

Associate Professor Andrew Ewen Ritchie

Electrical Machines Section, Institute of Energy Technology, Aalborg University, Pontoppidanstræde 101, 9220 Aalborg Øst, Denmark, Tel: +45 99 40 80 80 Direct Telephone line +45 99 40 92 41 Fax. +45 98 15 14 11 E-mail: aer@iet.aau.dk

Born 1943, B.Tech. from University of Bradford, England 1966. Employed as Development Engineer at English Electric Co. Bradford England, Special Machines & Equipment Division 1966-73, Scragg Power Drives, Macclesfield, England, 1973-76. Development Engineer at Thrige-Titan, Aalborg, Denmark 1976-79, ASEA, Aalborg, Denmark 1979-83, Electrolux Elmotor, Aalborg, Denmark 1983-87, External lecturer at Aalborg University 1986, Associate Professor at Aalborg University 1987-. Member of Energy Sector Study Board 1987-89, & 1996-, Faculty Study Board 1987-89, Seconded to Ondo State University, Ado Ekiti, Nigeria, April-June 1991. Member of Board of the Faculty of Engineering and Science, 1993-2001. Hon. Treasurer 'Dansk Magnetisk Forening', 'Danish Magnetic Association', 1994-2001. Chairman 'Dansk Magnetisk Forening', 'Danish Magnetic Association', 2005-2007. Member of Editorial Board, Electromotion Magazine, 1997-. Member of International programme and steering committee, UUES conference, 1999-. Member of International programme and steering committee, ICEMS conference, 2001-.

Teaching profile: Electrical Machines Courses 4th, 5th 6th 7th & 9th semesters, covering steady state and dynamic modelling of transformers and all types of rotating electrical machine, & Projects 3rd, 4th, 5th, 6th, 7th, 8th & 10th semesters. Technical supervisor for three Assistant Professors during their teaching qualification period.

Research in electrical machines, dynamic modelling in connection with transient disturbances, controlled operation and fault diagnosis, electrical machine design, magnetic materials. Supervisor for eight Ph.D projects. Part time project coordinator for CETEC, Research Centre for Electro-technical Energy Conversion 1991-1995. Coordinator NorMUD network, Uniting Research Students in Heavy Current Electrical Engineering around the Baltic Rim 2000-2005.

SUPERVISOR FOR PhD. PROJECTS:

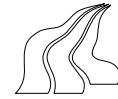
- 1989 - 1995 Deng, Xiaolan; 'Detection of Rotor Faults on Induction Motors by Investigating the Flux Linkage of the Stator Winding', PhD Thesis, Institute of Energy Technology, Aalborg University, Denmark. Defended 95-01-24. ref. I14 94 S 0076. 187 pages.
- 1992-1995 Rasmussen, Keld Folsach; 'Efficiency Optimisation of Electric Motors', PhD Thesis, Institute of Energy Technology, Aalborg University, Denmark. Defended 95-05-02. Sponsored by ATV (*Academy of Technical Sciences*) and Grundfos A/S ref. EF441. 214 pages.
- 1993-1996 Rasmussen, Claus Bjerregaard; 'Optimisation of Electric Motor for Refrigerator Compressors', PhD Thesis, Institute of Energy Technology, Aalborg University, Denmark. Defended ????. Institute of Energy Technology, Aalborg University, Denmark. 206 pages. ISBN- 87-89179-15-3
- 1994-1997 Sandholdt, Per, 'Modellering og test af elektriske drevsystemer', 'Modelling and test of electrical drive systems', PhD Project, Institute of Energy Technology, Aalborg University, Denmark. Defended 2002-06-30. Institute of Energy Technology, Aalborg University, Denmark. 270 pages. plus appendices. 2 vols. ISBN 87-89179-38-2.
- 1995-1998 Post, Rasmus, 'Modellering af Jerntab i elektriske maskiner fødet af kommuterende effektelektroniske anordninger', 'Modelling of Iron Loss in Electrical Machines supplied by



