Jeff Waters

Technical Consulting

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Positions and Employment

1996-2006
Owner of Jeff Waters Consulting / Mechatron, Inc., Fairfield OH

1994-1996
Vice President and Chief Engineer for Drive Teck, Inc., Greenwood IN

1986-1993
President of PALCO, Inc., Cincinnati, OH

1983-1986
Applications Engineering Manager for Machine Drive Co., Cincinnati OH

1979-1980
Lecturer Indiana Electric Motor League

1974-1983
Industry Market Manager for Eaton Corp., Kenosha WI;

Applications Engineer for Eaton Corp., Kenosha WI;

Product Development Engineer for Eaton Corp., Kenosha WI;

Education

B.S. Applied Science, University of Wisconsin, 1977
Math, Physics, Mechanical Engineering

Mechanical Engineering, University of Cincinnati; 1979
High Mileage Vehicle Simulation and Analysis, Practical Alternative Fuels for Combustion Engines

M.A.R. Mount St. Mary's Seminary Antheneum of Ohio, 1988
Pastoral Counseling, Diagnosis & Treatment of Mental Disorders

M.S. / PhD Mechanical Engineering, Century University, Expected 2006

Applications of Joint Time & Frequency Analysis Methods & Artificial Learning Networks

Consultancy Overview, Interests, & Current Research Activities

Continuation study of long distance runners biomechanical efficiency. Data collected segregated into wavelet coefficients that teach an artificial neural network that may be used for early detection and treatment of a musculo-skeletal degenerative conditions with developed accelerations therapy. (2004, 2005, 2006)

A clinical pilot study was conducted on a group of aged long distance runners who advised of significant changes occurring in their running patterns over a 12 month period. Accelerometer data collected revealed an irregular transitions in biomechanical efficiency of a subject group. Analysis suggested that the irregularities could be treated to improve efficiency with therapy designed to elevate synovial joint pressure. (2002, 2003)

Development & testing of application specific Axial Gap, Permanent Magnet Ironless induction machine (2004)

Design of cardiac rehabilitation treadmill power transmission system to include substantially increased power transmission and control stiffness matrix for optimum simulation of actual road conditions. (1996)

Induction motors equipped with sensors to collect critical data that creates joint time and frequency coefficients during degrading changes. These coefficients are used to teach an artificial network to respond as may be required. (2003-2006)

Designed & Construction of AMCA Flow Machine designed for measurement and dynamic analysis of air flow over fans and airfoils. (2000-2001)

Numerous rotating machine development laboratories for industry and academia.

Numerous HVAC installations for laboratories and industry (1998-2006)

Design and develop an air cooled, solid rotor, mono coil, axial gap induction machine product line for specific high torque to inertia performance and applications. (1998)

Development of a water cooled, solid rotor, radial gap, induction machine product line ranging from 3 to 2000 horsepower. (1998)

Design & develop line regenerative, field orient control matched with a low inertia, water cooled, high speed induction machine to provide a high performance cradled test dynamometer.

Develop trolley car traction motor test system and procedure.

Counter EMF Controlled magnetic shaft bearing system (1993)

Significant Engineering Designs

Limited torque control of speciality 3 phase A.C. motors

Bidirectional closed loop torque control for high performance dynamometer applications.

Axial gap air cooled solid rotor electric machine for clutch or brake applications

Floating inductor ring for water cooled Eddy Current dynamometer machinery

Track compensation for Electric Chassis dynamometers

Software based inertia compensation & simulation for four quadrant dynamometer controls

High performance D.C. Drive Power controller family from 50 through 1700 amp

High speed AC & DC traction motor development and testing

Micro Computer Based Real Time Control System Programmed in C and Labview

Rotating Machine Resonance Avoidance Control Strategy & Software Development

PC software application for the measurement, analysis and treatment of irregular biomechanical effciency in long distance runners

PC software development for the analysis of real time data mined from rotating machines to assist in failure prediction

Rehabilitation treadmill with roll integrated high performance electric motor & clutch

(Patent Applications & Disclosures for Items 3, 4, 10, &11)

Articles & Presentations

Murdock, L., Waters,J., Broers,K., Walsh,M., Age Related Differences In Running Economy, Presented at Regional Conference of the American Society of Biomechanics 2006

Waters,J., Electric Motor Data Mined for Intelligent Machines Treatment (Abstract). 2004

Waters,J., Irregular Biomechanical Efficiency in Long Distance Runners (Abstract). 2003

Waters,J., Rebuilding a High Current Regenerative DC Chassis Dynamometer. Mechatron, Inc. 1998

Waters, J., New life for the Eaton AF-300 Adjustable Frequency Inverter., Mechatron, Inc. 1998

Waters, J., Solid Rotor pole design considerations. Palco, Inc. 1997

Waters, J., Periodic Maintenance of DC Dynamometers and Controls. PALCO, Inc. 1997

A Study of A.C. Dynamometer Power Interference. PALCO Inc. 1990

Eddy Current Drive Theory. PALCO, Inc. 1987

D.C. Motor Theory & Thyristor D.C. Motor Control. PALCO, Inc. 1986

Software Tools and Programming Languages

Labview, C, HC11 Assember, Cosmos, Abacus, FlexPDE FEA

Personal Activities

Competitive long distance runner

PADI Rescue Diver Certified & DMC

Instructor for Archdiocese of Cincinnati

References

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