

Eric John Wernimont

Contact

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Degrees

Bachelor, Aero & Astronautical Engineering, December 1985
Purdue University at West Lafayette, Indiana

Master of Science, Aero & Astronautical Engineering, December 1991
Purdue University at West Lafayette, Indiana

Doctor of Philosophy, Aero & Astronautical Engineering, August 1997
Purdue University at West Lafayette, Indiana
Experimental Fuel Regression of Hydrogen Peroxide Hybrid Rockets

Interests

Hydrogen Peroxide Combustion Devices Including Catalyst Beds
Solid & Hybrid Rocket Motor Ballistics (Combustion & Performance)

Experience

General Kinetics, Huntington Beach, CA

Chief Operating Officer: Responsible for Oversight of Design, Fabrication Including Quality and Test for Company Products. Company Specializes in Hydrogen Peroxide Based Combustion Devices and Catalyst Beds 1 lbf to 35000 lbf Class.
May 1998 – Present

Beal Aerospace, Dallas, TX

Propulsion Lead: Propellant Selection, Catalyst Development
Propellant (Hydrogen Peroxide) Manufacture, Test Stand Fab and Design
Combustion Chamber and Propellant Feed System Design and Analysis.
3 Stage Vehicle Hydrogen Peroxide/Kerosene
250 lbf to 1.5 Million lbf Class
March 1997 – April 1998

Orbital Sciences Corp, Dulles, Virginia

Construction and Operation of Hydrogen Peroxide Vacuum Still
Design, Construction and Test of 100 lbf Monopropellant Thruster
Design of 2500 lbf 85% Hydrogen Peroxide/Kerosene Thruster
Feb 1994 – June 1994

Responsibilities in each of the following positions include preliminary design, anomaly investigation, test evaluation and performance prediction of solid rocket motors. These duties were performed in all phases from initial concept to production.

Aerojet, Advanced Solid Rocket Motor Division, Iuka, Mississippi
Nozzle Thermal Ablative Analysis Engineer, Aerothermal & Ballistics
Aug 1992 – Dec 1993

Thiokol Corporation, Strategic Motor Performance, Brigham City, Utah
Design and Analysis Engineer, Ballistics
Summer 1991, Feb 1989 – June 1990, June 1986 – 1988

United Technologies, Chemical Systems Division, San Jose, CA
Design and Analysis Engineer, Ballistics
June 1988 – Jan 1989

Original Software

Ballistics:

Lumped parameter and Volume filling ballistics predictors:
Solid rocket motor models to handle 3-D spatial variations of burn rate effects due to strain augmentation, rheology, mix variations, and thermal gradients hybrid rocket motor models for compressible and incompressible oxidizers

Computational Fluid Dynamics:

Generalized 2-D Elliptic mesh generator, solving Poisson's Eq.
Multi-grid solution of above elliptic mesh generator
2-D Euler Equations flow solver, employing finite volume approach
2-D Boundary element solution of an inviscid, incompressible free surface

Skills:

Extensive use of industry and proprietary codes for:

Evaluation of solid propellant burning surface
Thermochemical evaluation of propellant chemistry
Thermal Ablative response of nozzles
Prediction of solid rocket motor performance

Test Engineer: Fluid Management Design & Fabrication, Instrumentation and Data Acquisition Setup, Propellant Handling, Test Procedures and Ops

Fluent: MS-DOS, UNIX, VMS, Linux (PC UNIX), FORTRAN

Publications, Conference Papers and Patents

Wernimont, E. and Ventura, M.C., “Catalyst Bed Testing for Development of a 98% Hydrogen Peroxide Procurement Specification”, AIAA 2002-3852, 38th AIAA Joint Propulsion Conference & Exhibit, Indianapolis, IN, July 2002

Ventura, M.C. and Wernimont, E., “Review of Hydrogen Peroxide Safety Data Sheets”, AIAA 2002-3850, 38th AIAA Joint Propulsion Conference & Exhibit, Indianapolis, IN, July 2002

Wernimont, E. and Ventura, M.C., “Review of Hydrogen Peroxide Specification MIL-P-16005E”, AIAA 2001-3251, 37th AIAA Joint Propulsion Conference & Exhibit, Salt Lake City, UT, July 2001

Ventura, M.C. and Wernimont, E., “Advancements in High Concentration Hydrogen Peroxide Catalyst Beds”, AIAA 2001-3250, 37th AIAA Joint Propulsion Conference & Exhibit, Salt Lake City, UT, July 2001