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- 2000-2003 *Commutating Power Electronics Apparatus*, PhD Project, Institute of Energy Technology, Aalborg University, Denmark. Abandoned 2002-10-29, Institute of Energy Technology, Aalborg University, Denmark. 206 pages.
- 2000-2003 Zamastil, Michaela Maria, *Condition Monitoring of Rotational Mechanical Systems from Electrical Measurements*, PhD Project, Institute of Energy Technology, Aalborg University, Denmark. Defended ????. Institute of Energy Technology, Aalborg University, Denmark. 206 pages. ISBN
- 2000-2003 Tataru, Ana-Maria, *"Shark - A new Concept in Electrical Machines"*, PhD Project, Institute of Energy Technology, Aalborg University, Denmark. Defended 2004-10-15. Institute of Energy Technology, Aalborg University, Denmark.
- 2000-2003 Lu, Kaiyuan, *"Design Study for Controllable Electric Motor for Three Wheel Drive, In Wheel Mounting on Professional , Electric , Lawn Mower"*, PhD Project, Institute of Energy Technology, Aalborg University, Denmark. Defended 2005-03-22. Institute of Energy Technology, Aalborg University, Denmark.

RESEARCH PROJECTS

- [1] 'Energiforbrug i kølesystemer', *'Energy usage in refrigerator systems'*, i samarbejde med in collaboration with: DTU/LfK, CETEC E/F, Danfoss, Gram, finansieret af Energistyrelsen, NESAs, Danfoss, Gram, IET, LfK. Rasmussen C.B., Andersen H.R., Ritchie E., Pedersen J.K.
- [2] '22 kW Permanentmagnet Generator til Vindmølle', *'Permanent Magnet generator for Windmill'* i samarbejde med in collaboration with: NVFC, De Smithske, Berendsen Teknik, CETEC E/F, KTH., finansieret af Energistyrelsen, De Smithske, Berendsen Teknik. Jens Birk, Ewen Ritchie.
- [3] 'Optimering af T220 telefontransducer', *'Optimisation of T220 telephone transducer'* i samarbejde med in collaboration with: Kirk Acoustic A/S, finansieret af Kirk Acoustic A/S. Hans Henrik Hansen, Ewen Ritchie.
- [4] 'Anvendelsesorienteret Udvikling og Karakterisering af Magnetiske Materialer', *'Application oriented development and characterisation of Magnetic Materials'* i samarbejde med in collaboration with: Danfoss, DTU/IFM, Ferroperm, Grundfos, Höganäs, Kirk, Nilfisk; finansieret af Erhvervsfremme Styrelsen, Danfoss, Ferroperm, Grundfos, Höganäs, Kirk, Nilfisk.
- [5] 'Modellering og test af elektriske drivsystemer', *'Modelling and test of electrical drive systems'*; Per Sandholdt, John K. Pedersen, Ewen Ritchie., finansieret af Aalborg Universitet, det Tekniske Naturvidenskabelige Fakultet.
- [6] 'Modellering af Jerntab i elektriske maskiner fødet af kommuterende effektelektroniske anordninger', *'Modelling of Iron Loss in Electrical Machines supplied by Commutating Power Electronics Apparatus'*; i samarbejde med in collaboration with: Danfoss A/S og Grundfos A/S. Oct. '95 - Sept. '98. Rasmus Post, Ewen Ritchie
- [7] *>Modelling and design of an eddy current brake with thin cylindrical rotor= in collaboration with* University of Bryansk, Russia. Technical University of Sofia, Bulgaria, Elena Degtyareva, Ivan Stoyanov Yatchev, Ewen Ritchie.
- [8] *>Modelling and design of a Proportional Force Linear Actuator= in collaboration with* Technical University of Sofia, Bulgaria, Ivan Stoyanov Yatchev, Ewen Ritchie.
- [9] *>Multi-disciplinary optimisation of Electromagnetic Devices=, in collaboration with* Inst. of Mechanical Design, AAU, Inst. of Electrical Engineering, Dept of Small Electrical Machines, University of Warsaw, Poland, University of Pavia, Italy. Giancarlo Chiapparoli, Marek Rudnicki, Niels Olhoff, Ewen Ritchie.
- [10] Alternativ Kompressor *>Alternative Compressor= i samarbejde med in collaboration with:* DTU/ET, CETEC E/F, Danfoss, finansieret af Energistyrelsen, Danfoss, IET, ET. Ritchie E. Danig P.O.



