CURRICULUM VITA

NAME:	Nabeel A. O. Demerdash (U.S. Citizen)
BIRTH DATE:	April 26, 1943
MARITAL STATUS:	Married, Three Children Spouse's Name: Esther, Children: Yvonne, Omar and Nancy
TELEPHONE:	414-288-3975 (Work) 262-827-0994 (Home)
PRESENT	Professor, Department of Electrical and Computer

e) Special topics in Power Systems and Devices/Electrical Transients and Protection in Power Systems (EECE 183), Summer Session II, 1995, Fall 1997.

f) Power Systems (EECE 182), Spring 1998

g) Design and Analysis of Electric Motors in Adjustable Speed Drives (EECE 185, now EECE 5210/ELEN 4210), Fall Semesters 1998 through 2016.

h) Advanced Electric Machinery (EECE 281, now EECE 6210), Fall 1997, Spring 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013, and 2015.

i) Principles of Design of Power Systems Protection and Monitoring (EECE 186, now EECE 5240/ELEN 4240), Spring Semesters 1999, 2001, 2004, and Fall 2005, 2007, 2009, 2011, and 2013.

j) Electrical Transients and Surges in Power Systems and Devices (EECE 187, now EECE 5250/ELEN 4250), Spring Semesters 1998, 2000, 2002 and 2003, Fall 2004, 2006, 2008, 2010, 2012, 2015, and 2016.

k) Advanced Concepts in the Design and Modeling of Electric Machines and

and 2012, and 2014.

l) Finite Elements (EECE6230), Spring 2009 and Fall 2014.

2. 1983 to 1994, Clarkson University, Department of Electrical and Computer Engineering, as Professor (1983-1994).

Subjects taught:

a) Electric Machines and Drives, (EE 436), (Formerly Energy Conversion II).

b) Electromagnetic Fields and Waves, (EE 381).

c) Advanced Electric Machines and Drives, (EE 532).

d) Linear Circuits, (EE 221).

e) Computer-Aided Power Device and System Analysis, (EE 538).

f) Power System Protection, (EE 437).

g) Principles of Electrical Engineering, (EE 322).

h) Electrical Science, (ES 250).

3. 1972 to 1983, Virginia Polytechnic Institute and State University, Department of Electrical Engineering, as Assistant Prof.(1972-1977), Associate Prof.(1977-

1981), and Professor (1981-1983). Winner of a "Certificate of Teaching Excellence" during the 1979/1980 Academic Year.

Subjects taught:

a) Finite Element Analysis of Electromagnetic Fields in Electrical Devices, (Graduate Level)

b) Power System Stability, (Graduate Level)

c) Computer Methods in Power System Analysis, (Graduate Level)

d) Dynamic and Transient Analysis of Electrical Machines, (Graduate Level)

e) Electrical Transients in Power Systems, (Graduate Level)

f) Advanced Power System Analysis, (Graduate Level)

g) Energy Conversion (Electrical Machinery), (Senior Level)

h) Power Systems Fault Analysis and Protection, (Senior Level)

i) Power System Protection Lab, (Senior Level)

j) Energy Conversion Lab, (Senior Level)

k) Electromagnetic Fields, (Junior Level)

l) Electric Networks, (Junior Level)

m) Fundamentals of Electrical Engineering, (Junior Level)

Fnior Leve

d)

Milwaukee Section of IEEE, Milwaukee, WI, Spring, 1989, 1990, 1991, and 1992, 1993, 1994, 1995, 1996 and 1997.

4. “Finite Elements in Electromagnetics,” a five-day short course workshop, Sponsored by Rensselaer Polytechnic Institute and endorsed by the Schenectady Section of IEEE, June 26-30, 1989, June 18-22, 1990, and June 24-28, 1991.

5. “Tutorial on: Adjustable Speed Drives”, a one day short course tutorial, sponsored by the Power Engineering Society of IEEE, Feb. 3, 1993. Given at the 1993 Winter Meeting of the Power Engineering Society, Columbus, Ohio, Jan. 31-Feb. 5, 1993, and 1993 IEEE Summer Meeting of the Power Engineering Society, Vancouver, B.C., Canada, July 18-22, 1993, IEEE Tutorial Course

10. Recipient of $282,000.00 NASA (Lewis Research Center) Grant for "Computer-Aided Modeling and Prediction of Performance of the Modified Lundell Class of Alternators in Space Station Solar Dynamic Power Systems," $85,000.00 for 1987-88, $90,000.00 for 1988-89, $107,000.00 for 1989-91.

11. Co-recipient of $366,552.00 NASA (Lewis Research Center) Grant for "Analysis of Electromagnetic Interferences from Power Systems Processing and Transmission Components of the Space Station," $149,000.00 for Jan.1 - Sept.30, 1990, Remainder for Oct. 1, 1990-Dec. 31, 1991. (Co-PI's: P.W. Barber and N.A. Demerdash).

12. Recipient of a $35,954.00 Sundstrand Corporation, Aviation Operations Contract for "Finite Element Investigation of the Pole Face Losses in a High Speed Generator Designed for Aerospace Applications," April 1, 1990-May 31, 1991.

13.

Research Laboratory under the Direction of Professor Demerdash, September 1997.

20. Co-recipient of a $340,000.00 NSF Grant for "A Novel Approach to Fault Modeling, Diagnostics and Prediction in Motor Drive Systems", from Sept. 1, 2003 through August 31, 2006, plus 3 REU supplements of 18,000 (with R.J. Povinelli (PI), and E.E. Yaz (Co-PI)).

21. Recipient of a $26,500.00 NSF-USAID Grant for an "On-Line Fault Diagnostics for Induction Motor Drive Systems Through Electronic Signal and Artificial Intelligence Techniques", from October 1, 2006 through December 31, 2007.

22. Recipient of a $26,000 SWETRC/DOE Grant titled, "New Energy Storage Technologies and Power Converter Topologies for Wind Turbines," from January 1, 2010 through December 31, 2010.

23. Recipient of a $21,000 A.O. Smith Corporation Grant titled, "Design Synthesis and Optimization of Permanent Magnet Brushless DC and Synchronous Motors and Drives, Application to IPM Motors," from September 1, 2009 through August 31, 2010.

24. Recipient of a $25,000 A.O. Smith Corporation Grant titled, "Design Synthesis and Optimization of Permanent Magnet Brushless DC and Synchronous Motors and Drives, Application to IPM Motors," from September 1, 2010 through August 31, 2011.

25. Recipient of a $90, 000 WERC Grant titled, "Novel Protection Means for PM Machines in Wind Energy Generation and Hybrid-Electric Vehicle Applications," from June 18, 2010 through June 18, 2011.

26. Recipient of a $27, 000 (share of N.A. Demerdash) WERC Grant titled, "DC Distribution for Wind Farms to Achieve Higher Efficiency and Reliability and Lower Cost," from Jan. 1, 2011 through Dec. 31, 2011.

27. Recipient (with Dr. Dan Ionel's help) of 5 ANSYS software licenses worth more than $1,000,000 on the open Software Market from Aug. 2010 to Present.

28. Recipient of a $425, 000 NSF-GOALI Grant titled, "Intelligent Systems for Health Condition Prognostics in AC Permanent Magnet and Induction Machine Drives for Highly Efficient and Renewable Energy Utilization," from September 15, 2010 through August 31, 2015.

29. Recipient of a $175, 823.64 Regal-Beloit Corporation Grant titled, "Advanced Design Optimization and Simulation of Modular Brushless PM Electric Machines and Drives," from August 16, 2011 through December 31, 2013.

30. Recipient of a $29, 166 UMN-DOE Grant titled, "A Nationwide Consortium of Universities to Revitalize Electric Power Engineering Education by State-of-the art Laboratories," July 30, 2010 through July 29, 2013.

Type of Work: Computerized Simulation of Electromagnetic Field Phenomena and Associated Problems in Rotating Machinery. This includes solution of static as well as time varying electromagnetic field problems by finite difference and other techniques. Design of large turbo-generators (1000MVA) including thermal and heat transfer problems of cooling hydrogen inner-cooled and water-hydrogen –cooled generators. Experience with preliminary designs of the first Westinghouse cryogenic generator. Specifically: 1) Experience with magnetic field determination by means of digital simulation in turbo-generators, including machines with new asymmetrical rotor designs. 2) Experience with mechanical forces on commutating pole windings in d.c. motors during flashovers, determined from magnetic field digital simulation. 3) Experience with determination of steel damper bar eddy currents, losses and equivalent circuit representation during starting and transient disturbances in large pumped-storage type hydroelectric generators. 4) Experience with standard and specialized shop floor testing of large turbo-generators of over 600 MVA capacity. 5) Experience with exploratory designs of large water cooled single shaft turbo-generators of over 1700 MVA capacity. 6) End winding forces and end winding losses in turbo-generators. 7) Experience with heat transfer and thermal calculations using digital simulation techniques applicable to turbo-generators. 8) Experience with force calculations on field and stator windings of the first Westinghouse cryogenic turbo-generator. 9) Experience with matrix sparsity techniques for digital solution of nonlinear diffusion and Poisson type partial differential equations, in large electromagnetic field problems. 10) Experience in classical techniques of solving electrical machine transients.