Ventura, M.C. and Wernimont, E., “History of the Reaction Motors Super Performance 90% H₂O₂/Kerosene LR-40 Rocket Engine”, AIAA 2001-3838, 37th AIAA Joint Propulsion Conference & Exhibit, Salt Lake City, UT, July 2001

Wernimont, E. and Mullens, P., “Capabilities of Hydrogen Peroxide Catalyst Beds”, AIAA 2000-3555, 36th AIAA Joint Propulsion Conference & Exhibit, Huntsville, AL, July 2000

Wernimont, E. and Garboden, G.L., “Performance of 2500 lbf Hydrogen Peroxide-Polyethylene Hybrid”, AIAA 2000-3545, 36th AIAA Joint Propulsion Conference & Exhibit, Huntsville, AL, July 2000

Wernimont, E. and Ventura, M.C., “Critical Review of MIL-P-16005E”, 3rd International Hydrogen Peroxide Propulsion Conference, Gulfport, MS, Nov, 2000

Wernimont, E.J. and Heister, S.D., “Reconstruction Technique for Reducing Hybrid-Rocket Combustion Test Data”, AIAA Journal of Propulsion and Power, Vol 15, Number 1, Jan-Feb 1999.

Wernimont, E. and Garboden, G.L., “Experimentation with Hydrogen Peroxide Oxidized Rockets”, AIAA 99-2743, 35th AIAA Joint Propulsion Conference & Exhibit, Los Angeles, CA, June 1999

Wernimont, E. and Mullens, P., “Recent Developments in Hydrogen Peroxide Monopropellant Devices”, AIAA 99-2741, 35th AIAA Joint Propulsion Conference & Exhibit, Los Angeles, CA, June 1999

Wernimont, E., Ventura, M.C., Garboden, G. and Mullens, P., "Past and Present Uses of Rocket Grade Hydrogen Peroxide", 2nd International Hydrogen Peroxide Propulsion Conference, Purdue University, IN, Nov, 1999

Caravella, J.R., Heister, S.D., Wernimont, E.J., "Characterization of Fuel Regression in a Radial Flow Hybrid Rocket", AIAA Journal of Propulsion and Power, Vol 14, Number 1, Jan-Feb 1998.

Wernimont, E.J., Meyer, S.E., Ventura, M.E., "Hybrid motor system with a consumable catalytic bed a composition of the catalytic bed and a method of using", US Patent No. 5,727,368 Issued March 17, 1998

Wernimont, E., "Experimental Study of Combustion in Hydrogen Peroxide Hybrid Rockets", Ph.D. Thesis Purdue University, West Lafayette, IN, August, 1997.

Wernimont, E. and Heister, S.D., "Experimental Study of Chamber Pressure Effects on Hydrogen Peroxide Oxidizer Hybrid Rockets", AIAA 97-2801, 33th AIAA Joint Propulsion Conference & Exhibit, Seattle, WA, July 1997

Wernimont, E. and Heister, S.D., "Progress in Hydrogen Peroxide Oxidized Hybrid Rocket Experiments", AIAA 96-2696, 32nd AIAA Joint Propulsion Conference & Exhibit, Lake Buena Vista, FL, July 1996

Caravella, J.R., Heister, S.D. and Wernimont, E., "Characterization of Fuel Regression in a Radial Flow Hybrid Rocket", AIAA 96-3096, 32nd AIAA Joint Propulsion Conference & Exhibit, Lake Buena Vista, FL, July 1996

E. Wernimont, S. Heister, "Performance Characterization of Hybrid Rockets Using Hydrogen Peroxide Oxidizer", AIAA 95-3084, 31st AIAA/SAE/ASME/ASEE Propulsion Conference, San Diego, CA, Jul. 10-12, 1995.

E. Wernimont, S. Meyer, "Hydrogen Peroxide Hybrid Rocket Engine Performance Investigation", AIAA 94-3147, 30th Joint AIAA/SAE/ASME/ASEE Propulsion Conference, Indianapolis, IN, Jun. 27-29, 1994.

E. Wernimont, "Design of an Experiment for the Production of a Foamed Tin Sample", NASA Goddard Conference Publication 2401, Get Away Special Experimenter's Symposium, Greenbelt, MD, 1985.