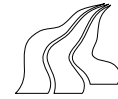
- [11] >Demonstrationsopstilling for afprøvning af momentkurve, m.m. for en d.c. motor uden mekanisk tilkobling=, >Demonstration arrangement for measuring the torque-speed curve of a D.C. motor without mechanical loading=, i samarbejde med in collaboration with: Thrige Electric A/S. Claus B. Rasmussen, Zhaohui Zeng, Ewen Ritchie
- [12] Alternativ Styresystem=Alternative Steering System= i samarbejde med in collaboration with: Danfoss A/S Zhaohui Zeng, Ewen Ritchie
- [13] Application of Flywheel for Energy Storage >Svinghjul for energilagring= i samarbejde med in collaboration with Risø, NESÅ, Per Udsen A/S, Zhaohui Zeng, Ewen Ritchie 1998-1999, med tilskud fra energistyrelsen supported by the Danish Energy Agency.

DISSERTATION AND PROFESSORSHIP ACTIVITIES

- 1996 Chairman, Organising Committee, Nordic Research Symposium 12.-16.08.96, Energy Efficient Electric Motors and Drive Systems, Sponsored by NorFA.
- 1996 Chairman, Adjudication Committee for Claus Bjerregaard Rasmussen appointment as Assistant Professor.
- 1996 External Examiner, University of Tasmania, Hobart, Tasmania, Australia, Mr Andrew Gary Innes' PhD Thesis; " Detection of Broken Rotor Bars in Variable - Speed Induction Motor Drive".
- 1996 Opponent, Dr. Tech. Dissertation Examination, Helsinki University of Technology, Finland, Dr. Sakari Palko: AStructural Optimisation of An Induction Motor Using A Genetic Algorithm and A Finite Element Method.'
- 1997 Member of Adjudication Committee for the Appointment of an Assistant Lecturer in Electrical Energy Technology at The Institute of Energy Technology, Aalborg University.
- 1998 Member of Adjudication Committee for the Appointment of an Assistant Lecturer in Electrical Energy Technology at The Institute of Energy Technology, Aalborg University.
- 1999 External Examiner, University of Tasmania, Hobart, Tasmania, Australia, Mr Andrew Gary Innes' PhD Thesis; " Detection of Broken Rotor Bars in Variable - Speed Induction Motor Drive". Resubmission.
- 2000 Chairman of Adjudication Committee for PhD Thesis Examination, Institute of Energy Technology, Faculty of Science and Technology, Aalborg University, Leo Østergaard: AModelling and Simulation of the Diode Split Transformer'.
- 2000 Member of adjudication committee for the appointment of Dr Raoul Rabonivici as Associate Professor at the Ben Gurion University of the Negev, Israel.
- 2002 Chairman of Adjudication Committee for PhD Thesis Examination, Institute of Energy Technology, Faculty of Science and Technology, Aalborg University, Peter Omand Rasmussen, "Design and Advanced Control of Switched Reluctance Motors".
- 2002 Opponent, Dr. Tech. Dissertation Examination, Helsinki University of Technology, Finland, Jarmo Perho " Reluctance Network For Analysing Induction Machines".
- 2003 Chairman of Adjudication Committee for PhD Thesis Examination, Institute of Energy Technology, Faculty of Science and Technology, Aalborg University, Martin Høgdahl Jensen, "Broadband Model of the Distribution Network".

REVIEWER

- 1997 MMM INTERMAG '98, Conference, San Francisco, USA.
- 1997 - IEE Proceedings - Electric Power Applications.
- 1998 - ICEM >98 Conference, Istanbul, Turkey.



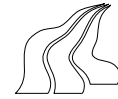
1999 - IEEE Transactions on Industrial Electronics
 2000 ICEM 2000 Conference, Helsinki, Finland