2.2 Full Time (Summer) Employment with Other Industries:

1. Summer 1985. Lewis Research Center of the National Aeronautics and Space Administration, Cleveland, Ohio - Power System Management and Distribution Branch - Space Station.

   Position: NASA Visiting Scientist (Summer Research Fellow)

Position: NASA Visiting Scientist (Summer Research Fellow)

Type of Work: Investigation of the Effect of Severe Space Environment and Abnormal Operating Conditions on Characteristics of Induction Motors Aboard the Space Shuttle Orbiter.

2.3 Industrial Training (Summer) with the Electric Power Industry:

English Electric Company (England) Liverpool Works - Summer of 1962 (June-Oct.) and Stafford works - Summer of 1963 (June-Oct.).

Position: Engineering Student Apprentice

Standards, as well as an editorial body for The IEEE Transactions on Energy

14. Co-Chaired a Session on “Eddy Currents and Magnetic Field Calculations” at the 1981 International Magnetics Conference, INTERMAGE-81, March 12-15, 1981, Grenoble, France.

15. Invited to Chair a Session on “Motor Control” at the 1981 International Conference on Industrial Control and Electronics, ICEI-81, Nov. 9-13, 1981, San Francisco.

16. Chaired a session on “Excitation and Resonances, Sensors, and Numerical Techniques” at the 1982 Joint International Magnetics - MMM Conference, INTERMAG-82, July 20-23, 1982, Montreal, Canada.

17. Chaired a session on “Electric Machinery and Devices “at the Workshop on Electromagnetic Field Computation, Oct. 20-21, 1986, Schenectady, New York.

18. Chaired a session on “DC and Permanent Magnet Machines - Analysis and Application” at the 1987 IEEE-Power Engineering Society Winter Meeting, Feb.1-6, 1987, New Orleans, Louisiana.

19. Chaired a session on “Saturation Effects in Rotating Machinery Analysis” at the 1989 IEEE - Power Engineering Society Winter Meeting, Jan.31-Feb.3, 1989, New York, New York.

20. Chaired a session on “DC and Permanent Magnet Machinery Drives” at the 1989 IEEE-Power Engineering Society Winter Meeting, Jan.29-Feb.3, 1989, New York, New York.

21. Chaired a session on “Rotating Machinery” at the 1990 IEEE Power Engineering Society Winter Meeting, Feb. 4-8 1990, Atlanta, Georgia.

22. Co-Chaired a session on “Electromagnetics” at the 1990 International Magnetics Conference, INTERMAG-90, April 17-20, 1990 Brighton, England, UK.

23. Chaired a session on “Magnetostatics, Micromagnetics and Materials” at the 1990 Fourth Biennial IEEE Conference on Electromagnetic Field Computation, CEFC’90, October 22-24,1990, Toronto, Canada.

24. Organized and Chaired a Panel Session on “Impact of Super-Computers on the Analysis and Design of Electrical Machinery”, at the 1991 IEEE- Power Engineering Society Winter Meeting, Feb. 3-7, 1991, New York, New York.

25.

28. Chaired a session on "Acoustics and Vibrations" at the 2003 IEEE-International Electric Machines and Drives Conference (IEMDC-2003), Madison, Wisconsin, June 1-4, 2003.

29. Past Secretary, Vice Chairman, as well as Chairman of the Virginia Mountain Section of IEEE, 1978/79,79/80 and 80/81, respectively.

30. Past Secretary, Vice Chairman, as well as Chairman of the Industrial Applications Chapter of the Virginia Mountain Section of IEEE, 1975/76, 76/11 and 77/78, respectively.

31. Service from 1979 to 1983 on the editorial board of The International Journal of Electric Machines and Electromechanics - An International Quarterly, publisher: Hemisphere Publishing Corporation.

32. Reviewer of Research Proposals for NSF on Energy and Electromechanical Energy Conversion Related Topics.

33. Reviewer of book manuscript for several U.S. publishers.

5.0 LIST OF PUBLICATION OF NABEEL A.O. DEMERDASH:

5.1 Papers in Refereed Archival Journals:

1. Demerdash, N.A., Hamilton, H.B and Brown, G.W., "Simulation for Design Purposes of Magnetic Fields in Turbogenerators with Symmetrical and Asymmetrical Rotors - Part I: Model Development and Solution Techniques," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-91, 1972, pp. 1985-1992.

2. Demerdash, N.A., Hamilton, H.B and Brown, G.W., "Simulation for Design Purposes of Magnetic Fields in Turbogenerators with Symmetrical and Asymmetrical Rotors - Part II: Model Calibration and Applications", IEEE Transactions on Power Apparatus and Systems, Vol. PAS-91, 1972, pp. 1992-1999.

3. Demerdash, N.A. and Hamilton, H.B., "Effect of Rotor Asymmetry on Field Forms and Eddy Current Losses in Stator Conductors Due to Radial Flux." IEEE Transactions on Power Apparatus and Systems, Vol. PAS-91, 1972, pp. 1999- 2010

4. Demerdash, N.A. and Gillott, D.H., "A new Approach for Determination of Eddy Currents and Flux Penetration in Nonlinear Ferromagnetic Materials," IEEE Transactions on Magnetics, Vol. MAG-10, 1974, pp. 682-685.

5. Demerdash, N.A., Garg, V.K. and Hamilton, H.B., "Effect of Ventilating Holes on Radial Flux and Losses in Stator Slots of Turbogenerators," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-94, 1975, pp. 1177-1182.

6. Demerdash, N.A. and Hamilton, H.B., "Use of Computerized Magnetic Field Solutions in Design Optimization of Turbogenerators," IEEE Transactions on Magnetics, MAG-11, 1975, pp. 1532-1534.

7. Demerdash, N.A. and Hamilton, H.B., “A Simplified Approach for Determination of Saturated Synchronous Reactances of Large Turbo-generators under Load,” IEEE Transactions on Power Apparatus and Systems, Vol. PAS-95, 1976, pp. 560-569.

8.

Issue on the 1979 Symposium on Eddy Current Characterizations of Material and Structures, Sept. 5-7, Sponsored by the National Bureau of Standards, ASTM-STP722, pp. 22-47.

18. Demerdash, N.A., Nehl, T.W. and Fouad, F.A., "Three Dimensional Finite Element Vector Potential Formulation of Magnetic Fields in Electrical Apparatus," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-100, 1981, pp. 4105-4111.

19. Demerdash, N.A., Nehl, T.W., Mohammed, O.A. and Fouad, F.A., "Experimental Verification and Application of the Three Dimensional Finite Element Magnetic Vector Potential Method in Electrical Apparatus," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-100, 1981, pp. 4112-4122.

20. Fouad, F.A., Nehl, T.W. and Demerdash, N.A., "Magnetic Field Modeling of Permanent Magnet Type Electronically Operated Synchronous Machines Using Finite Elements," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-100, 1981, pp. 4125-4135.

21. Fouad, F.A., Nehl, T.W. and Demerdash, N.A., "Permanent Magnet modeling for Use in Vector Potential Finite Element Analysis in Electrical Machinery," IEEE Transactions on Magnetics, Vol. MAG-17, 1981, pp. 3002-3004.

22. Nehl, T.W., Fouad, F.A. and Demerdash, N.A., "Digital Simulations of Power Conditioner – Machine Interaction for Electronically Commutated DC Permanent Magnet Machines," IEEE Transactions on Magnetics, Vol. MAG-17, 1981, pp. 3284-3286.

23. Demerdash, N.A., Nehl, T.W., Mohammed, O.A. and Fouad, F.A., "Nonlinear Three Dimensional Magnetic Vector Potential Finite Element Solution of Field Problems Including Experimental Verifications," IEEE Transactions on Magnetics, Vol. MAG-17, 1981, pp. 3408-3410.

