ROBERT C. DEGENEFF

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PROFESSIONAL ACTIVITIES

June 2006 – Present — President - Utility Systems Technologies, Inc.

Responsible for the activities of Utility Systems Technologies, Inc. as it designs, sells, and manufactures electronic voltage regulators used for the improvement of industrial power quality. The company has exhibited an average growth of 30% over the last 8 years. UST brand labels for Square D and Sola.

June 1989 – June 2006 — Professor - Rensselaer Polytechnic Institute

Responsible for teaching graduate and undergraduate courses and conducting research. Major areas of research interest are transformer design, transient response of electrical equipment, HVDC system studies and utility system planning studies.

September 1985 - May 1989 — Manager - Software Services Section, GE Company, SDED, Schenectady, NY

Responsible for the profit and loss of SDED's efforts to license utility planning software to the industry. These efforts have focussed on production costs, optimal power flow, multi-area reliability, generation/demand side planning, and expert systems. Work has required both extensive marketing activity and managing diverse research and development activities funded by GE, EPRI, ESEERCO, and utilities. Have taken the group from a cost center in 1985 to a profit center in 1988. Section consists of 19 electrical and software engineers.

April 1981 - September 1985 — Manager - HVDC Transmission Engineering Subsection, GE, Schenectady, NY

Responsible for coordinating SDED's Studies and research into the performance characteristics of HVDC Systems (transformers, electronics, filters, etc.). This work required managing the execution of system studies to efficiently design HVDC systems, conducting commercial studies, and performing basic research into the HVDC systems characteristics. The position required technical and financial control, scheduling, and marketing activities. During this one year period, the department studied every HVDC system contemplated worldwide on the open market. Research was conducted successfully for GE, EPRI, DOE, and numerous utilities. The subsection consisted of 12 engineers.

May 1980 - Manager - Electrical and Analytical Development
April 1981 Engineering Units, GE, Large Power Transformer, Pittsfield, MA

Responsible for establishing of standard practices which insure design integrity for transformer and reactor insulation structures, short circuit strength, magnetic characteristics and material specifications. This included the development of mathematical models and computer programs in addition to the design of experiments and analysis of resulting data. Work resulted in transformers with lower stray losses, better impulse voltage distribution, and increased insulation integrity. Consulted and contributed to several EPRI contracts, the DOE gas insulted transformer project, and to other GE department projects. Directed and contributed technical expertise to locate and correct factory problems and test failures. Unit consisted of eight engineers.

May 1978 - Manager - Analytic Development Unit, GE, Large
May 1980 Power Transformer Dept., Pittsfield, MA

Responsible for the development of all analytic computer tools necessary to predict the internal electrical behavior of transformers. This included electrostatic and electromagnetic finite element, transient voltage and a group of programs to predict the electromagnetic stray loss in transformers and reactors.

September 1973 - Senior Engineer - General Electric Company,
May 1978 Large Power Transformer

Designed and developed a group of computer programs necessary to calculate the internal transient voltage response of power transformers. Supervised two engineers and two programmers engaged in this activity. Consulted frequently on factory related problems.

August 1967 - Technical Intelligence Officer - USAF, Foreign Technology Division
September 1971 WPAFB, Dayton, OH

Provided mission planning for a classified phased-array radar system and infrared detection system. Worked with government contractors to generate technical specifications to modify the radar system. Generated a new method of determining hypersonic ballistic coefficients. Discharged honorably as a Captain in 1971.

June 1967 - Engineer - American Electric Power Service
August 1967 Corporation, New York City, NY

During this period, worked as an engineer in the Metering and Communications Department.

August 1961 - Coop-Student - General Motors Fisher Body Division
August 1966 St. Louis, MO

Performed a variety of assignments including production line foreman, time study, plant, production and maintenance engineering.

EDUCATION

Doctor of Engineering in Electric Power Engineering - Rensselaer Polytechnic Institute, 1973. Thesis title: “Transient Interaction of Transformers and Transmission Lines.” Thesis advisor: Dr. T. S. Lauber.