ADVANCED COURSES

- 1993 Organiser - Finite Element Analysis as a tool for Electromagnetic Circuit Design, Lecturer David Carpenter, Vector Fields Ltd., England.
- 1994 Organiser - International Post-graduate training Course: 'Electromagnetic Fields and Electrical Energy Conversion.', Lecturer, Dr. Jarmo Perho, Helsinki University of Technology, Espoo, Finland.
- 1996 Co-Organiser with Assoc. Prof. Olaf Lyngdahl Olsen, and Prof. Tapani Jokinen :- Nordic Research Symposium, Subject: Energy Efficient Electric Motors and Drives : The Summer Seminar for Young Nordic and Baltic Post-graduate Students, whose interest lies in the field of Electric Motors and Drives, sponsored by NorFA was held at Skagen, Denmark, on 96-08-12/16. The seminar included inspiring lectures by eminent keynote speakers, working lectures by Nordic lecturers, and oral contributions from the delegates, reporting their own research results. A proceedings was produced and distributed to the delegates, it was also published as ISBN 87-89179-12-9.
- 1997 Organiser - Aalborg University Post Graduate School Training Course: Numerical Methods for Calculating Electrical and Magnetic Fields, Mathematical Methodology and Fundamentals of Electromagnetism. Lecturer, Assoc. Prof. Marek Rudnicki, *Inst. of Electrical Engineering, Dept of Small Electrical Machines, University of Warsaw, Poland,*
- 1998 Organiser - Aalborg University Post Graduate School Training Course: Numerical Methods for Calculating Electrical and Magnetic Fields, Mathematical Methodology and Fundamentals of Electromagnetism. Lecturer, Assoc. Prof. Marek Rudnicki, *Inst. of Electrical Engineering, Dept of Small Electrical Machines, University of Warsaw, Poland,* repeat.
- 2001 Organiser - Aalborg University Post Graduate School Training Course: Numerical Methods for Calculating Electrical and Magnetic Fields, Mathematical Methodology and Fundamentals of Electromagnetism. Lecturer, Assoc. Prof. Marek Rudnicki, *Inst. of Electrical Engineering, Dept of Small Electrical Machines, University of Lodz, Poland,* repeat.
- 2002 Organiser - Aalborg University Post Graduate School Training Course: Noise And Vibration In Electrical Machines, Lecturer: Professor Z.Q. Zhu, University of Sheffield, United Kingdom.

GUEST LECTURERS

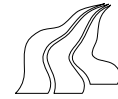
- 1992-01-22 Co-Organiser with Prof. Bengt Alvsten - Prof. David Howe, University of Sheffield, England. 'Design Techniques and Electronic Motors'
- 1992-01-22 Co-Organiser with Prof. Bengt Alvsten - Prof. M. Jufer, École Polytechnique Fédérale de Lausanne, Switzerland. 'State of the Art, The New Generations of Motors'
- 1995-05-03 Organiser - Prof. Timothy J. E. Miller, University of Glasgow, United Kingdom. 'Design Techniques for Permanent Magnet Motors'.
- 1995-08-16 Co-Organiser with Assistant Prof. Frede Blaabjerg and Assoc. Prof. Olaf Lyngdahl Olsen, - Dr. David A. Staton, University of Glasgow, United Kingdom. 'Brushless Machines. Design Tools'



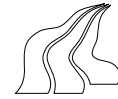
- 1995-09-28 Organiser - Prof. Robert E. Betz, University of Newcastle, NSW, Australia, 'Control of Synchronous Reluctance Motors - an Overview'
- 1997 Organiser - Prof. Karel Jezernik, University of Maribor, Maribor, Slovenia, 'Robust Control of the Induction Motor'.
- 2000 Organiser - Prof. Z. Q. Zhu, University of Sheffield, England, Acoustic Noise in Electrical Machines

