Peter Y. P. Wung Ph.D.EE

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Citizenship

Naturalized US citizen since 1979.

Academic Appointment

University of Dayton Dayton. OH *2018-Present*

Adjunct Professor, School of Electrical and Computer Engineering

- Fall 2018-Present ECE 316: Introduction to Electrical Energy
- Spring 2018-Present ECE 471: Contemporary Electrical Power Systems and Smart Grid

Marquette University. Milwaukee. WI *2022-Present*

Adjunct Professor, School of Electrical and Computer Engineering

- Fall 2022-Present ELEN 4240/EECE 5240: Principles of Power System Protection and Monitoring
- Spring 2022-Present ELEN 4230/EECE 5230: Renewable and Legacy Electric Energy Systems Analysis
- Spring 2023-2024 ELEN 4220/EECE 5220: Power Electronics

Smart Grid Related Work Experience

Regal Beloit Corporation. Tipp City. OH *2011-2016*

Principal Engineer, Enabling Technology-Commercial and Industrial, Innovations Group

- External Representation
  - NEMA Advisory Council to NIST Smart Grid Interoperability Panel. 2013-2016
  - IEEE Smart Grid (Steering Committee Member) 2014-2019
  - Co-chair IEEE Smart Grid R&D Committee 2014-2019
  - Member, IEEE Smart Grid Marketing Committee 2014-2019
- Internal Representation
  - Long Range Planning Special Topics:
    - Member of Regal Beloit Internet of Things investigative committee (report to senior management and presentation at Tech Symposium) 2015
    - DC Microgrids (Presentation to senior management, videotaped) 2014
    - Smart Grid (Part of the presentation to senior management) 2013
- Long term enabling technology development for Regal Beloit.
  - Research and track technology developments and update Regal Beloit senior management.
  - Internal Topic Expert on: DC Microgrid, Smart Grid, Internet of Things, Big Data Analytics

Electric Machines Related Work Experience

GE Aviation. Dayton. OH *2016-2018*

Staff Engineer, Electric Machines

Regal Beloit Corporation. Tipp City. OH *2011-2016*

Principal Engineer, Enabling Technology-Commercial and Industrial, Innovations Group

- External Representation
  - Regal Beloit Liaison with WEMPEC 2011-Present
  - Regal Beloit Liaison with SMMA (MCMA) 2011-Present

- Member, IEEE 1812-2014: IEEE Trial-Use Guide for Testing Permanent Magnet Machines Working Group.
- Electromagnetic designs, advanced system solutions.
    - Axial flux PM machines for commercial and industrial applications
    - Switched reluctance, permanent magnet, and induction machines for commercial compressors.
- Theoretical resource for equivalent circuit-based performance calculation program for three phase and single phase induction machines.
- Development of new motor technology for Regal Beloit.

A. O. Smith Electrical Products Company, Tipp City. OH *2007-2011*

Principal Engineer

- Responsible for the maintenance of Motor Design Suite, an AOS EPC proprietary induction motor performance calculation program.
- Liaison with University of Glasgow SPEED Consortium. Responsible for the conversion and maintenance of the AOS version of the SPEED software.
- Development of new motor technology for AOS EPC.
- Member of AOS EPC Patent Committee: examine and critique technology patents for AOS EPC.
- AOS Liaison with Wisconsin Electric Machines and Power Electronics Consortium 2007-2011
- AOS Liaison with SMMA (MCMA) 2007-2011

DeltaGee Motors, Blacksburg, VA *2007*

Consultant

- Motor technology consultant. Dealing with design, analysis, testing, manufacturing, and marketing of proprietary motor technologies.

Tecumseh Products Research Laboratory, Ann Arbor MI *2006-2007*

Senior Electrical Engineer

- Research and development work in BLDC motors for application in compressors and blowers. Design of radial flux and axial flux BLDC motors for blower applications.
- Design of induction motors for application in compressors and blowers with Tecumseh Brasil.
- Verification of single-phase BLDC motor design with Tecumseh-Europe.
- Analyzed motor performance and the motor sensitivity to steel variations.
- Part of the team that designed and built a cogging torque tester.

Emerson Motor Company, St. Louis MO *1994- 2006*

Senior Engineering Specialist, Advanced Motor Development.