24. Nehl, T.W., Fouad, F.A. and Demerdash, N.A., "Determination of Saturated Values of Rotating Machinery Incremental and Apparent Inductances by an Energy Perturbation Method," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-101, 1982, pp. 4441-4451.

25. Fouad, F.A., Nehl, T.W. and Demerdash, N.A., "Saturated Transformer Inductances Determined by Energy Perturbation Techniques," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-101, 1982, pp. 4185-4193.

26. Demerdash, N.A., Mohammed, O.A., Nehl, T.W., Fouad, F.A., and Miller, R.H., "Solution of Eddy Current Problems Using Three Dimensional Finite Element Complex Magnetic Vector Potential," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-101, 1982, pp. 4222-4229.

27. Nagarkatti, A.K, Mohammed, O.A and Demerdash, N.A., "Special Losses in Rotors of Electrically Commutated Brushless DC Motors Induced by Non-Uniformly

Rotating Armature MMFs," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-101, 1982, pp. 4502- 4507.

28. Nehl, T.W., Fouad, F.A., Demerdash, N.A. and Maslowski, E., "Dynamic Simulation of Radially Oriented Permanent Magnet Type Electronically Operated Synchronous Machine with Parameters Obtained from Finite Element Field Solutions," IEEE Transactions on Industrial Applications, Vol. IA-I 8, 1982, pp. 172-182.

29. Demerdash, N.A., Fouad, F.A. and Nehl, T.W., "Determination of Winding Inductances in Ferrite Type Permanent Magnet Electric Machinerad [,")-3.be(F)14.3331(.A)3.25012(r

47. Hijazi, T.M., and Demerdash, N.A., “Computer-Aided Modeling and Experimental Verification of Power Conditioner Operated Permanent Magnet Brushless DC Motors Including Rotor Damping Effects,” IEEE Transactions on Energy Conversion, Vol. EC-3, No.3, 1988, pp. 714-721.

48. Hijazi, T.M. and Demerdash, N.A., “Impact of the Addition of a Rotor-Mounted Damper Bar Cage on the Performance of Samarium-Cobalt Permanent Magnet Brushless DC Motor Systems,” IEEE Transactions on Energy Conversion, Vol. EC-3, No. 4, 1988, pp. 890-898.

49. Arkadan, A.A., Demerdash, N.A., Vaidya, J.G., and Shah, M.R., “Impact of Load on Winding Inductances of Permanent Magnet Generators with Multiple Damping Circuits Using Energy Perturbation,” IEEE Transactions on Energy Conversion, Vol. EC-3, No. 4, 1988, pp. 880-889.

50. Arakadan, A.A., and Demerdash, N.A., “Modeling of Transients in Permanent Magnet Generators with Mulitple Damping Circuits Using the Natural ABC Frame of Reference,” IEEE Transactions on Energy Conversion, Vol. EC-3, No. 3, 1988, pp. 715-722.

51. Arkadan, A.A., Hijazi, T.M., and Demerdash, N.A., “Computer-Aided Modeling of a Rectified DC Load-Permanent Magnet Generator System with Multiple Damper Windings in the Natural abc Frame of Reference,” IEEE Transactions on Energy Conversion, Vol. EC-4, No. 3, 1989, pp. 518-525.

52. Jamil, M.K., and Demerdash, N.A., “Effects of Chopper Control Circuits on Core Losses of Permanent Magnet DC Motors,” IEEE Transactions on Magnetics, Vol. MAG-25, No. 5, 1989, pp. 3572-3574.

53. Jamil, M.K., and Demerdash, N.A., “Harmonics and Core Losses of Permanent Magnet DC Motors Controlled by Chopper Circuits,” IEEE Transactions on Energy Conversion, Vol. EC-5, No. 2, 1990, pp. 408-414.

54. Demerdas3.91642(s)3.58327(a)-3.91642(r)-921-3.91642(r)1642(m)-3.25012(e)-167(a)-3.9 0 Td [(D)3

58. Alhamadi, M.A., Wang, R., and Demerdash, N.A., "Vector Potential 3D-Finite Element Modeling of Magnetic Fields in Permanent Magnet Devices," IEEE Transactions on Magnetics, Vol. MAG-27, No. 6, 1991, pp. 5016-5018.

59. Demerdash, N.A., Wang, R., and Secunde, R., "Three Dimensional Magnetic Fields in Extra High Speed Modified Lundell Alternators Computed by a Combined Vector-Scalar Magnetic Potential Finite Element Method," IEEE Transactions on Energy Conversion, Vol. 7, No. 2, 1992, pp. 353-366. (IEEE - Power & Energy Society Prize Paper Award, 1993, and Electric Machinery Committee - IEEE/PES Prize Paper Award, 1993.)

60. Wang, R., and Demerdash, N.A., "Extra High Speed Modified Lundell Alternator Parameters and Open/Short-Circuit Characteristics from Global 3D-FE Magnetic Field Solutions," IEEE Transactions on Energy Conversion, Vol. 7, No. 2, 1992, pp. 330-341.

61. Wang, R., and Demerdash, N.A., "Computation of Load Performance and Other Parameters of Extra High Speed Modified Lundell Alternators from 3D-FE Magnetic Field Solutions," IEEE Transactions on Energy Conversion, Vol. 7, No. 2, 1992, pp. 342-352.

62. Luo, Z., and Demerdash, N.A., "A Finite-Element Ballooning Model for 2D Eddy Current Open Boundary Problems for Aerospace Applications," IEEE Transactions on Magnetics, Vol. 28, No. 5, 1992, pp. 2241-2243.

63. Luo, Z. and Demerdash, N.A., "The Analysis of the Magnetostatic Fields Surrounding a Twisted-Pair Transmission Line Using Integral Methods," IEEE Transactions on Magnetics, Vol. 28, No. 5, 1992, pp. 2244-2246.

64. Jamil, M.K., Baldassari, P., and Demerdash, N.A. "No-Load Induction Motor Core Losses Using a Combined Finite Element State Space Model," IEEE Transactions on Magnetics, Vol. 28, No. 5, 1992, pp. 2821-2823.

65. Demerdash, N.A., and Baldassari, P., "A Combined Finite Element-State Space Modeling Environment for Induction Motors in the ABC Frame of Reference: the No-Load Condition," IEEE Transactions on Energy Conversion, Vol. 7, No. 4, 1992, pp. 698-709.

66. Baldassari, P., and Demerdash, N.A., "A Combined Finite Element-State Space Modeling Environment for Induction Motors in the ABC Frame of Reference: the Blocked-Rotor and Sinusoidally Energized Load Conditions," IEEE Transactions on Energy Conversion, Vol. 7, No. 4, 1992, pp. 710-720.

67. Demerdash, N.A., Gallagher, R.H., Schilling, R.J., and Svoboda, J.A., "Impact of Academic Computing on Teaching Electrical Engineering at Clarkson University," IEEE Transactions on Education, Vol. 36, No. 1, 1993, pp. 94-102.

68. Demerdash, N.A., Wang, R., and Alhamadi, M., "An Adaptive Newton-Raphson Technique for Combined Vector-Scalar Potential Solutions of Large Scale 3D

Magnetic Field Problems Involving Anisotropic Materials," IEEE Transactions on Magnetics, Vol. MAG-29, No. 2, 1993, pp. 1950-1957.

69. Demerdash, N.A., Luo, Z., Alhamadi, M., and Mattingly, B.T., "Teaching Electric Machinery and Associated Electromagnetic Fields - A Case for the Benefits of

Transactions on Aerospace and Electronic Systems, Vol. 32, No. 2, 1996, pp. 785-794.

79. Demerdash, N.A.O. and Alhamadi, M.A., "Three-Dimensional Finite Element Analysis of Permanent Magnet Brushless DC Motor Drives - Status of the State of the Art," IEEE Transactions on Industrial Electronics, Vol. 43, No. 2, 1996, pp. 268-275.

80. Arkadan, A.A., Subramaniam-Sivanesan, S., and Demerdash, N.A.O., "Shape Optimization of PM Devices Using Constrained Gradient Based Inverse Problem Methodology," IEEE Transactions on Magnetics, Vol. 32, No. 3, 1996, pp. 1222-1225.

81. Deng, F., and Demerdash, N.A., "CFE-SS Approach for Synchronous Generators under Unbalances – Part I: The Unbalanced Loads," IEEE Transactions on Aerospace and Electronic Systems, Vol. 33, No. 1, 1997, pp. 142-152.