PUBLICATION LIST

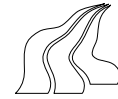
- [1] Bengt Alvsten, Ewen Ritchie, "Problem Oriented, Project Organised Education in Power Electronics at the University of Aalborg, Denmark", ISPS Prague, Sept. 1992.
- [2] Ritchie A.E., Xiaolan Deng, "A Fast, Precise & Low Cost Measurement System for Induction Motors", UPEC Bristol, Sept. 1992.
- [3] Ewen Ritchie, "Future Trends in Teaching Electrical Machines at the University of Aalborg, Denmark", Nordisk Forskerkonference i Stærkstrømsteknik, Aalborg, 1992.
- [4] Bengt Alvsten, Ewen Ritchie, RCEEC, "A Network for Increasing & Strengthening the Research on Electrical Machines & Drive Systems", Seminario Electro/Tecnologias para la Industria, Bilbao, May 1992.
- [5] Carl Ulrik Graversen, Keld Folsach Rasmussen, Ewen Ritchie, "State-of-the-art Investigation of High Speed Electric Motors", RCEEC Aalborg, April 1992.
- [6] Ewen Ritchie, "An Induction Motor Drive for the SAT Project", Danfoss, Nordborg Denmark, June 1992.
- [7] Ewen Ritchie, "Review of Centre Research Plan", Int. Conf. on Energy Effective & Smart Motors, Aalborg, Denmark, Jan. 1992.
- [8] Bitsch Jørgensen, M., Borch, O., Esan, A.A., Dalgaard-Jensen, K., Isager, P., Kloch, S., Ritchie, E., Müller, J., Lambert Mortensen, N., "Proposal for a Revised Programme of Studies at the Faculty of Engineering", Ondo State University, Nigeria, Using the Pedagogical Model at AUC as Reference', Aalborg Feb.1992, ISSN 0902-8005 U 9201.
- [9] Frede Blaabjerg, John K. Pedersen, Ewen Ritchie, Peter Nielsen. "Determination of Mechanical Resonances in Induction Motors by Random Modulation and Acoustic Measurement". Proceed. of EPE '93. Vol. 4, 1993. pp. 319-324.
- [10] Deng, X., Ritchie, E., "Detection of Broken Rotor Bars in Induction Motor Rotors by Investigating the Flux Linkage of the Stator Winding", Proc. Int. Conf. Electrical Machines in Australia, Adelaide, Sept. 1993, pp 164-169.
- [11] Christiansen, H.C, Olsen, O.L., Ritchie, E., "Teaching Electrical Machines using Problem Oriented, Project Organised Education at Aalborg University, Denmark", Proc. Int. Conf. Electrical Machines in Australia, Adelaide, Sept. 1993, pp 648-653.
- [12] Ritchie, A.E., Howe, D., Birch, T.S., Zhu Z.Q, "Materials and Technologies for Controlled High-Speed Electrical Drives - MATCHED", Proposal for Brite-EuRam II: Feb.26 1993
- [13] Deng, X., Ritchie, E., Jokinen, T. "Diagnosis of Rotor Faults in Squirrel-Cage Induction Motor Rotors Using a Fuzzy Logic Approach", Proc. Int. Conf. Electrical Machines, Paris, Sept. 1994,V2.pp. 348-352.
- [14] Deng, X., Ritchie, E., Jokinen, T. "Dynamical Model of Three-Phase Squirrel-Cage Induction Motor with Rotor Faults", Proc. Int. Conf. Electrical Machines, Paris, Sept. 1994, V2. pp.694-698.
- [15] Rasmussen, C.B., Rasmussen, K.F., Ritchie, E., "A Strategy for Selection and Efficiency Optimisation of Small Electric Motors", Proc. Int. Conf. Electrical Machines, Paris, Sept. 1994,V3. pp. 526-530.
- [16] Ritchie, E., Deng, X., Blanke, M., Bak-Jensen, B.,Nielsen, S.B., "Condition Monitoring and Diagnosis Techniques at the University of Aalborg, Denmark; Spectral Analysis; Fuzzy Logic; Fault Detection and Isolation; Transfer Function Comparison", Invited Tutorial Contribution, T2, Int. Conf. Electrical Machines, Paris, Sept. 1994.
- [17] Christensen, L., Mathiassen, O., Bech Rasmussen, L., Ritchie, A.E., Riber Rosholm, J., "Iron Losses in Electrical Machines driven from Non-Sinusoidal Waveforms", UPEC Galway, Sept 1994.
- [18] Perho J., Ritchie E.; ' A Motor Operation Ananlysis Using Reluctance Net.'; Proceedings Stockholm Power Tech., International Symposium on Electric Power Engineering, Stockholm, Sweden, June 1995. pp 356-361.
- [19] Deng X., Palko S., Jokinen T., Ritchie E., 'Rotor Faults Analysis of Induction Motors by Dynamic Model and Finite Element Method.'; Proceedings Stockholm Power Tech., International Symposium on Electric Power Engineering, Stockholm, Sweden, June 1995. pp 368-371.



