PATENTS

- 1. P.H. Kasai and R.J. Bishop, "Thermolysis of Water in Contact with Zeolite Masses", U.S. Patent No. 3,963,830, June, (1976).
- 2. P.H. Kasai, J.N. Francis and R.J. Bishop, "Preparation of Cu (II) Zeolites", U.S. Patent No. 4,034,065, July, (1977).

PUBLICATIONS

- 1. P.H. Kasai and R.J. Bishop, "Electron Spin Resonance study of Nitric Oxide Adsorption on Linde Type Y Zeolites", *J.A.C.S.*, 94, p. 5560, (1972).
- 2. P.H. Kasai and R.J. Bishop, "Ionization and Electron Transfer Reactions in Linde Type Y Zeolites", *J. Phys. Chem.*, 77, p. 2308, (1973).
- 3. P.H. Kasai and R.J. Bishop, "Chapter 6: Electron Spin Resonance Studies of Zeolites", A.C.S. Monograph No. 171, (1976).
- 4. P.H. Kasai and R.J. Bishop, "Thermochemical Decomposition of Water Catalyzed by Zeolites", *J. Phys. Chem.*, 81, p. 1527, (1977).
- 5. P.H. Kasai, R.J. Bishop and D. McLeod, "Ligand Effects on the Redox Reactions in Ni (II) and Cu (II)-Exchanged Zeolites", J. Phys. Chem., 82, p. 279, (1978).
- 6. G.E. Totten, R.J. Bishop, R.L. McDaniels, D.P. Braniff and D.J. Irvine, "Effect of Low Molecular Weight Carboxylic Acids on Hydraulic Pump Wear", *SAE Technical Paper Series*, Paper Number 941751, (1994).
- 7. L.D. Wedeven, G.E. Totten and R.J. Bishop, "Performance Map Characterization of Hydraulic Fluids", *SAE Technical Paper Series*, Paper Number 941752, (1994).
- 8. G.E. Totten, R.J. Bishop and G.M. Webster, "Novel Thickened Water-Glycol Hydraulic Fluids For Use at High Pressures", Paper No. CL-99, 1994 AISE Annual Convention, Cleveland, OH, Sept. 1994.
- 9. G.E. Totten, R.J. Bishop Jr., R.L. McDaniels, D.P. Braniff and D.J. Irvine, "Acidic Breakdown of Hydraulic Fluid", *Off-Highway Engineering*, 1995, April, p. 19-22.
- D.A. Wachter, R.J. Bishop Jr., R.L. McDaniels and G.E. Totten, "Water-Glycol Hydraulic Fluid Performance Monitoring: Fluid Performance and Analytical Strategy", *SAE Technical Paper Series*, Paper Number 952155, (1995).
- G.E. Totten, R.J. Bishop Jr., R.L. McDaniels, and G.H. Kling, "Evaluation of Hydraulic Fluid Performance: Correlation of Water-Glycol Fluid Performance by ASTM D-2882 Vane Pump and Various Bench Tests", *SAE Technical Paper Series*, Paper Number 952156, (1995).
- 12. G.E. Totten and R.J. Bishop Jr., "Hydraulic Pump Testing Procedures to Evaluate Lubrication Performance of Hydraulic Fluids", *SAE Technical Paper Series*, Paper Number 952092, (1995).

- 13. G.E. Totten and R.J. Bishop Jr., "Historical Overview of the Development of Water-Glycol Hydraulic Fluids", *SAE Technical Paper Series*, Paper Number 952076, (1995).
- 14. L.D. Wedeven, G.E. Totten and R.J. Bishop Jr., "Performance Map and Film Thickness Characterization of Hydraulic Fluids", *SAE Technical Paper Series*, Paper Number 952091, (1995).
- G.E. Totten, R.J. Bishop Jr., and G.H. Kling, "Correlation of Water-Glycol Hydraulic Fluid Performance by ASTM D-2882 Versus Various Bench Tests", *Proceedings of the International Tribology Conference - Vol. II*, Japanese Society of Tribologists, Yokohama, 1996, p. 921-926.
- G.E. Totten, R.J. Bishop Jr., T. Narumi, and D.A. Wachter, "Water-Glycol Hydraulic Fluid Performance Monitoring: Fluid Performance and Analytical Strategy", *Proceedings of the International Tribology Conference - Vol. II*, Japanese Society of Tribologists, Yokohama, 1996, p. 903-908.