82. Demerdash, N.A., and Deng, F., "CFS-SS Approach for Synchronous Generators under Unbalances – Part II: The Balanced and Unbalanced Rectifier Loads," IEEE Transactions on Aerospace and Electronic Systems, Vol. 33, No. 1, 1997, pp. 152-162.

83. Arkadan, A.A., Shehadeh, H.H., Brown, R.H., and Demerdash, N.A.O., "Effects of Chopping on Core Losses and Inductance Profiles of SRM Drives," IEEE Transactions on Magnetics, Vol. 1, No. 2, March 1997, pp. 2105-2108.

84. Deng, F., and Demerdash, N.A., "Comprehensive Salient-Pole Synchronous Machine

89. Bangura, F.J., Isaac, F.N., Demerdash, N.A., and Arkadan, A.A., "A Time-Stepping Coupled Finite Element - State Space Model for Induction Motor Drives - Part II: Machine Performance Computation and Verifications," IEEE Transactions on Energy Conversion, Vol. 14, No. 4, Dec. 1999, pp. 1472-1478.

90. Demerdash, N.A., and Bangura, J.F., "Characterization of Induction Motors in

Through a Combination of Time-Series Data Mining and Time-Stepping Coupled FE-State Space Techniques," IEEE Transactions on Industry Applications, Vol. 39, No. 4, July-Aug. 2003, pp. 1005-1013.

99. Mirafzal B., Demerdash N.A.O., "Induction Machine Broken-Bar Fault Diagnosis Using the Rotor Magnetic Field Space-Vector Orientation," IEEE Transactions on Industry Applications, Vol. 40, No. 2, March-April 2004, pp. 534-542.

100. Mirafzal B., Demerdash N.A.O., "Effects of Load Magnitude on Diagnosing Broken Bar Faults in Induction Motors Using the Pendulous Oscillation of the Rotor Magnetic Field Orientation," IEEE Transactions on Industry Applications, Vol. 41, No. 3, May-June 2005, pp. 771-783.

101. Mirafzal B., Demerdash N.A.O., "On Innovative Methods of Induction Motor Interturn and Broken Bar Fault Diagnosis," IEEE Transactions on Industry Applications, Vol. 42, No. 2, March/April, 2006, pp. 405-414.

102. Solveson M., Mirafzal B., and Demerdash, N.A.O., "Soft Started Induction Motor Modeling and Heating Issues for Different Starting Profiles Using a Flux Linkage ABC-Frame of Reference," IEEE Transactions on Industry Applications, vol. 42, No. 4, July/August 2006, pp. 973-982.

103. Mirafzal B., Povinelli, R. and Demerdash N.A.O., "Inter-turn Fault Diagnosis in Induction Motors Using the Pendulous Oscillation Phenomenon," IEEE Transactions On Energy Conversion, Vol. 21, No. 4, December 2006, pp. 871-882.

104. daSilva, A. M., Povinelli, R, and Demerdash, N.A.O., "Induction Machine Broken Bar and Stator Short-Circuit Fault Diagnostics Based on Three-Phase Stator Current Envelopes," IEEE Transactions on Industrial Electronics, Vol. 55, No. 3, March 2008, pp. 1310-1318.

105. Yeh, Chia-Chou, Sizov, G. Y., Sayed-Ahmed, A., Demerdash, N. A.O., Povinelli R., Yaz, E. E., Ionel, D. M, "A Reconfigurable Motor for Experimental Emulation of Stator Winding Inter-Turn and Broken Bar Faults in Polyphase Induction Machines," IEEE Transactions on Energy Conversion, Vol. 23, No. 4, December 2008, pp. 1005-1014.

106. Sizov, G. Y., Sayed-Ahmed, A., Yeh, Chia-Chou, and Demerdash, N. A.O., "Analysis and Diagnostics of Adjacent and Nonadjacent Broken Rotor Bar Faults in Squirrel-Cage Induction Machines," IEEE Transactions on Industrial Electronics, Vol. 56, No. 11, November 2009, pp. 4627-4641.

107. Yeh, Chia-Chou and Demerdash, N.A.O., "Fault-Tolerant Soft Starter Control of Induction Motors with Reduced Transient Torque Pulsations," IEEE Transactions on Energy Conversion, Vol. 24, No. 4, December 2009, pp. 848-859.

108. A. Sayed-Ahmed, and N. A. O. Demerdash, “Control of Open-Loop PWM Delta-Connected Motor-Drive Systems Under One Phase Failure Condition,” Journal of Power Electronics, Vol. 11, No. 6, Nov. 2011, pp. 824-836.

109. G. Y. Sizov, D. M. Ionel, and N. A. O. Demerdash, “Modeling and Parametric Design of Permanent-Magnet AC Machines Using Computationally Efficient-Finite Element Analysis,” IEEE Transactions on Industrial Electronics, Vol. 59, No. 6, June 2012, pp. 2403–2413.

110. A. Sayed-Ahmed, and N. A.O. Demerdash, “Fault-Tolerant Operation of Δ-Connected Scalar- and Vector-Controlled AC Motor Drives,” IEEE Transactions on Power Electronics, Vol.27, No.6, June 2012, pp.3041-3049.

111. A. Sayed-Ahmed, B. Mirafzal, and N. A.O. Demerdash, “Fault-Tolerant Technique for Δ-Connected AC-Motor Drives,” IEEE Transactions on Energy Conversion, Vol.26, No.2, pp.646-653, June 2011. This paper was designated a 2012 IEEE Power

128. Discussion to “Calculation of Induced Field Current and Voltage in Solid Rotor Generators,” IEEE Transactions on Power Apparatus and Systems, Vol. PAS-97, 1978, pp. 1923-1924, by Demerdash, N.A.
129. Discussion to “Transient Three-Dimensional Finite-Element Analysis of Heat Flow

2. Demerdash, N.A. and Gillott, D.H., "A Modified R-C Circuit for Determinations of Eddy Currents and Losses in Nonlinear Ferromagnetic Bars, Part I: Theoretical Development," Paper No. C-74-005-5, IEEE Winter Power Meeting, New York, Jan. 23-Feb. 1, 1974. Abstract No. C-74-005-5, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-93, 1974, pp. 1729.

3. Demerdash, N.A and Gillott, D.H., "A Modified R-C Circuit for Determination of Eddy Currents and Losses in Nonlinear Ferromagnetic Bars, Part II: Numerical Results," Paper No. C-74-006-3, IEEE Winter Power Meeting, New York, Jan. 28-Feb. 1, 1974. Abstract No. C-74-006-3, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-93, 1974, pp. 1729.

4. Demerdash, N.A. and Hamilton, H.B., "Simulation for Design Purposes of Magnetic Fields in Turbogenerators with Symmetrical and Asymmetrical Rotors – Part III – Flux Distribution Under Load," Paper No. C-74-007-1, Winter Power Meeting, New York, Jan. 28- Feb. 1, 1974. Abstract No. C-74-007-1, IEEE Transactions on Power and Apparatus and Systems, Vol. PAS-93, 1974, pp. 172.

5. Garg, V.K., Demerdash, N.A. and Grigsby, L.L., "Dynamic Power System Model, Part I: Generalized Nonlinear Synchronous Machine Model with Parameters Based on Design Particulars," Paper No. C-75-125-0, Winter Power Meeting, New York, 1975. Abstract No. C-75-125-0, IEEE Transactions on Power Apparatus and Systems, Vol.

and Machine Parameter Computation," Electric Machines and Drives Conference Record, IEEE International, May 18-21, 1997, pp. WA2/2.1-WA2/2.3.

29. Bangura, J.F., Isaac, F.N., Demerdash, N.A., and Arkadan, A.A., "A Time-Stepping Coupled Finite Element-State Space Model for Induction Motor Drives. II. Machine Performance Computation and Verification," Electric Machines and Drives Conference Record, IEEE International, May 18-21, 1997, pp. WB3/4.1-WB3/4.3.

Analysis," IEEE - International Electric Machines and Drives Conference, IEEE-IEMDC 1999, May 9-12, pp. 192-194.

38. Povinelli, R.J., Bangura, J.F., Demerdash, N.A., and Brown, R.H., "Diagnostics of Bar and End-Ring Connector Breakage Faults in Polyphase Induction Motors Through a Novel Dual Track of Time-Series Data Mining and Time-Stepping Coupled FE-State Space Modeling," IEEE - International Electric Machines and Drives Conference, IEEE-IEMDC 2001, pp. 809-813.