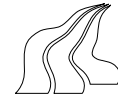
- [20] Deng X., Ritchie E., Jokinen T. , 'An Improved Knowledge Base of a Fuzzy Logic Diagnostic System for an Induction Motor with Rotor Faults. '; Proceedings CICEM '95, Hangzhou, PRC, Aug. 1995. pp 901-905.
- [21] Birk J.,Ritchie E., 'Simulink Model of Permanent Magnet Generator feeding a Network through an AC-DC-AC converter. '; Proceedings CICEM '95, Hangzhou, PRC, Aug. 1995. pp976-981
- [22] Andersen H.R., Rasmussen C.B. Ritchie E., Pedersen J. K.; 'Efficiency Comparison of Electrical Motors for Energy Optimised Variable Speed Low Power and Low Cost Household Equipment.' Proceedings EPE '95, Seville, Spain, Sept. 1995. vol 3 pp. 3423-3427.
- [23] Rasmussen C.B., Andersen H.R., Ritchie E., Pedersen J.K.; 'Design and Efficiency Comparison of Electric Motors for Low Power Variable Speed Drives with Focus on Permanent Magnet Motors.' Proceedings 7th.International Conf. on Electrical Machines and Drives, Durham, UK, Sept. 1995. pp.428-432
- [24] Hindkaer L., Mentz H ., Mortensen T.I., Ries K., Ritchie E., Thor C.Y.B.; 'Transient Model of a Self Controlled Brushless Synchronous Generator'; Proceedings UPEC '95, Greenwich, U.K., Sept. 1995. pp. 477-481.
- [25] Blaabjerg F., Pedersen J.K., Ritchie E., Nielsen P.; 'Determination of Mechanical Resonances in Induction Motors by Random modulation and Acoustic Measurement.' Trans. IEEE, IAS, Vol. 31, No. 4, July/August 1995. pp 823-829.
- [26] Sandholdt, P. Ritchie, E., Pedersen, J.K., Betz R.E.: >A Dynamometer Performing Dynamical Emulation of Loads with Non-linear Friction= ; Proceedings IEEE International Symposium on Industrial Electronics (ISIE >96), Warsaw, Poland, June 17-20. 1996, Vol.2 pp873-878.
- [27] Rasmussen C.B., Ritchie, E.: >Magnetic Equivalent Circuit Method for Designing Permanent Magnet Motors=; Proc. Int. Conf. Electrical Machines, Vigo, Spain, Sept. 1996, Vol.3 pp 103-108.
- [28] Perho J., Ritchie, E.: >Analysis of a Permanent Magnet Machine Using Reluctance Network.=; Proc. Int. Conf. Electrical Machines, Vigo, Spain, Sept. 1996, Vol.1 pp 44-48.
- [29] Christensen, L., Mathiassen, O., Rasmussen L.B., Ritchie A.E.; >Extraction of the parameters for a single-phase squirrel-cage induction motor using an iterative method.=; Proceedings of IMACS >96, St. Nazaire, France, Sept. 1996. pp 959-964.
- [30] Gislason, F., Jensen, P.R., Jespersen, K.,Padrah, S., Pedersen, M.R., Ritchie, A.E., Sander-Larsen, J.;>Transient Models of Three-Phase Synchronous Generator and Transformer for Analysis of Inrush Current >; Proceedings UPEC '96, Iraklio, Crete, Greece, Sept. 1996. submitted 4 pp.
- [31] Ritchie, A.E., Editor;>The Nordic Research Symposium: Energy Efficient Electric Motors and Drives>; Proceedings , Skagen, Denmark, Aug. 1996. Institute of Energy Technology, Aalborg University, Aalborg, Denmark; 375 pp., ISBN 87-89179-12-9.
- [32] Rasmussen, C.B., Ritchie E.; >Improved Reluctance MMF Network for Calculation of Magnetic Field Distribution in Surface Mounted Permanent Magnet Motors'; Electromotion >97, Cluj-Napoca, Romania, May 1997, Invited Paper, Published in Electromotion MagazineVol. 4. No: 1-2.May 1997. ISSN 1223 - 057X., pp. 55-61.
- [33] Rasmussen, C.B., Ritchie E.; >Selection and Comparison by Testing of Motor Drives for Household Refrigerator Compressor' Proc. First International (III All-Russian) Conference on Electromechatronics (EMT=97), St. Petersburg, Russia, May 1997, pp 262-273.
- [34] Rasmussen, C.B., Ritchie E., Arkkio A.; >Variable Speed Induction Motor Drive for Household Refrigerator Compressor' Proc. IEEE International Symposium on Industrial Electronics (ISIE >97), Guimarães, Portugal, July 1997, IEEE Catalog No. 97TH8280, Vol. 2. pp. 655-659.
- [35] Rasmussen, C.B., Ritchie E.; >A Magnetic Circuit Approach for Predicting PM Motor Performance' Proceed. of IEEE, Industry Applications Society (IAS) Annual Meeting, IAS '97, New Orleans, Louisiana, USA, October 1997, pp..
- [36] Rasmussen C.B., Ritchie E.,; >Variable Speed Brushless DC Motor Drive for Household Refrigerator Compressor.' Proceedings 8th. International Conf. on Electrical Machines and Drives (EMD), Cambridge, UK, Sept. 1997. pp.
- [37] Andersen, G.K., Christiansen, H., Gurholt, R., Helle, L., Hovet, T.G., Jensen, C.H., Ritchie, E.; >ADynamic Model of a Switched Reluctance Motor for Vibration Analysis', Proceedings UPEC '97, Manchester, UK, Sept. 1997. submitted 4 pp.
- [38] Bak-Jensen, Birgitte, Ritchie Ewen; >ADiagnostic Methods and Condition Monitoring of Broken Rotor Bars, Voltage Transformers and Zinc-Oxide Arresters.' Proceedings of SDEMPED=97, The 1997 IEEE



