

Jonathan R. Wood, Ph.D.

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SUMMARY

Dr Wood has a Ph.D from M.I.T. and 51 years of career experience in analog circuits, power electronics, power supplies, feedback control systems, and electromechanical systems. He has an intimate knowledge of the skills of practicing engineers, based in part on 30 years of experience running his own business in power electronics. He has an extensive list of technical publications, and has given lectures on feedback systems and power electronics at major universities and at power electronics conferences. Dr Wood is a Life Member of the I.E.E.E. He holds sixteen patents in the field of electronic power conversion, and has served as an expert witness in over a dozen cases, including trial experience and numerous depositions.

EXPERTISE

- Power Electronics
- Power Conversion
- Power Supplies
- Power Supply Design
- Power Management
- Analog Circuits
- Analog Electronics
- Electrical Engineering
- DC-DC Converter Design
- Magnetics
- Expert Witness

EDUCATION

Ph.D. Electrical Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1973.

M.E. (Master of Engineering, Electrical), The University of Auckland, New Zealand, 1969.

B.E. (Bachelor of Engineering, Electrical), The University of Auckland, New Zealand, 1968.

EXPERIENCE

Altor Limited LC, Concord, Massachusetts, www.jonathanrwood.com

President, October 2004 to present. Consulting and Expert Witness services in analog and power electronics. Clients include:

Andrews Kurth LLP, Washington DC
Argo-Tech Corporation, Cleveland OH
Baker and McKenzie LLP, Dallas TX
Chubb Insurance Company, Boston MA

Cooley Godward LLP, San Francisco CA
Covington and Burling LLP, Redwood Shores CA
Design Concepts, Inc., Madison WI
Dell, Inc., Round Rock TX
EMO Labs, Inc., Waltham MA
Fairchild Semiconductor Corporation, Portland ME
Haynes and Boone LLP, San Jose CA
Heller Ehrman LLP, San Diego CA
International Rectifier Corporation, Leominster MA
ITT Night Vision, Roanoke VA
Johnson Outdoors Marine Electronics, Mankato MN
Lincoln Electric Company, Cleveland OH
MagneMotion, Inc., Devens MA
McDermott, Will and Emery, Chicago IL
Meisterling and Associates LLC, East Hampton CT
Microtech Systems Inc., Foster City CA
Miles & Stockbridge PC, Tysons Corner VA
Milwaukee Electric Tool Corporation, Brookfield WI
Monolithic Power Systems Inc., San Jose CA
Morgan, Lewis & Bockius LLP, Chicago IL
Norbar USA, Inc., Willoughby, OH
O'Melveny and Myers LLP, Los Angeles CA
ON Semiconductor, East Greenwich RI
Orrick, Herrington & Sutcliffe LLP, Menlo Park CA
PL Manufacturing Inc., Cooperstown ND
Primary Insight, Inc. (Division of Bear Stearns) New York NY
Qualcomm Inc., San Diego CA
Rackspace Hosting, San Antonio TX
Resonance Research, Inc., Billerica MA
R. F. Little Engineering, Windham NH
Ropes & Gray, New York NY
Sager and Schaffer LLP, Westborough MA
SkyNet Electronic Company, Taipei Taiwan ROC
Smith Amundsen LLC, Indianapolis IN
TAEUS International Corporation, Colorado Springs CO
Unifi Scientific Advances, Longview TX
uPI Semiconductor Corporation, Taiwan ROC
Vista Research (Div. of McGraw-Hill), New York NY
Watts Regulator Company, North Andover MA
William Drake Ltd., Buckfastleigh, Devon UK
Winston & Strawn LLP, New York NY
Williams & Connolly LLP, Washington DC

Acumentrics Corporation, Westwood, Massachusetts, www.acumentrics.com

Vice President of Engineering October 1999 to October 2004. Acumentrics designs and manufactures solid-oxide fuel cell systems and ruggedized uninterruptible power supplies for distributed power applications. As a partner in the firm, Dr. Wood served for seven years as Vice President of Engineering and a Member of the Board of Directors.

Dr. Wood oversaw the integration of two engineering teams from merging companies into a cohesive, unified, and productive group with three major development activities: Rugged UPSs, Flywheel-based UPSs, and Fuel Cell Systems. He identified and hired key personnel to ensure the success of each program. He set up and directed an overseas operation, from the US. He also

supervised and participated in a successful 200 kW flywheel system development, incorporating programmable hand-held controllers.

Altor, Inc., Natick, Massachusetts

President December 1986 to October 1999. Altor, Inc. designed and manufactured custom power conversion products. Dr. Wood founded Altor, Inc. in 1986. Without funding he grew it to a successful 15-person organization serving a wide variety of customers and applications. Altor, Inc. merged with Acumentrics Corporation in October 1999. Altor, Inc. provided analysis, design, prototyping, and manufacturing services to a wide variety of customers, including, but not limited to:

Agile Networks, Inc., Concord MA
AirNet Communications Corporation, Melbourne FL
Applied Laser Electronics, Ashland MA
Alliant Computer Systems, Littleton MA
AMP, Inc., Harrisburg PA
AT&T Corporation, Whippany NJ
Avid Technology Inc., Tewksbury MA
Avidyne Corporation, Lexington MA
Barkley and Dexter, Fitchburg MA
Beacon Power Corporation, Woburn MA
Bose Corporation, Framingham MA
Broadband Access Systems, Inc., Marlborough MA
Bytex Corporation, Southborough MA
Cherry Semiconductor Corporation, East Greenwich RI
Compaq Computer Corporation, Maynard MA
Cooper Energy Services, Mount Vernon OH
Coral Network Corporation, Marlborough MA
Data General Corporation, Westboro MA
Digital Equipment Corporation, Maynard MA
Digital Marine Electronics Corporation, Acton MA
EMC Corporation, Hopkinton MA
Epoch Systems Inc., Marlborough MA
E-Systems, Greenville TX
Fletcher Challenge Corporation, Auckland, NZ
FORE Systems, Inc., Warrendale PA
The Foxboro Company, Foxboro MA
GTE Government Systems, Needham MA
IDE Corporation, Billerica MA
International Power Devices, Brighton MA
Lancast, Inc., Nashua NH
Lockheed Sanders Corporation, Nashua NH
LTX Corporation, Westwood MA
Lucent Technologies, Inc., Marlborough MA
Lucent Technologies, Inc., Mt. Olive, NJ
MacConnell Research, San Diego CA
McLaughlin Research Corporation, Middletown RI
Microcom Inc., Norwood MA
MITEQ Inc., Hauppauge NY
The MITRE Corporation, Bedford MA
MP Video Inc., Hopkinton MA
Northstar Marine, Acton MA
Nuclear Logistics Inc., Fort Worth TX
PB Diagnostic Systems Inc., Westwood MA

PictureTel Corporation, Peabody MA
PowerCube Corporation, Chatsworth CA
Prominet Corporation, Marlborough MA
Racal Interlan Inc., Boxborough MA
Raytheon Company, Lexington MA
Sensormatic Electronics Corporation, Deerfield Beach, FL
Sepracor Inc., Marlborough MA
Serco Systems Limited, Portsmouth, England
Simplex Time Recorder Company, Gardner MA
Smith and Nephew Dyonics, Inc., Andover MA
Steinbrecher Corporation, Burlington MA
SurgiQuip, Inc., Tulsa OK
Technical Communications Corporation, Concord MA
Tellabs, Inc., Burlington MA
Thermal Dynamics Inc., West Lebanon NH
Venable Industries, Torrance CA
Wang Laboratories, Inc.
Willett International Limited, Framingham MA
Xylogics Inc., Wilmington MA
Xyplex, Inc., Littleton MA
Yamato Lock, Inc., Fitchburg MA
Zero Emissions Technology Inc., New Durham NH

Altor designed and manufactured power supplies for numerous applications, including, but not limited to:

- Instrumentation power supplies
- Medical power supplies
- Programmable linear power supplies
- Specialty power supplies
- Computer power supplies
- Telecommunication power supplies
- Rugged environment power supplies
- Dual-redundant power supplies
- Multiple-redundant power supplies
- Industrial power supplies
- Replacement power supplies

Growth of the company was based on profits alone. Research was carried out on supporting technologies for high-speed motor-generators for use in premium power supply applications. Dr. Wood gained a wide-ranging US Patent in this area. He also gained a US Patent on a feedback control circuit for use with industry-standard converter modules.

Data General Corporation, Westborough, Massachusetts

Senior Engineer 1981 to December 1986. Dr. Wood served in both management and technology-leadership roles, with a primary focus in computer power supplies.

Designed a reliable and economical power supply for the corporation's MV/4000 computer, a major revenue-producing product for the corporation. Obtained a US Patent on one aspect of this design.

Carried out successful modeling, analysis, and design implementation of democratic load-sharing schemes for modular power supplies.

Categorized, modeled, and compared options for power supply front ends for fault-tolerant systems. Developed computer simulations for some of these.

Identified, modeled, and implemented a fast-transient-response feedback loop design method. Presented technical papers at national power conversion conferences in 1982 and 1983.

Identified, modeled, and explained the occurrence of chaotic system behavior in switching power supplies. Presented a pioneering technical paper at a power conversion conference in 1984.

Investigated the use of high-speed motor-generators for robust power supply front ends featuring long ride-through and complete immunity to power line transients. Designed, simulated, built, and successfully tested a 1 kW system and a 3 kW system.

Mobil Tyco Solar Energy Corporation, Waltham, Massachusetts

Group Leader, Systems Engineering, 1977 to 1981. Managed the development and installation of photovoltaic-powered systems.

Designed, built, and tested novel solar photovoltaic concentrating collectors, including Winston collectors, planar-concentrating collectors (employing fluorescent dyes), and modified fresnel-lens collectors. Evaluated the economics of each type.

Identified and simulated a practical algorithm for maintaining battery charge in a photovoltaic-powered water processing system. Supervised the design, building, and test of a 1 kW photovoltaic system to test this.

Wrote successful proposals for demonstration photovoltaic-powered water desalination systems.

Supervised the design and building of an 8 kW photovoltaic-powered water desalination system. This system produced potable water from sea water, and was installed and operated near Jeddah in Saudi Arabia.

Energy Consultant, 1974 to 1977.

Working for the New Zealand Government, carried out an extensive study of wind power potential for New Zealand. Identified and applied an algorithm for measuring the economic benefit to a utility grid of an intermittent energy source. Used hourly records of wind occurrence at selected sites, together with hourly records of electricity demand for the utility grid, as a data base for a computer-based assessment of correlation between supply and demand. Visited wind power hardware manufacturers in the US, Canada, Britain, Switzerland, and Holland.

Assisted with the design, construction, and testing of a 30 kW Darrieus wind turbine.

Working for the New Zealand Government, participated in the development of 50-year energy scenarios for New Zealand. Studied all factors affecting growth in energy demand, and all conceivable sources of energy production. Developed four distinct scenarios, all based on meticulous calculations. Published two extensive reports.

University of Auckland, 1976 to 1977.

Senior Lecturer in Electrical Engineering, University of Auckland, New Zealand. Taught Basic Electronics, Power Electronics, and Control Theory. Research included the development of electronic power converters for 1 – 20 kW wind turbines.

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