Responsibilities are: evaluation and assessment of new power electronic and electromechanical energy conversion device technologies. Analysis and design of existing electromechanical energy conversion technology for application. Product development for production. Research and development of salient technologies for possible market applications. Numerical analysis of design concepts. Advanced science and technology resource.

Induction Motor Design and Analysis

Project management of the integration of SPEED consortium induction motor design program into the business systems of Emerson Motor Company.

Investigation of the Emerson proprietary integral horsepower induction motor performance program for prediction improvement and interface with Finite Element Analysis software.

Single phase induction motor modeling using SLIM FEA software.

Project management of integration of FEA package into single phase induction motor design program.

Permanent Magnet Motor Design and Analysis

Project engineer for an Electrical Power Steering system motor product. Worked with the customer from intermediate design through Concept Verification and Design Verification stages.

Analysis brushless DC motor cogging torque problems for various projects.

Redesigned and built a surface mount brushless DC motor for Emerson testing purposes.

Investigated interior permanent magnet motor potential for commercial development.

Switched Reluctance Motor Design and Analysis

Investigate the causes and solutions for the noise and vibration problems associated with the switched reluctance motor.

Manufacture a prototype permanent magnet assisted switched reluctance motor for experimental studies conducted at the University of Wisconsin-Madison.

Design, build and characterization of a switched reluctance motor for application in a commercial grade scroll compressor.

Development of a 10 HP general purpose switched reluctance motor in a NEMA 215 Frame.

Design and production of a one of a kind switched reluctance motor for application in a Sun Rayce solar car for University of Missouri-Columbia and Ohio State University.

Linear Actuator Design and Analysis

Project engineer for a design team from a major scroll compressor manufacturer and Emerson motors and drives groups to investigate a hypercycloidal motor for application in a scroll compressor. Analysis and feasibility study of linear actuator concepts for rotational action.

Thermal Circuit Analysis

Initiated a major program to write a thermal prediction program for application with electromagnetic motor design program.

TECO-Westinghouse, Round Rock, TX *1993-1994*

Senior Research Engineer

Responsibilities are: Three phase induction motor modeling and design. Update and improvement of the performance calculation program.

Education

Doctorate of Philosophy in Electrical Engineering *1993*

Georgia Institute of Technology

Thesis: Operating Point Dependent Modeling and Control of Synchronous Reluctance Motors
Thesis Advisor: Prof. Hans B. Püttgen.

Masters of Science in Electrical Engineering *1985*

Georgia Institute of Technology

Teaching Assistant: 1983-1985

Bachelors of Science in Electrical Engineering *1983*

University of Illinois Urbana-Champaign

Professional Societies

Institute of Electrical and Electronic Engineers *1979-Present*

Senior Member	*1998-Present*
Member	*1993-1998*
Student Member	*1979-1993*

Industry Application Society of the IEEE *1997-Present*

S1M Portal Administrator	*2019-Present*
Intersociety Cooperation Chair	*2015-2017*

Steering Committee Chair, Energy Conversion Congress and Exposition *2014*
General Chair, Energy Conversion Congress and Exposition *2013*
Special Associate Editor, Electric Machines Committee *2011-Present*
Industry Representative, Energy Conversion Congress and Exposition Steering Committee *2009-Present*
Awards Chair Industrial Power Conversion Systems Department, IAS *2009-2012*
Technical Programs Co-Chair, Energy Conversion Congress and Exposition *2010*
Publicity Chair, Energy Conversion Congress and Exposition *2009*
At-large member, IAS executive board *2006-2009*
Chairman, Electric Machinery Committee *2006-2007*
Vice Chairman, Electric Machinery Committee *2004-2005*
Secretary, Electric Machinery Committee *2002-2003*

Power and Energy Society of the IEEE *1979-Present*

Power Electronics Society of the IEEE *1988-Present*

Paper Reviewer

Industrial Electronics Society of IEEE *2000-Present*

Paper Reviewer

Magnetics Society of the IEEE *2007-Present*

Paper Reviewer

Institute of Engineering and Technology (UK) *2005-2020*

Reviewer for Proceedings of Electric Power Applications.

Software

Finite Element Software

- Ansys Maxwell
- Areva SLIM FEA program
- FLUX2D
- SPEED Design Suite:PC-FEA
- MotorCad

Mathematical Calculation Software

- MATLAB
- Excel

Language Skills

- **Spoken:** Mandarin Chinese, Spanish.
- **Read:** Chinese, Spanish.