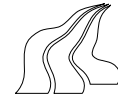
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- International Symposium on Diagnostics for Electrical Machines, Power Electronics and Drives. Carry-le-Rouet, France, September 1-3, 1997, pp. 211-217.
- [39] Ritchie Ewen., Frederiksen Poul.T., Jensen Finn, editors, *>Magnetiske Materialer, Beregninger og Anvendelser=* Compendium, Institute of Energy Technology, Aalborg University, Aalborg Denmark, September 1997, 150 pages, ISBN 87-89179-21-8.
- [40] Ritchie E., Pedersen J. K., Rasmussen C. B., Andersen H. R., *>Sammenligning af Virkningsgraden for Elektromotorer til Husholdningsapparater under Energi-optimeret Drift=* Teknisk Nyt, Copenhagen Denmark, Submitted Oct. 1997
- [41] Jacobsen T. L., Pedersen J. K., Ritchie E., *=State of the Art Investigation of Brushless Drive system for Electrical Vehicles=* , Report, Institute of Energy Technology, Aalborg University, Aalborg Denmark, November 1997, 37 pages. I14 96 S 0058.
- [42] Zeng, Z., Ritchie E., *=Selection of Suitable Generic Drive Type to suit the Application=* , Report, Institute of Energy Technology, Aalborg University, Aalborg Denmark, December 1997, 29 pages. I14 97 S 0085.
- [43] Ritchie E., Selbo, T.; *Alternativ kompressor - Lineær Kompressor - El-faglig slutrapport til forprojekt >Alternative Compressor - Linear Compressor - Closing report of the Preliminary Project=*, Report, Institute of Energy Technology, Aalborg University, Aalborg Denmark, November 1997, 16 pages. I14 97 S 0089.
- [44] Zeng, Z., Ritchie E., *=Demonstration Arrangement for Testing Torque Characteristics of DC Motors Without Any Mechanical Attachment=* , Report, Institute of Energy Technology, Aalborg University, Aalborg Denmark, February 1998, 42 pages. I14 98 S 0001.
- [45] Peter Jensen, Mogens Lau, Ewen Ritchie, Peter Friis Sørensen , *Non Linear Dynamic and Quasi Steady State Model of the Induction Machine*, Proceedings UPEC '98, Edinburgh, UK, Sept. 1998. Vol. 1, pp. 53-56, ISBN 0 9523165-3-6
- [46] Zeng, Z., Ritchie E., *=Selection of Suitable Generic Drive Type to suit Mobile Drive Applications=*, Report, Institute of Energy Technology, Aalborg University, Aalborg Denmark, April 1998, 72 pages. I14 98 S 0086.
- [47] Zeng, Z., Ritchie E., *=Electric Traction System Design for Fork Lift Trucks =* , Proceedings NORpie/98 (1998 IEEE Nordic Workshop on Power and Industrial Electronics), Espoo, Finland, August 1998, pp. 189-193.
- [48] Lucian Tutelea, Ion Boldea, Ewen Ritchie, Per Sandholdt, Frede Blaabjerg, *Thermal testing for inverter-fed induction machines using mixed frequency method*, Proc. Int. Conf. Electrical Machines, Istanbul, Turkey, Sept. 1998, pp. 248-253. ISBN 975-429-125-x/ ISBN 975-429-126-8 (Vol.1)
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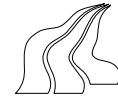
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