- L.D. Wedeven, G.E. Totten and R.J. Bishop Jr., "Performance Map and Film Thickness Characterization of Hydraulic Fluids", *Proceedings of the International Tribology Conference - Vol. II*, Japanese Society of Tribologists, Yokohama, 1996, p. 1095-1100.
- 18. G.E. Totten, R.J. Bishop Jr. and G.M. Webster, "Novel Thickened Water-Glycol Hydraulic Fluids for Use at High Pressures", *Iron and Steel Engineer*, 1995, Sept., p. 41-45.
- G.E. Totten, R.J. Bishop Jr., R.L. McDaniels and D.A. Wachter, "Water-Glycol Hydraulic Fluid Maintenance - Pump Wear Implications and Recommendations", 1995, AISE Annual Convention, Pittsburgh, PA, Sept. 1995.
- 20. G.E. Totten and R.J. Bishop Jr., "Evaluation of Vickers V-104 and 20VQ5 Vane Pumps for ASTM D- 2882 Wear Tests Using Water-Glycol Hydraulic Fluids"; <u>TRIBOLOGY OF HYDRAULIC PUMP TESTING</u>, George E. Totten, Gary H. Kling and Donald M. Smolenski, Ed., American Society for Testing and Materials, Philadelphia, 1995, p. 118-128.
- R.J. Bishop Jr. and G.E. Totten, "Tribological Testing With Hydraulic Pumps: A Review and Critique", <u>TRIBOLOGY OF HYDRAULIC PUMP TESTING</u>, George E. Totten, Gary H. Kling and Donald M. Smolenski, Ed., American Society for Testing and Materials, Philadelphia, 1995, p.65-84.
- L.D. Wedeven, G.E. Totten and R.J. Bishop Jr., "Testing Within the Continuum of Multiple Lubrication and Failure Mechanisms", <u>TRIBOLOGY OF HYDRAULIC PUMP TESTING</u>, George E. Totten, Gary H. Kling and Donald M. Smolenski, Ed., American Society for Testing and Materials, Philadelphia, 1995, p.3-20.
- R.J. Bishop Jr., G.E. Totten, G.M. Webster and D.A. Wachter, "Maintenance of Water-Glycol Hydraulic Fluids", *Proceedings of the 47th National Conference on Fluid Power - Volume 1*, Chicago, IL, April 23-25, 1996, pp. 107-116.
- 24. L.D. Wedeven, G.E. Totten and R.J. Bishop, Jr., "Hydraulic Fluid Lubrication: Performance Map and Effective Film Thickness Characterization", *Proceedings of the 47th National Conference on Fluid Power Volume 1*, Chicago, IL, April 23-25, 1996, pp. 21-29.
- 25. G.E. Totten, R.J. Bishop Jr., and G.H. Kling, "Prediction of Hydraulic Pump Lubrication Performance: Bench Test Modeling", *Proceedings of the 47th National Conference on Fluid Power - Volume 1*, Chicago, IL, April 23-25, 1996, pp. 31-41.

- 26. G.E. Totten, R.J. Bishop Jr. and G.M. Webster, "Water-Glycol Hydraulic Fluid Evaluation by ASTM D-2882: Significant Contributors to Erroneous and Non-Reproducible Results", SAE Technical Paper Series, Paper No. 961740, (1996).
- 27. G.E. Totten and R.J. Bishop Jr., "Attempted Bench Test Correlation of Hydraulic Fluids with the ASTM D-2882 Vickers Vane Pump Test", *Proceedings AISE 1996 Annual Convention Vol. 1*, September 30, 1996, Chicago, IL, pp. 735-747.
- 28. G.E. Totten, R.J. Bishop Jr., R.L. McDaniels and D.A. Wachter, "Water-Glycol Hydraulic Fluid Maintenance", *Iron and Steel Engineer*, 1996, Oct., p. 34-38.
- **29.** G.E. Totten and R.J. Bishop Jr., "ASTM D-2882 Vickers Vane Pump Test: Replacement of Vickers V-104 Vane Pump with the 20VQ Vane Pump", AISE 1997 Annual Convention Proceedings, Vol.2, Oct. 1-2, 1997, Cleveland, OH, p. 1439-1452.