Master of Engineering in Electric Power Engineering - Rensselaer Polytechnic Institute, 1967

Bachelor of Mechanical Engineering - General Motors Institute, 1966

PROFESSIONAL ACTIVITIES AND AWARDS

Chairman, Vice-Chairman, Treasurer, Secretary and Publicity Chairman of the Berkshire Section of IEEE Member of IEEE Transformers Committee, Chairman of numerous task forces and working groups. Currently Chairman of the IEEE Transformers Committee working group to write a guide to the transient interaction of breakers and transformers.

Published over seven dozen papers and contributed chapters in five books. Primary area of interest is the performance and design of transformers.

IEEE Prize Paper 1984 and 2000

Fellow IEEE 1990

IEEE Halprin Award 2008

Registered Professional Engineer in the State of New York, #54374

Eight patents awarded

Founder and President of Utility Systems Technologies, Inc. (ustpower.com) UST designs, manufactures, and markets, power quality mitigation equipment from 1 to 2500kVA.

SELECTED TECHNICAL PAPERS

1. R.C. Degeneff and W.N. Kennedy, “Calculation of Initial, Pseudo-Final, and Final Voltage Distribution in Coils Using Matrix Techniques.” Paper A75-416-8, IEEE PES Summer Meeting, 1975, San Francisco, CA.

2. R.C. Degeneff and T.S. Lauber, “Transient Interaction of Three-Phase Transformers and Transmission Lines.” Paper A76-014-1, IEEE PES Winter Power Meeting, 1976, New York, NY.

3. R.C. Degeneff, “A General Method for Determining Resonances in Transformer Windings.” IEEE Transactions, PES Vol. 96, pp. 423-430, 1977.

4. R.C. Degeneff, “Reducing Storage and Saving Computational Time with a Generalization of the Dommel (BPA) Solution Method.” IEEE PICA Conference Proceedings, May 24-27, 1977, pp. 307-313.

5. R.C. Degeneff, “A Method for Constructing Terminal Models for Single-Phase n-Winding Transformers.” Paper A78-539-9, IEEE PES Summer Meeting, Los Angeles, CA, July 1978.

6. R.C. Degeneff, W.J. McNutt, N. Neugebauer, J. Panek, M.C. McCallum, and C. Honey, “Transformer Response to System Switching Voltages.” Paper 81SM319-3. IEEE PES Summer Meeting, Portland, OR, July 26-31, 1981. (This paper received the 1984 IEEE Prize Paper Award.)

7. R.C. Degeneff, “HVDC, A Key to Economic Energy Transfer,” Electric FORUM Magazine, Vol. 9, No. 3, 1983.

8. R.C. Degeneff, “The Transient Voltage Interaction of Transformers and Transmission Lines.” Power Transformer Considerations of Current Interest to the Utility Engineer, IEEE Tutorial Course 84 EHO 109-7-PWR, 1984, pp. 16-31.

9. R.C. Degeneff, “Advanced Studies Techniques: Tools for HVDC System Design.” International Power Systems, June 1984, pp. 11-18.

10. R.C. Degeneff and S. Ihara, “AC Filter Design for HVDC Systems.” Power System Harmonics, IEEE Tutorial Course, 84 EHO 221-1-PWR, 1984, pp. 85-90.

11. G.A. Jordan, L.L. Garver, R.C. Degeneff, and R.M. Sigley, “Software Aims at Power Pool Operations,” Electrical World, June 1986.

12. G.A. Jordan, L.L. Garver, and R.C. Degeneff, “Using a Production Simulation Program to Evaluate the Effect of Transmission Limits on HVDC Imports,” IEEE Montech, 1986, September 29-October 1, 1986, pp. 22-29.

13. G.A. Jordan, L.L. Garver, R.C. Degeneff, and R.M. Sigley, “Evaluating Energy Imports with Multi-Area Production Simulation,” Minnesota Power Systems Conference, October 8-9, 1987.