39. Bangura, J.F., Povinelli, R.J., Demerdash, N.A., and Brown, R.H., "Diagnostics of Eccentricities and Bar/End-Ring Connector Breakages in Polyphase Induction Motors Through a Combination of Time-Series Data Mining and Time-Stepping Coupled FE-State Space Techniques," Industry Applications Conference, 2001. Thirty-Sixth IEEE-IAS Annual Meeting. Conference Record of the 2001 IEEE-IAS Annual Meeting, Vol. 3, Sept. 30 - Oct.4, 2001, pp. 1579-1586.

40. Povinelli, R.J., Johnson, M.T., Bangura, J.F., and Demerdash, N.A., "A Comparison of Phase Space Reconstruction and Spectral Coherence Approaches for Diagnostics of Bar and End-Ring Connector Breakage Faults in Polyphase Induction Motors Using Current Waveforms," IEEE - Industry Applications Conference, 2002. Thirty-Seventh IEEE-IAS Annual Meeting. Conference Record, Vol. 3, Oct. 13-18, 2002, pp. 1541-1547.

41. Mirafzal, B., and Demerdash, N.A., "Effects of Inductance Nonlinearities in a Transformer-Rectifier DC Motor Drive Systems on the AC Side Harmonic Distortion Using a Time-Stepping Coupled Finite Element-Circuit Technique," IEEE - Electric Machines and Drives Conference, IEEE-IEMDC-2003, Vol. 3, June 1-4 , 2003, pp. 1755-1759.

42. Yeh, Chia-Chou, and Demerdash, N.A., "A Study of the Effects of Machine Winding Space Harmonic and Advanced Phase Current Switching on Torque and Performance Quality in Brushless DC Motors Using P-Spice Modeling," IEEE - Electric Machines and Drives Conference, IEEE-IEMDC-2003, Vol. 2, June 1-4, 2003, pp. 826-832.

43. Mirafzal, B., and Demerdash, N.A., "A Nonlinear Controller for Current Source Inverter for Induction Motor Drive Systems," Electric Machines and Drives Conference, 2003. IEMDC-2003. IEEE International, Vol. 3, 1-4 June 2003, pp. 1491-1497.

44. Mirafzal Behrooz, Fateh Fariba, Yeh Chiachou, Povinelli Richard, and Demerdash Nabeel A O., "Condition Monitoring of Squirrel-Cage Induction Motors Fed by PWM-Based Drives Using a Parameter Estimation Approach," POWERCON-2004, 2004 International Conference on Power System Technology, Vol. 2, 2004. pp. 1579-1584.

45. Solveson, Mark G., Mirafzal, Behrooz, and Demerdash, Nabeel A O., "Soft Started Induction Motor Modeling and Heating Issues for Different Starting Profiles Using a Flux Linkage ABC-Frame of Reference," The 39th IEEE Industry Applications Society Annual Meeting 2004, IEEE - IAS 2004 Conference Record, Vol. 1, 2004. pp. 18-25.

46. Yeh, Chia-Chou. Povinelli, Richard J. Mirafzal, Behrooz., and Demerdash, Nabeel A O., "Diagnosis of Stator Winding Inter-Turn Shorts in Induction Motors Fed by PWM-

Inverter Drive Systems Using a Time-Series Data Mining Technique," POWERCON 2004, 2004 International Conference on Power System Technology, Vol. 1, 2004. pp. 891-896.

47. Mirafzal, Behrooz, and Demerdash, Nabeel A O., "Effects of Load on Diagnosing Broken Bar Faults in Induction Motors Using the Pendulous Oscillation of the Rotor Magnetic Field Orientation," IAS Annual Meeting (IEEE Industry Applications Society) Conference Record of the 2004 IEEE Industry Applications Conference; 39th IAS Annual Meeting. Vol. 2, 2004. pp. 699-707.

48. Solveson, Mark G. Mirafzal, Behrooz, and Demerdash, Nabeel A.O., "Soft Started Induction Motor Modeling and Heating Issues for Different Starting Profiles Using a Flux Linkage ABC-Frame of Reference," IEEE IAS Annual Meeting Conference, 39th IEEE IAS Annual Meeting, Seattle, Vol. 1, October, 2004, pp. 18-25.

49. Yeh, ChiaChou, Mirafzal, Behrooz, Povinelli, Richard J., and Demerdash, Nabeel A.O., "A Condition Monitoring Vector Database Approach for Broken Bar Fault Diagnostics of Induction Machines," IEEE International Electric Machines a

55. Sizov, Gennadi Y., Yeh, Chia-Chou, and Demerdash, Nabeel A.O., "Application of Piezoelectric Sensors to Rotor Fault Diagnostics in Squirrel-Cage Induction Machines," Conference Proceedings of the IEEE Industry Applications Society Annual Meeting, 42nd IEEE-IAS Annual Meeting, Edmonton, Canada, October 5-9, 2008.

56. G. Y. Sizov, C-C. Yeh, and N. A. O. Demerdash, "Magnetic Equivalent Circuit Modeling of Induction Machines Under Stator and Rotor Fault Conditions," Conference Proceedings of the International Electric Machines and Drives Conference (IEMDC), 2009, Miami, USA, May 3-6, 2009.

57. G. Y. Sizov, D. M. Ionel, and N. A. O. Demerdash, "Modeling and Design Optimization of PM AC Machines Using Computationally Efficient - Finite E

65. J. He, G. Y. Sizov, P. Zhang, and N. A. O. Demerdash, “A Review of Mitigation Methods for Overvoltage in Long-Cable-Fed PWM AC Drives,” Conference Proceedings of IEEE Energy Conversion Congress and Exposition (ECCE), 2011, pp. 2160–2166, Sep.17-22, 2011.

66. G. Y. Sizov, P. Zhang, D. M. Ionel, and N. A. O. Demerdash, “Automated Bi-Objective Design Optimization of Multi-MW Direct-Drive PM Machines Using CE-FEA and Differential Evolution,” Conference Proceedings of IEEE Energy Conversion Congress and Exposition (ECCE), 2011, pp. 3672–3678, Sep.17-22, 2011.

74. P. Zhang, D. M. Ionel, and N. A.O. Demerdash, "Morphing Parametric Modeling and Design Optimization of Spoke and V-Type Permanent Magnet Machines by Combined Design of Experiments and Differential Evolution Algorithms," Conference Proceedings of IEEE Energy Conversion Congress and Exposition (ECCE), Denver, CO, pp. 5056-5063, Sep.15-19, 2013.

75. X. Jing, J. He, and N. A. O. Demerdash, "Loss Balancing SVPWM for Active Neutral-Point-Clamped Multilevel Converters," Conference Proceedings of IEEE Applied Power Electronics Conference and Exposition (APEC 2014), Fort Worth, TX, pp. 281-288, Mar.16-20, 2014.

76. M. Li, J. He, and N.A.O. Demerdash, "A Flux-Weakening Control Approach for Interior Permanent Magnet Synchronous Motors Based on Z-Source Inverters," Conference Proceedings of 2014 IEEE Transportation Electrification Conference and Expo (ITEC 2014), Dearborn, MI, pp. 1-6, June 15-18, 2014.

77. J. He and N.A.O. Demerdash, "Diagnosis of Open-Circuit Switch Faults in Multilevel Active-NPC Inverters," Conference Proceedings of 2014 IEEE Transportation Electrification Conference and Expo (ITEC 2014), Dearborn, MI, pp. 1-6, June 15-18, 2014.

78. J. He, C. Somogyi, A. Strandt, and N.A.O. Demerdash, "Diagnosis of Stator Winding Short-Circuit Faults in an Interior Permanent Magnet Synchronous Machine," Conference Proceedings of 2014 IEEE Energy Conversion Congress and Exposition (ECCE 2014), Pittsburgh, PA, pp. 3125-3130, Sep.14-18, 2014.

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80. J. He, A. Fatemi, N.A.O. Demerdash, and D. M. Ionel, "Diagnosis of Stator Short-Circuit Faults in Series and Parallel Winding Connections of Current-Controlled Permanent Magnet Synchronous Machines," Conference Proceedings of 2015 IEEE International Electric Machines and Drives Conference (IEMDC), Idaho, May 2015.

81. A. Fatemi, D. M. Ionel, and N. A. O. Demerdash, "Identification of Design Rules for Interior PM Motors with Different Cooling Systems," Conference Proceedings of 2015 IEEE International Electric Machines and Drives Conference (IEMDC), Idaho, pp. 1228-1234, May 2015.