- 30. G.E. Totten, Y.H. Sun, and R.J. Bishop, "Hydraulic Fluids: Foaming, Air Entrainment and Air Release A Review", *SAE Technical Paper Series*, Paper Number 972789, (1997).
- G.E. Totten, J. Cerf, R.J. Bishop and G.M. Webster, "Recent Results of Biodegradability and Toxicology of Water-Glycol Hydraulic Fluids", *SAE Technical Paper Series*, Paper Number 972744, (1997).
- 32. G.E. Totten, R.J. Bishop, and G.M. Webster, "Hydraulic Fluid Evaluation by ASTM D-2882: Wear Rate Error Minimization", *New Achievements and Ideals in Fluid Power Engineering*, Eds., L. Yongxiang and G. Yiyuan, 1997, International Academic Publishers, Beijing, PRC, p. 36-41.
- 33. L.D. Wedeven, G.E. Totten and R.J. Bishop, "Tribological Modeling of Hydraulic Fluid Lubricity by Performance Map Film Thickness Evaluation", *New Achievements and Ideals in Fluid Power Engineering*, Eds. L. Yongxiang and G. Yiyuan, 1997, International Academic Publishers, Beijing, PRC, pp. 36-41.
- 34. G.E. Totten, R.J. Bishop and G.M. Webster, "Water-Glycol Hydraulic Fluids: Technological Advancements and Limitations", 11th International Colloquium, Industrial and Automotive Lubrication Vol. III, Ed. W.J. Bartz, Technische Akademie Esslingen, 13-15, January, 1998, p. 1803-1809.
- 35. G.E. Totten, R.J. Bishop Jr. Y.H. Sun and L. Xie, "Hydraulic System Wear by Cavitation: A Review", SAE Technical Paper Series, Paper Number 982036, 1998.
- 36. G.M. Gent, R.J. Bishop Jr. and G.E. Totten, "Review of ASTM D-2882 Hardware Problems and Suggested Solutions", SAE Technical Paper Series, Paper Number 982021, 1998.
- H.M. Melief, G.E. Totten and R.J. Bishop, "Overview of the Proposed Rexroth High-Pressure Piston Pump Testing Procedure for Hydraulic Fluid Qualification", SAE Technical Paper Series, Paper Number 982022, 1998.
- G.E. Totten, G.M. Webster and R.J. Bishop Jr., "Biodegradability and Toxicity of a High-Performance Water-Glycol Hydraulic Fluid", AISE 1998 Annual Convention Proceedings, September 21-23, 1998, Pittsburgh, PA.
- 39. G.E. Totten and R.J. Bishop Jr., "The Hydraulic Pump Inlet Condition: Impact on Hydraulic Pump Cavitation Potential", SAE Technical Paper Series, Paper Number 1999–01–1877.

- G.E. Totten, G. Svedberg, and R.J. Bishop, "Hydraulic System Cavitation: Part II A Review of Hardware Design-Related Effects", SAE Technical Paper Series, Paper Number 1999-01-2857, September 13-15,1999.
- 41 G.E. Totten, G.H. Kling, J. Reichel and R.J. Bishop, "Biodegradable Hydraulic Fluid Review", SAE Technical Paper Series, Paper Number 1999-01-2865, September 13-15, 1999.
- 42. G.E. Totten, Y.H. Sun and R.J. Bishop and Xie Lin, "Hydraulic System Cavitation: A Review", *Proceed. Of the Second International Conference on Surface Engineering-Vol. 1*, Eds. Li Zhengsheng and Gao Wanzhen, Journal of Materials Protection Publishing House, Wuhan, China, 1999, p. 414-429.
- 43. G.E. Totten, G.M. Webster and R.J. Bishop, "Biodegradability and Toxicity of a High-Performance Water-Glycol Hydraulic Fluid", *AISE Steel Technology*, 1999, Vol. 76, No. 12, p. 27-30.
- 44. G.E. Totten, G.M. Webster and R.J. Bishop, "Comparison of Vickers V-104 and 20VQ5 Vane Pump Wear Rates for Various Water-Glycol Hydraulic Fluids", *12th International Colloquium, Tribology 2000 Plus, Vol. III*, Ed. W.J. Bartz, Technische Akademie Esslingen, 11-13 January, 2000, p. 2201-2206.