Leadership Activities

- Publications Chair Industry Application Society Annual Meeting 2024-Present
- Educator-In-Chief for Smart Grid, IEEE Adhoc Committee on LifeLong Learning and Continuing Education 2020-2023
- Chair. IEEE Smart Grid Program 2019-2022
- Co-chair IEEE Smart Grid R&D Committee 2014-2019
- Steering Committee Chair, Energy Conversion Congress and Exposition 2014
- General Chair, Energy Conversion Congress and Exposition 2013

- Technical Programs Co-Chair, Energy Conversion Congress and Exposition 2010
- Publicity Chair, Energy Conversion Congress and Exposition 2009
- Chairman, Industry Application Society Electric Machinery Committee 2006-2007
- Vice-Chairman, Industry Application Society Electric Machinery Committee 2003-2005
- Secretary, Industry Application Society Electric Machinery Committee 2002-2004
- Vice President, Georgia Institute of Technology Graduate Student Senate, 1986-1987

References

Available upon request.

Publications

Smart Grid Related

The Future As We See It.

P. Wung,
Presented in: IEEE Smart Grid Portal. **http://smartgrid.ieee.org/newsletters/december-2015/the-future-as-we-see-it**
Publication date: December 2015

Electric Machines Technology Related

Rollup stator development for 56 frame PM synchronous motor

Kreidler, J.J., Anderson, W.K. ; Venkateswararao, S. ; Conway, B.J. ; Willis, H.D. ; Wung, P.Y.P.
Energy Conversion Congress and Exposition (ECCE), 2014 IEEE
Date of Conference: 14-18 Sept. 2014
Page(s): 5571 - 5578

Modelling and effects of in-situ magnetization of isotropic ferrite magnet motors

Min-Fu Hsieh; Ching-Kuo Lin; Dorrell, D.G.; Wung, P.
Energy Conversion Congress and Exposition (ECCE), 2011 IEEE
Date of Conference: **17-22 Sept. 2011**
Page(s): 3278 - 3284

Comparing European 132 frame switched reluctance and induction motor drives

Turner, M.J. Wung, P.Y.P. Wallace, R.S.
This paper appears in: **Industrial Electronics, Control and Instrumentation, 1997. IECON 97. 23rd International Conference on**
Publication Date: 9-14 Nov. 1997
Volume: 2
On page(s): 403 - 408 vol.2

A systematic approach toward studying noise and vibration in switched reluctance machines: preliminary results

Mahn, J. Williams, D. Wung, P. Horst, G. Lloyd, J. Randall, S.
This paper appears in: **Industry Applications Conference, 1996. Thirty-First IAS Annual Meeting, IAS '96., Conference Record of the 1996 IEEE**
Publication Date: 6-10 Oct. 1996
On page(s): 779 - 785 vol.2
Number of Pages: 4 vol. xxxiv+2583

Adjustable Speed Drive Performance Evaluation Methods

Hans-Björn Püttgen, P. Wung, D. Rouaud, Lajoie-Mazenc, E.; Maire, J.; Dessoude, M.; Samotyj, M.
Power Electronics and Applications, 1993., Fifth European Conference on;
Date of Conference: 13-16 Sep 1993

Application of PC-based measurement techniques to ASD performance evaluation

Wung, P.Y.P. Püttgen, H.B.

Sch. of Electr. Eng., Georgia Inst. of Technol., Atlanta, GA, USA;

This paper appears in: **System Theory, 1993. Proceedings SSST '93., Twenty-Fifth Southeastern Symposium on**

Publication Date: 7-9 March 1993

On page(s): 74 - 78

Synchronous reluctance motor operating point dependent parameter determination

Wung, P.Y.P. Püttgen, H.B.

Sch. of Electr. Eng., Georgia Inst. of Technol., Atlanta, GA, USA;

This paper appears in: **Industry Applications, IEEE Transactions on**

Publication Date: March-April 1992

Volume: 28 , Issue: 2

On page(s): 358 - 363

Adjustable Speed Drive Power Quality Performance Evaluation Methods

Hans-Björn Püttgen, P. Wung, D. Rouaud

Presented at: PQA'92, Atlanta, Georgia, USA, September 1992
Publication date: 1992

Recent Power Quality Related Small to Intermediate ASD Market Trends

Hans-Björn Püttgen, P. Wung, D. Rouaud

Presented at: PQA'91, Paris, France, October 1991
Publication date: 1991