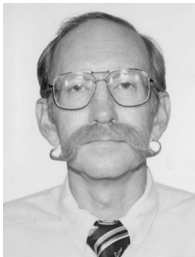


Bruce Weber, Coordinator, is the Operations Manager for Best Equipment, in Houston, Texas. As Operations Manager, his duties include supervision of the pump repair facility, consulting with clients concerning pumping systems, and pump troubleshooting. Other areas include failure analysis, pump modifications, bearings, high pressure mechanical seals, and lubrication systems. Prior to joining Best Equipment, Mr. Weber was associated with Koch Hydrocarbon, in Medford, Oklahoma, for 18 years. His responsibility as Maintenance Supervisor included 10,000 miles of pipelines that employed 2300 pumps. He also served as a consultant for Koch's four light hydrocarbon processing plants.

Mr. Weber is currently enrolled at the University of Oklahoma, working toward a B.S. degree.

Ronald Carlson is a Machinery Reliability Engineer with Flint Hills Resources, in Corpus Christi, Texas. He has worked in the oil industry in maintenance for 18 years in various capacities including pumps, compressors, and vibration analysis.

Mr. Carlson has a B.S. degree (Mechanical Engineering) from the University of Nebraska, and a B.S. and M.S. degree (Aeronautical Engineering) from Wichita State.



Francis H. Kludt is the Associate Rotating Equipment Engineer at the Celanese, Pampa, Texas plant. His present responsibilities include maintenance engineering and technical support for all rotating equipment in the plant. This includes project review and consultation, troubleshooting, repair, lubrication, reliability improvements, and preventive/predictive maintenance programs. He worked with the Westinghouse Power Generation Service Division as Service Engineer and Advanced Reliability Engineer (1969 to 1976), and at Olin Chemical as Senior Maintenance Engineer (1976 to 1978), before joining Celanese Chemical in 1978. He has been a coauthor of papers for the Turbomachinery Symposium.

Mr. Kludt received a B.S. degree (Mechanical Engineering, 1969) from Texas A&M University and an MBA degree (Management, 1999) from Wayland Baptist University. He is a member of ASME, the Vibration Institute, and is a registered Professional Engineer in the State of Texas.

DISCUSSION GROUP 13

on

LIFE-CYCLE COSTS



William A. (Alan) Evans, Coordinator, is Manager of Engineering for the Mechanical Seal Division of A.W. Chesterton Company, in Stoneham, Massachusetts. During his eight years with the company, he has held several positions. He has spent 20 years in the field of rotating equipment, focusing primarily on pumps and turbomachinery. He gained broad experience as an end-user of rotating equipment during his 14 years as maintenance/reliability engineer in process industries. Mr. Evans' technological background and experience cover a wide range of topics, including tribology, machine design, predictive maintenance, and reliability engineering. He has conducted lectures, seminars, and presentations on improving reliability as it relates to pumps/seals and pumping systems. He has published articles for STLE, of which he is a member.

Mr. Evans received his MBA from Northeastern University and his BSME from Rochester Institute of Technology. He also has an Associates degree in Applied Science from Pennsylvania State University.



Kenneth R. (Ken) Burkhardt is a Pump Consultant with the DuPont Company, in Wilmington, Delaware, where he provides pump, mechanical seal, and pumping system technical support throughout DuPont. Prior to his current position, Mr. Burkhardt held manufacturing site positions of Site Maintenance Technology Leader, Mechanical/Reliability Team Leader, Site Rotating Equipment Engineer, Maintenance Engineer, and Project Engineer.

Mr. Burkhardt participates in ASME Standards Committee B73 (Chemical Standard Pumps) and is a member of ASME B73.3 Sealless Pump revision subcommittee working group. He graduated from Virginia Polytechnic Institute with a BSME degree (1981). He is a member of ASME and is a registered Professional Engineer in the State of Alabama.



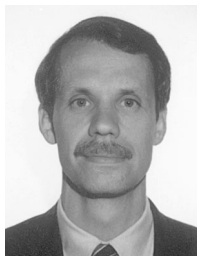
Judy E. Hodgson is a Pump Consultant in the Rotating Machinery Group in Engineering at DuPont, in Wilmington, Delaware. Her specialty is modeling and analyzing pumping systems. She has been a pump consultant since 1997. Prior to that, she had project, maintenance, and research and development assignments with DuPont.

Ms. Hodgson received her B.S. degree (Mechanical Engineering, 1991) from Penn State University.

DISCUSSION GROUP 14

on

MIXERS AND AGITATORS



Bruce E. Freeland, Coordinator, is Vice President of Engineering and Marketing for Lightnin, in Rochester, New York. He is responsible for all product development and marketing of mixers and related products at Lightnin. His past experience includes management responsibility for product development and marketing of pumping equipment, while working for Goulds Pumps, in Seneca Falls, New York.

Mr. Freeland has presented various technical papers in the past and has been a member of API, serving on Task Forces focused on pumping equipment (610, 685). He is currently an Advisory Committee member for the International Pump Users Symposium.

Mr. Freeland received his B.S. degree (Mechanical Engineering) from Clarkson University and is a registered Professional Engineer in the State of New York.

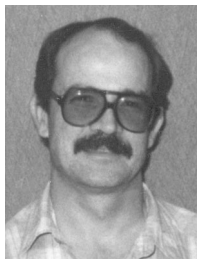
Andrew Creathorn is the Director of the Customer Service and Support Team at Lightnin Mixers, in Rochester, New York. In his current position he has responsibility for order related engineering functions and product development. Mr. Creathorn joined Lightnin in 1991, as a Project Engineer, and has 11 years of direct involvement in the mechanical design and application of mixing equipment. During this time he has designed numerous agitators for a wide range of process requirement, and successfully led initiatives to change Lightnin's approach to mixer design to take advantage of developing technology.

Mr. Creathorn received his B.Sc. degree (Mechanical Engineering, 1987) from Teesside Polytechnic, UK, and spent four years with a centrifugal pump manufacturer in a design engineering capacity, prior to joining Lightnin.



Bernd Gigas is Principal Research Engineer at LIGHTNIN, in Rochester, New York. Over the past 16 years he has held various positions in Process Engineering, Application Engineering, and Research & Development. His current research focus is on process and mechanical reliability improvements for mixers in high power, high volume gas-liquid-solid applications and process intensification.

Mr. Gigas earned a B.S. degree (Chemical Engineering) from the University of Rochester and has completed graduate work (Mechanical and Chemical Engineering) at Rochester Institute of Technology and the University of Rochester.



David E. Littlefield is a Senior Design Associate with Dow Chemical U.S.A. in Freeport, Texas. He joined Dow's Engineering and Construction Services Division in 1979, working primarily in the Rotating Equipment Group. He transferred to Texas Operations in 1983, where he has worked in the Mechanical Technology Group, troubleshooting and specifying rotating and general mechanical equipment.

Mr. Littlefield is a 1979 B.S. (Mechanical Engineering) graduate of Texas A&M University. He is a member of ASME and is a registered Professional Engineer in the State of Texas.