- 45. G.E. Totten, R.J. Bishop and. J. Cerf, "Biodegradable, Fire-Resistant, High-Performance Water- Glycol Hydraulic Fluids", *Proceedings of the 48th National Conference on Fluid Power*, Chicago, IL, April4-6, 2000, National Fluid Power Association, Milwaukee, WI, pp.57-63.
- 46. H.M. Melief, G.E. Totten and R.J. Bishop, "Hydraulic Fluid Qualification Using the Rexroth High- Pressure Piston Pump Test", *Proceedings of the 48th National Conference on Fluid Power*, Chicago, IL, April4-6, 2000, National Fluid Power Association, Milwaukee, WI, pp. 241-249.
- 47. G.E. Totten, G.H. Kling and R.J. Bishop, "Development of Hydraulic Pump Performance Standards: An Overview of Current Activities", *Proceedings of the 48th National Conference on Fluid Power*, Chicago, IL, April4-6, 2000, National Fluid Power Association, Milwaukee, WI, pp. 273-279.
- 48. G.E. Totten, R.J. Bishop and G.M. Gent, "Evaluation of Hydraulic Fluid Lubrication by Vickers Vane Pump Testing: Effect of Testing Conditions", *Proceedings of the 48th National Conference on Fluid Power*, Chicago, IL, April4-6, 2000; National Fluid Power Association, Milwaukee, WI, pp. 281-286.
- G.E. Totten, R.J. Bishop and G.M. Gent, "Hydraulic Fluid Evaluation by ASTM D 2882: Procedures to Significantly Improve Precision of Experimental Results", *Proceedings of the 48th National Conference on Fluid Power*, Chicago, IL, April4-6, 2000; National Fluid Power Association, Milwaukee, WI, pp. 287-292.
- 50. C.G. Fey, G.E. Totten, R.J. Bishop and A. Ashraf, "Analysis of Common Failure Modes of Axial Piston Pumps", SAE Technical Paper Series, Paper Number 2000-01-2581, 2000.
- 51. C.G. Fey, R. Goebel, G.E. Totten and R.J. Bishop, "Root Cause Analysis of a Piston Pump Failure: A Case History", SAE Technical Paper Series, Paper Number 2000-01-2590, 2000.
- 52. J. Nätscher, R.J. Bishop, G.E. Totten and A. Ashraf, "Hydraulic Fluid Qualification: An Overview of Critical Considerations", SAE Technical Paper Series, Paper Number 2000-01-2541, 2000.
- 53. G.E. Totten, R.J. Bishop, G.M. Webster and W.E. Sloan, "Anhydrous Polyalkylene Glycol Hydraulic Fluids: A Review", SAE Technical Paper Series, Paper Number 2000-01-2557, 2000.

- 54. G.E. Totten and R.J. Bishop, "Water Glycol Hydraulic Fluids: Conversion and Troubleshooting of Mineral Oil Hydraulic Systems", SAE Technical Paper Series, Paper Number 2000-01-2589, 2000.
- 55. R.J. Bishop and G.E. Totten, "Design of Proper Inlet Condition to Minimize Hydraulic Pump Wear", *Hydraulic Failure Analysis: Fluids, Components and System Effects, ASTM STP 1339*, Eds. G.E. Totten, D.K. Wills, and D. Feldmann, 2000, American Society for Testing and Materials, West Conshohocken, PA, in publication.
- 56. H. Liang, G.E. Totten, K. Mizuno and R.J. Bishop, "Fundamental Hydraulic Wear Processes", *Hydraulic Failure Analysis: Fluids, Components and System Effects, ASTM STP 1339*, Eds. G.E. Totten, D.K. Wills, and D. Feldmann, 2000, American Society for Testing and Materials, West Conshohocken, PA, in publication.
- 57. G. E. Totten, R. J. Bishop and L. Xie, "Bench Tests to Evaluate Hydraulic Fluid Lubrication: A Review", Bench Testing of the Lubrication and Wear Properties of Industrial Fluids Used in Machinery Applications, STP, G.E. Totten, L.D. Wedeven, J. R. Dickey and M. Anderson, 2000, American Society for Testing and Materials, West Conshohocken, PA, in publication.
- 58. R.K. Tessmann, H.M. Melief and R. J. Bishop, "Chapter 1: Basic Hydraulic Pump and Circuit Design", *Handbook of Hydraulic Fluid Technology*, Ed. G.E. Totten, Marcel Dekker, Inc., New York, 2000.