82. A. Fatemi, N. A. O. Demerdash, and D. M. Ionel, "Design Optimization of IPM Machines for Efficient Operation in Extended Speed Range," Conference Proceedings of 2015 IEEE Transportation Electrification Conference and Expo (ITEC), Detroit, MI, pp. 1-8, June 2015.

83. A. Fatemi, D. M. Ionel, N. A. O. Demerdash and T. W. Nehl, "Fast Multi-Objective CMODE-Type Optimization of Electric Machines for Multicore Desktop Computers,"

1. "Description of Inter-Pole Forces for D.C. Machines with Presentation of Results," Large Rotating Apparatus Divisions, Westinghouse Electric Corporation, LRA Memo No. 408, by King, E.I. and Demerdash, N.A.

2. "Theory of Simulation of Turbine-Generators," Large Rotating Apparatus Division, Westinghouse Electric Corporation, LRA Memo No. 471, by Demerdash, N.A.

3. "Calibration of Magnetic Vector Potential Simulation Models of Turbine-Generators by Shop Test," Large Rotating Apparatus, Westinghouse Electric Corporation, LRA Memo No. 472, by Demerdash, N.A.

4. "Use of Turbine-Generator Excitation and Radial Flux Loss Computer Programs," Large Rotating Apparatus, Westinghouse Electric Corporation, LRA Memo No. 469, by Demerdash, N.A.

5. "Effective Permeability – A Method to Include Saturation in Nonlinear Eddy Current Problems," Large Rotating Appaams,"u15(e)01(R)0.33315(A)3.25012(M)3.58327(e)-3.91642(m)-3.2
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12. "Finite-element Analysis of Nonlinear Electromagnetic Devices, Part (I)," November 1978, Submitted to the High Power Branch of the Aerospace Propulsion Laboratory, Wright Patterson Air Force Base, Dayton, Ohio, Contract No. SIP/78-17, by Demerdash, N.A., Nehl, T.W. and Fouad, F.A.

13. "Development of the Finite Element Formulation for the Three Dimensional Static Magnetic Field Problem, Stage No.1," Submitted to the Ford Motor Company, Contract No. NP-47-J-667579-9, Electrical and Electronics Division, January 1980, by Demerdash, N.A. and Nehl, T.W.

14. "Development of the Finite Element Formulation for the Three Dimensional Static Magnetic Field Problem, Stage No. 2," Submitted to the Ford Motor Company, Contract No. NP-47-J-667579-9, Electrical and Electronics Division, June 1980, by Demerdash, N.A., Nehl, T.W. and Fouad, F.A.

15. "Development of a Three Dimensional Finite Element Method for Solution of Magnetostatic Problems Using Magnetic Vector Potential," Final Report, Contract No. NP-47-J-667579-9, Submitted to the Electrical and Electronics Division, the Ford Motor Company, October 1980, by Demerdash, N.A., Nehl, T.W., Fouad, F.A. and Mohammed, O.A.

16. "Improved Transistor-Controlled and Commutated Brushless DC Motors for Electric Vehicle Propulsion," Final Report on NASA/DOE Contract No. DEN3-65 Submitted to NASA Lewis Research Center/DOE, Cleveland, Ohio, January 1983, by Demerdash, N.A., Miller, R.H., Nehl, T.W. and Nyamusa, T.A. (DOE/NASA/0065-83-1, NASA CR 168053).

17. "Grid Modules and Methods for Computer-Aided Analysis for Nonlinear Electromagnetic Fields in Electrical Devices by Finite Elements," Final Report on Subcontract SCEEE-SCRAP/81-5 of F33615-81-C-201 1, Submitted to the Southeastern Center for Electrical Engineering Education/High Power Branch of the Aerospace Propulsion Laboratory, WPAFB, U.S. Airforce, May 1983, by Demerdash, N.A. and Nehl, T.W.

18. "Analysis, Testing and Evaluation of Faulted and Unfaulted WYE, DELTA, and Open DELTA Connected Electromechanical Actuators," Final Report on contrast NAS9-16281, Submitted to NASA Johnson Space Center, Houston, Texas, July 1983, by Nehl, T.W., and Demerdash, N.A., Lewis Research Center, March, 1993, by Demerdash, N.A., and Wang, R..

19. "Dynamic Modeling of Brushless Excitation Systems for Large Turbine Generators," Final Report on Contract 61 14022E2B8, Submitted to Westinghouse Electric Corporation, Large Steam Turbine Generator Division, East Pittsburgh, PA 14112, July 1983, by Nehl, T.W. and Demerdash, N.A.

20. Dynamic Analysis of Permanent Magnet Generators with Different Rotor Configurations," Final Report on Contract: P.O. B-2L34 93-24M, Submitted to

Sundstrand Aviation Operations, Sundstrand Corporation, Rockford Illinois 61125, April 1988, by Demerdash, N.A. and Arkadan, A.A.

21. "Computer-Aided Modeling and Prediction of Performance of the Modified Lundell Class of Alternators in Space Station Solar Dynamic Power Systems," Final Report on Contract NAG3-818 - Submitted to NASA Lewis Research Center, March, 1993, by Demerdash, N.A., and Wang, R..

5.7 Patents and Patent Disclosures:

1. "Rotor for Dynamo-Electric Machines," US Patent, No. 3,697,791 by Lee A. Kilgore, and Nabeel A. Demerdash, Oct. 10, 1972.

2. "Method of Diagnosing a Broken Bar Fault in an Induction Motor", US Patent No. 7,081,760 by Behrooz Mirafzal and Nabeel A.O. Demerdash, July 25, 2006.

3. "An On-line Diagnostic Method for Electronic Switch Faults in Multilevel Neutral Point Clamped Converters," Provisional Application No. 62/255,083, by Jiangbiao He and Nabeel A.O. Demerdash, September 2015.

4. "A Novel Fault-Tolerant Topology for Multilevel NPC Converters with Improved Overload Capability," Provisional Application No. 62/255,075, by Jiangbiao He, Lixiang Wei, Nathan Weise, and Nabeel A.O. Demerdash, September 2015.

5.8 M.S. Thesis and Ph.D. Dissertation:

Masters of Science Thesis, "Effect of Complex Wave Forms on Losses in D.C. Motors," University of Pittsburgh, December 1967.

Doctor of Philosophy Dissertation, "Computerized Magnetic Field Model for Performance Calculation of Turbo-Generators with Asymmetrical and Symmetrical Rotors," University of Pittsburgh, August 1971.

6.0 TECHNICAL PRESENTATIONS CONDUCTED BY NABEEL A.O. DEMERDASH:

6.1 Presentations Conducted at International Conferences:

More than one hundred presentations conducted at the following conferences:

1) The 1970 IEEE - Industry and General Applications Society Meeting, Chicago, Illinois. (One presentation).

2) The 1972 IEEE - Powere.p(l)-3.25012(l)b(m)-3.25012327(e)-3.91642(e)-3.91012(r)-0.33315(i)-3.250

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3) The 1974 IEEE - Power Engineering Society Winter Meeting, New York, New York. (Three presentations).

4) The 1974 International Magnetics Conference (INTERMAG-74), Toronto, Canada. (One presentation).

5) The 1975 IEEE - Power Engineering Society Winter Meeting, New York, New York. (Two presentations).

6) The 1975 International Magnetics Conference (INTERMAG-75), London, England. (One presentation).

7) The 1976 IEEE - Power Engineering Society Summer Meeting, San Francisco, California. (One presentation).

8) The 1976 Joint International Magnetics - MMM Conference (INTERMAG-MMM-76), Pittsburgh, Pennsylvania. (Two presentations).

9) The 1977 International Magnetics Conference (INTERMAG-77), Las Angeles, California. (One presentation).

10) The 1978 IEEE - Power Engineering Society Winter Meeting, New York, New York. (Two presentations).

11) The 1978 International Magnetics Conference (INTERMAG-78), Florence, Italy. (One presentation).

12) The 1979 IEEE - Power Electroncis Specialists Conference, San Diego, California. (One presentation).

13) The 1980 IEEE - Power Engineering Society Winter Meeting, New York, New York. (One presentation).

14) The 1980 International Magnetics Conference (INTERMAG-80), Boston, Massachusetts. (Two presentations).

15) The 1980 IEEE - Power Electroncis Specialists Conference, Atlanta, Georgia. (One presentation).

16) The 1980 International Electric Vehicle Exposition, St. Louis, Missouri. (One presentation).

17) The Collogue International sur Ia Commande et Ia Regulation Numerique Des Machines Elecriques (CONUMEL-80), Lyon, France. (One presentation).