14. C. Saylor, J.E. Scheiderich, G.A. Jordan, L.L. Garver, and R.C. Degeneff, “The Effect of Transmission Losses on Multi-Area Production Costs,” American Power Conference, April 27-29, 1987.

15. G.A. Jordan, L.L. Garver, and R.C. Degeneff, “Transmission Constraints Can Cut Energy Import Savings,” Electrical World, July 1987.

16. R.C. Degeneff and R.P. Felak, “Cutting Fuel Costs with Optimal Power Flows: An Integral Part of Least Cost Planning and Operations,” Public Utilities Fortnightly, February 18, 1988.

17. R.C. Degeneff, “Software Trends in the Utility Industry,” Electric Light and Power, July 1988.

18. R.C. Degeneff, W. Neugebauer, and C. Saylor, “Security Constrained Optimization: An Added Dimension in Utility Optimal Power Flow Technology,” IEEE Computer Applications in Power, October 1988.

19. R.C. Degeneff, R.P. Felak, L. Garver, and G. Jordan, “The Integrated Effect of Wheeling on Total System Production Costs,” Sixth NARVC Biennial Regulatory Information Conference, September 15, 1988, Columbus, OH.

20. R.C. Degeneff, R.P. Felak, L. Garver, and G. Jordan, “The Integrated Effect of Phase Angle Regulators on Production Costs of Two Pools,” 1988 Pennsylvania Electric Association System Planning Committee Meeting, Hershey, PA, September 20, 1988.

21. M. Gutierrez, R.C. Degeneff, P.J. McKenny and J.M. Schneider, Linear, Lumped Parameter Transformer Model Reduction Technique, IEEE paper no. 93 SM 394-7 PWRD.

22. R.C. Degeneff, M. Gutierrez and M. Vakilian, Nonlinear, Lumped Parameter Transformer Model Reduction Technique, IEEE paper no. 94 SM 409-3 PWRD.

23. M. Vakilian, R. Degeneff, M. Kupferschmid, “Computing the Internal Transient Voltage Response of a Transformer with a Nonlinear Core Using Gear’s Method - Part 1: Theory,” IEEE Transactions on Power Delivery, Vol. 10, No. 4, October 1995, pp. 1836-1841

24. M. Vakilian, R. Degeneff, M. Kupferschmid, “Computing the Internal Transient Voltage Response of a Transformer with a Nonlinear Core Using Gear’s Method - Part 2: Verification,” IEEE Transactions on Power Delivery, Vol. 10, No. 2, May 1995, pp. 702-708

25. P. M. Balma, R. C. Degeneff, H. R. Moore and L. B. Wagenaar, “The Effects of Long Term Operation and System Conditions on the Dielectric Capability and Insulation Coordination of Large Power Transformers,” Presented at the Summer Meetings of IEEE/PES, Denver, CO, Paper No. 96 SM 406-9 PWRD (This paper received the 2000 IEEE Prize Paper Award.)

SELECTED ADDITIONAL OTHER EXTERNAL PUBLICATIONS

1. Editor: Electric Forum Magazine, “HVDC, A Key to Economic Energy Transfer,” Vol. 9, No. 3, 1983.

2. Contributor: Fourth Edition - Electric Utility Systems and Practices, Wiley Interscience Publications, Transformers, Chapter. 8, pp. 146-157, 1988.

3. Editor and Contributor: McGraw Hill Standard Handbook of Electrical Engineers, 12th Edition, Direct Current Power Transmission, 1994.

4. Contributor: Electric Power Transformer Engineering, CRC Press, ISBN 0-8493-1704-5, Section 3.10, Transient Voltage Response, pp3-149 to 3-174, 2003.

5. “Insulation Coordination of HVDC Converter Stations,” EPRI EL 5414 Final Report (Project 2323-1, -2), October 1987.

6. Contributor: Electric Power Engineering, CRC Press and IEEE, ISBN 0-8493-8578-4, 2001.