- 59. L. Xie, R. J. Bishop and G.E. Totten, "Chapter 10: Bench and Pump Testing of Hydraulic Fluids", *Handbook of Hydraulic Fluid Technology*, Ed. G.E. Totten, Marcel Dekker, Inc., New York, 2000.
- 60. Roland J. Bishop and George E. Totten, "Managing Foam and Aeration in Hydraulic Fluids", *Proceedings* of the International Conference and Exhibition, Practicing Oil Analysis 2000, Tulsa, OK, October 24-26, 2000, pp. 58-70.
- 61. G. E. Totten, R. J. Bishop, R. Michael, H. M. Melief and C. G. Fey, "Development of the Rexroth High-Pressure Piston Pump Test for Hydraulic Fluid Qualification", 13th International Colloquium on Tribology, Lubricants, Materials and Lubrication Engineering, Vol. III, Ed. W. J. Bartz, Technische Akademie Esslingen, January 15-17, 2002, pp. 2091-2100.
- 62. R. Michael, H. M. Melief, C. G. Fey, G. E. Totten and R. J. Bishop, Jr., "Development of the Rexroth High-Pressure Piston Pump Test for Hydraulic Fluid Qualification", *Society of Automotive Engineers and International Fluid Power Exposition 2002*, Las Vegas, NV, Paper No. 2002-01-1405, March 19-23, 2002.
- 63. George E. Totten, Ben Ashraf and Roland J. Bishop, Jr., "Assessment of the Eaton (Vickers) V-104C Vane Pump as an Antiwear Lubrication Tester", *Society of Automotive Engineers and International Fluid Power Exposition 2002*, Las Vegas, NV, Paper No. 2002-01-1429, March 19-23, 2002.
- George E. Totten, G. M. Webster and Roland J. Bishop, Jr., "Comparison of Vickers V-104C and 20VQ5 Vane Pump Wear Rates for Various Water-Glycol Hydraulic Fluids", *Tribotest Journal*, June 2002, pp. 339-350.
- 65. George E. Totten and Roland J. Bishop, Jr., "Natural Gas Compressors and Their Lubrication", *Machinery Lubrication*, Noria Publishing, May-June, 2002, pp. 58-63.

- 66. R. Suzuki, Y. Tanaka, G. E. Totten and R. J. Bishop, Jr., "Removing Entrained Air in Hydraulic Fluids and Lubricating Oils", *Machinery Lubrication*, Noria Publishing, July-August, 2002, pp. 56-62.
- 67. George E. Totten and Roland J. Bishop, Jr., "Lubricant Requirements, Properties and Maintenance For Natural Gas Compressors", *Machinery Lubrication*, Noria Publishing, September-October, 2002, pp. 24-29.
- 68. R. Michael, H. M. Melief, C. G. Fey, G. E. Totten and R. J. Bishop, Jr., "Development of a New High-Pressure Piston Pump Test for Hydraulic Fluid Qualification", 5th Japanese Fluid Power Society International Symposium on Fluid Power, Nara, November 12-15, 2002, Paper No. 122.
- George E. Totten, Gary H. Kling, Peter W. Offutt, Roland J. Bishop, Jr. and John V. Sherman, "Development of a Standard High-Pressure Hydraulic Piston Pump Test: Status of ASTM D.02.N.07 Piston Pump Task Force Activities", 5th Japanese Fluid Power Society International Symposium on Fluid Power, Nara, November 12-15, 2002, Paper No. 123.
- 70. Y. Tanaka, R. Suzuki, G. E. Totten and R. J. Bishop, "Operation and Typical Application Overview of the Use of Bubble Eliminators for Deaeration of Hydraulic and Turbine Oils", *Lubrication and Fluid Power Conference and EXPO*, *Indianapolis, May 4-8, 2003*, <u>Proceedings Published by Lubrication & Fluid</u> <u>Power, Pensacola, FL, p. 146-156.</u>
- 71. G.E. Totten and R.J. Bishop Jr. "Quantitative Assessment of Air Content and Its Removal from Hydraulic Fluids: A Review" in Proceed. of the 51st National Conference on Fluid Power, March 12-14, 2008, Las Vegas Convention Center, Las Vegas, NV, National Fluid Power Association, Milwaukee, WI, NCFP I08-2.3, p. 47-60.