18) The 1981 IEEE - Power Electroncis Specialists Conference, Atlanta, Georgia. (Three presentations).

19) The 1981 International Magnetics Conference (INTERMAG-81), Grenoble, France. (Four presentations).

20) The 1982 IEEE - Power Engineering Society Winter Meeting, New York, New York. (Five presentations).

21) The 1982 International Magnetics Conference (INTERMAG-82), Montreal, Canada. (Two presentations).

22) The 1983 International Magnetics Conference (INTERMAG-83), Philadelphia, Pennsylvania. (Two presentations).

23) The 1984 IEEE - Power Engineering Society Winter Meeting, Dallas, Texas. (Two presentations).

24) The 1984 International Magnetics Conference (INTERMAG-84), Hamburgh, West Germany. (One presentation).

25) The 1985 IEEE - Power Engineering Society Winter Meeting, New York, New York. (Six presentations).

26) The 1986 IEEE - Power Engineering Society Winter Meeting, New York, New York. (Two presentations).

27) The 1987 IEEE - Power Engineering Society Winter Meeting, New Orleans, Louisiana. (One presentation).

28) The 1988 IEEE - Power Engineering Society Winter Meeting, New York, New York. (Five presentations).

29) The 1989 IEEE - Power Engineering Society Winter Meeting, New York, New York. (One presentation).

30) The 1989 International Magnetics Conference (INTERMAG-89), Washington, D.C. (One presentation).

31) The 1990 International Magnetics Conference (INTERMAG-90), Bri2 Tf 15.36 9on, D.C.

35) The 1992 IEEE-Power Engineering Society Winter Meeting, New York. (Two presentations)

36) The 1992 International Magnetics Conference, (INTERMAG '92), St. Louis, Missouri. (Three presentations)

37) The 1992 Fifth Biennial IEEE Conference on Electromagnetic Field Computation, CEFC '92, Clairmont, California. (Two presentations)

38) The 1993 IEEE-Power Engineering Society Winter Meeting, Columbus, Ohio. (Three presentations)

39) The 1993 IEEE-Power Engineering Society Winter Meeting, Columbus, Ohio. (Two presentations)

40) The 1993 IEEE-Power Engineering Society Summer Meeting, Vancouver, B.C., Canada. (Two presentations)

41) The 1994 IEEE - Power Engineering Society Summer Meeting, (Two presentations)

42) The 1995 IEEE - Power Engineering Society Winter Meeting, (One presentation)

43) The 1997 IEEE - Power Engineering Society Winter Meeting, (One presentation)

44) The 1997 IEEE-International Electric Machines and Drives Conference, Milwaukee, WI, (Four presentations)

45) The 1998 IEEE - Industry Application Annual Meeting, St. Louis, Missouri, (Two presentations).

46) The 1999 IEEE - International Electric Machines and Drives Conference, Seattle, WA, (Three presentations).

47) The 1999 IEEE - International Electric Machines and Drives Conference, Seattle, WA, (One of three keynote speakers at the plenary session of the conference).

48) The 2001 IEEE - Industry Applications Annual Meeting, Chicago, IL, (One presentation).

49) The 2002 IEEE - Industry Applications Annual Meeting, Pittsburgh, PA, (One presentation).

50) The 2003 IEEE - International Electric Machines and Drives Conference, Madison, WI, (Three presentations).

51) The 2009 IEEE - International Electric Machines and Drives Conference, Maimi, FL,

52) The 2015 IEEE - Energy Conversion Congress and Exposition, Montreal, Canada, (Two presentations).

6.2 Presentations Conducted at National and Regional Conferences:

More than seventy five presentations at various other IEEE sponsored Conferences on Industry Applications, Power Electronics, Electric Vehicles, and Region 3 IEEE Southeastcon., etc.

6.3 Technical Presentations Conducted at Various Corporate Industrial and Research Organizations, Government Agencies, and Universities:

Nabeel Demerdash has conducted more than 30 presentations and seminars on subjects such as Two and Three Dimensional Electromagnetic Saturation, as well as Practices and Experiences with Design and Fabrication of Electronically Controlled Electric Machinery System for Propulsion, Actuation and Industrial Drives, and Computer - Aided Design Optimization of Electronically Operated Permanent Magnet Brushless DC Machine Systems. Some of these presentations were conducted at the following organizations:

53) Department of Electrical Engineering, University of Pittsburgh, Fall 1971.

54) The Corporate Research and Development Center, the General Electric Company, Schenectady, New York, 1975.

55) The Corporate Research and Development Center the General Electric Company, Schenectady, New York, 1976.

56) The Johnson Space Center, Control Systems Development Division, NASA, Houston, Texas, 1975.

57) The Johnson Space Center, Control Systems Development Division, NASA, Houston, Texas, 1976.

58) A Joint Meeting of the IEEE-Power Engineering Society Chapter, and the Egyptian Engineering Society, Cairo, Egypt, 1977.

59) Department of Electrical Power Engineering and Electric Machines, Cairo University, Cairo, Egypt, 1977.

60) The High Power Branch, U.S. Airforce Aeropropulsion Laboratory, Wright-Patterson AFB, Dayton, Ohio, 1977.

61) Generator Systems Design Department, Westinghouse Electric Corporation, East Pittsburgh, Pennsylvania, 1977, 1980 and 1981.

62) The Electrical and Electronics Engineering Department, the General Motors Research Laboratories, GM Tech-Center, Warren, Michigan, 1978 and 1992.

63)

79) MagnTek Corp. Drives Division, New Berlin, WI (One Presentation February 19, 1998) - Televised for Motor Group at MagnTek Rand D Center in St. Louis, MO.

7.0 AWARDS AND RECOGNITIONS:

1. Recipient of the 1999 IEEE Nikola Tesla Technical Field Award, with a Citation as Follows: “For pioneering contributions to electric machine and drive system design using coupled finite element and electrical network models,” February 2, 1999.

2. Recipient of the 1999 IEEE Nikola Tesla Technical Field Award, with a Citation as Follows: “For pioneering contributions to electric machine and drive system design using coupled finite element and electrical network models,” February 2, 1999.

3. Elected Fellow of the Institute of Electrical and Electronics Engineers by the Board of Directors of the Institute at its meeting of November 19-20, 1989, with the following citation: “For contributions to the application of finite element analysis to electrical machine design.”

4. Achieved the status of Life-Fellow of the Institute of Electrical and Electronics Engineers, January 1, 2009.

5. Awarded “The 1993 IEEE-Power Engineering Society Prize Paper Award”, for a paper on 3D-FE magnetic fields in electric machinery, See Paper No. 59 in Journal Publications List.

6. Awarded “The 1993 IEEE-Electric Machinery Committee (PES) Prize Paper Award”, for a paper on 3D-FE magnetic fields in electric machinery, See Paper No. 59 in Journal Publications List.

7. Awarded “The 1994 IEEE-Power Engineering Society Working Group Award”, for the development of two chapters in a Tutorial Text No. 92EH0362-4PWR, on “Adjustable Speed Drives”, See item No. 5 in the section on Continuing Education - Course Development and Teaching.

8. Awarded “The 2012 IEEE-Power Engineering Society Prize Paper Award”, for a

12. Recipient of the Sigma Xi Marquette University Chapter 1998 Scientific Achievement Award with a Citation as Follows: "For distinguished scientific research achievement in energy conversion devices," May 7, 1998.

13. Selected for listing starting 1992 in "Who's Who in Simulation".

14. Selected for biographical listing starting with the 47th Edition of Marquis' 1992-1993 "Who's Who in America".

15. Selected for biographical listing starting with the 1st. Edition of Marquis' "Who's Who in Science and Engineering", 1992.

16. Selected for biographical listing starting with the 18th. Edition of "American Men and Women of Science", January 1992.

17. Invited in 1990 to membership in "The Electromagnetics Academy", and simultaneously listed in "Who's Who in Electromagnetics".

18. Named in 1990 to the list of speakers of the "Distinguished Speaker Program" of the IEEE-Industrial Electronics Society (IES).

19. Named in 1987 to the list of the "Distinguished Lecturer Program" of the IEEE Power Engineering Society, see the IEEE Power Engineering Review, Vol. PER-7, No. 10, October 1987, pp. 12-13.

20. Awarded a NASA-ASEE Certificate of Recognition for "Successful Participation in the Summer Faculty Fellowship Program" held at NASA-Lewis Research Center, Summer of 1985.

21. Awarded Certificate of Recognition "for the Creative Development of Technology" by NASA, 1979, for Contributions to Modeling and Understanding of the Operation of Permanent Magnet Brushless DC Motor and Induction Motor Drives.

22. Awarded "Certificate of Teaching Excellence" during the Academic Year 1979/80 at Virginia Polytechnic Institute and State University.

23. Awarded and NSF International Travel Grant to present a paper on the Use of

8.1 Ph.D. Students

Student	Degree and Date	Curriculum
1. V.K. Garg	Ph.D., completed August, 1975	EE (VPI &SU)

Dissertation Title: A Saturated Synchronous Machine Model for Dynamic Analysis and Control Purposes.

Remarks: See refereed papers No. 49, 50 and 52 in publication list, which were based on this research. Dr. Garg is now a Fellow of IEEE.

2. M.R. Shah	Ph.D., completed May 1980	EE	(VPI & SU)

Dissertation Title: A Practical Approach to Inclusion of Electromagnetic Field Nonlinearities in the Dynamic Modeling of Large Turbogenerators with Emphasis on the Interaction Between Machine Design and System Stability Aspects.

Remarks: See refereed journal paper No. 16 in the publication list, which was based on this research. Dr. Shah is now a Fellow of IEEE. He is also the 2012 Recipient of the IEEE Nikola Tesla Technical Field Award.

Remarks: See refereed journal papers No. 18, 19, 23, 26, 34, 39, and 41 in publication list, which were based on this research. Dr. Mohammed is now a Fellow of IEEE.

6. T.A. Nyamusa Ph.D., completed February, 1985 EE (Clarkson U.)

Dissertation Title: Integrated Field-Network Analysis of Electronically Commuted Machine Systems.

Remarks: See refereed journal papers No. 40, 43, and 44 in publication list, which were based on this research.

7. A.A. Arkadan Ph.D., completed January, 1988 EE (Clarkson U.)

Dissertation Title: Computer-Aided Dynamic Performance Prediction of Permanent Magnet Generator Systems with Damping Circuits and Electronically Switched Loads.

Remarks: See refereed journal papers No. 49 and 50 in publication list, which were based on this research. Dr. Arkadan is now a Fellow of IEEE.

8. T.M. Hijazi Ph.D., completed June, 1988 EE (Clarkson U.)

Dissertation Title: Finite Element-Network Graph Theory Modeling Techniques for Design and Analysis of Permanent Magnet Electronically Commutated Brushless DC Motors Including Rotor Damping Effects.

Remarks: See refereed journal papers No. 46, 47 and 48 in publication list, which were based on this research.

9. Ren-hon Wang Ph.D., completed May, 1991 EE (Clarkson U.)

Dissertation Title: Combined Magnetic Vector-Scalar Potential Finite Element Computation of 3D Magnetic Field and Performance of Modified Lundell Alternators in Space Station Applications.

Remarks: See refereed journal papers No. 54, 55, 57, 59-61, which were based on this research. Dr. Wang is now a Fellow of IEEE.

10. Mohd Alhamadi Ph.D., completed September, 1992 EE (Clarkson U.)

Dissertation Title: Three Dimensional Finite Element Magnetic Field Computations and Performance Simulation of Braces DC Motor Drives with Skewed Permanent Magnet Mounts.

Remarks: See refereed journal papers No. 56, 58,71-73 which are based on this research.

11. M.K. Jamil Ph.D., completed December, 1993 EE (Clarkson U.)

Dissertation Title: Computer-Aided Study and Analysis of Effects of Choppers on the

Remarks: See refereed journal papers No. 52 and 53, which are based on this research.

12. Fang Deng Ph.D., completed April, 1994 EE (Clarkson U.)

Dissertation Title: A Time Stepping Coupled Finite Element-State Space Modeling Environment for Synchronous Machine Performance and Design Analysis in the ABC Frame of Reference.

Remarks: See refereed journal papers No. 77, 78, 80 and 81 in publication list, which were based on this research.

13. John Bangura Ph.D., completed August, 1999 EE (Marquette U.)

Dissertation Title: Diagnosis of Normal and Abnormal Operations of Induction Motors in ASDS by a Coupled Finite Element-Network Technique.

Remarks: See refereed journal papers No. 88 through 93, 95 and 96, which were based on this research.

14. Behrooz Mirafzal, Ph.D., completed August, 2005 EE (Marquette U.)

Dissertation Title: Incipient Fault Diagnosis in Squirrel Cage Induction Motors.

Remarks: See refereed journal papers No. 99 through 102 in Publications List, which were based on this research.

15. Chia-Chou Yeh, Ph.D., completed May, 2008 EE (Marquette U.)

Dissertation Title: Fault Tolerant Operations of Induction Motor-Drive Systems.

Remarks: See refereed journal papers No. 105 and 107 and refereed conference papers 66, 68 through 70 in Publications List, which were based on this research.

16. Ahmed Sayed-Ahmed, Ph.D., completed December, 2009 EE (Marquette U.)

Dissertation Title: Control of PWM AC Motor-Drive Systems Under Faulty Conditions.

Remarks: See the refereed journal papers No. 109 and 110.

17. Gennadi Y. Sizov, Ph.D., completed December, 2013 EE (Marquette U.)

Dissertation Title: Design Optimization of Interior Permanent Magnet Machines Based on Computationally-Efficient Finite Element Analysis.

Remarks: See the refereed journal papers No. 109 ,113 and 114.

18. Peng Zhang, Ph.D., completed December, 2013 EE (Marquette U.)

Dissertation Title: A Novel Design Optimization of a Fault-Tolerant AC Permanent

Remarks: See refereed journal papers No. 8 and 10 in publication list, which were based on this research.

Remarks: See refereed Journal Paper No. 33 in publication list, which was partially based on this research. Dr. Arkadan is now a Fellow of IEEE.

9. M.M. El-Masry M.S., completed October, 1985 EE (Clarkson U.)

Thesis Title: Simulation of Steady State Conduction in Semiconductor Devices Using the Finite Element Method.

10. Vicky R. Johnson M.S., completed April, 1987 EE (Clarkson U.)

Thesis Title: Time-Domain Equivalent Circuit Model for Analysis of Inverter-Fed Induction Motors Compatible with Common Network Analysis Software Packages.

Remarks: See conference paper No. 42 which is partially based on this research.

11. Mohd Alhamadi M.S., completed May, 1988 EE (Clarkson U.)

Thesis Title: Modeling and Analysis of Inverter-Fed Induction Motors Using the Natural ABC Frame of Reference and Network Graph Techniques.

Remarks: See Journal Paper No. 56, which is partially based on this research.

12. Zemin Luo M.S., completed August, 1991 EE (Clarkson U.)

Thesis Title: Fields Surrounding Transmission Lines in Space Station Applications Using Finite and Ballooning Methods for Simulation of Infinite Boundaries.

Remarks: See refereed Journal Papers No. 62 and 63, which are partly based on this research.

13. Peter Baldasari M.S., completed December, 1991 EE (Clarkson U.)

Thesis Title: A Combined Finite Element-State Space Modeling Environment for Induction Motors in the ABC Frame of Reference.

Remarks: See refereed Journal Papers No. 64, 65 and 66, which are partially based on this research.

14. Fang Deng M.S., completed December, 1992 EE (Clarkson U.)

Thesis Title: A Coupled Finite Element-State Space Modeling Environment for Synchronous Machine Performance and Design Analysis in the ABC Frame of Reference.

15. Brian Boubar M.E., completed May, 1994 EE (Clarkson U.)

Project Area: On the Performance of Inverter Energized Three Phase Induction Motor Drives.

16. Frederick Isaac M.S., completed June, 1994 EE (Clarkson U.)

Thesis Title: Modeling and Comparison of Performance of Inverter and Sinusoidal No-Load Operation of Three Phase squirrel-Cage induction Motors Using a Time-Stepping Coupled Finite Element - State Space Method in the Natural ABC Frame of Reference.

17. Mark A. Bouton M.E., completed June, 1994 EE (Clarkson U.)

Project Area: On MOSFET Use in Inverters for Control of Three Phase Induction Motor Drives.

18. John F. Bangura M.S., completed May, 1996 EE (Marquette U.)

33. Muyang Li, M.S., completed December, 2013 EE (Marquette U.)

Thesis Title: Control of Extended Constant Power Speed Range of Permanent-Magnet Synchronous Motors based on Z-Source Inverters.

34. Chad Somogyi, M.S., completed May, 2015 EE (Marquette U.)

Thesis Title: Common Mode Voltage Mitigation Strategies Using PWM in Neutral-Point-Clamped Multilevel Inverters.