Patrick Lemieux

polyXengineering

Education:

Ph.D. Mechanical Engineering, California Institute of Technology, Pasadena, California, 1999.

M.S. Mechanical Engineering, Cranfield University, Bedford, Bedfordshire, England, 1992.

B.S. Mechanical Engineering, University of New Brunswick, Fredericton, New Brunswick, Canada, 1991.

Industrial Experience:

Areas of professional expertise include the investigation of accidents, failures and operation of thermal systems, primarily those concerning reciprocating and gas turbine engines, as well as fire and explosion cause and origin; analyses of Environmental Control Systems (ECS), Internal Combustion Engines, Power Plants, Wind Turbines, refrigeration systems and HVAC.

- polyXengineering Inc., San Luis Obispo, CA: Co-Founder and Principal Engineer, 2016-present
- Exponent Inc., Los Angeles, CA: Failure Analysis Engineering Consultant, 2000-2006
- Honeywell International, Torrance, CA: Staff Engineer (Engines; Environment Control Systems), 1999-2000
- IBM Canada Ltd, Toronto, ON: Engineer Trainee, 1989-1990

Academic Experience:

Teaching and research areas include engine and refrigeration system design and analysis, fuels and combustion, wind energy and wind turbine systems design and analysis, heat exchange processes, fluid mechanics.

- California Polytechnic State University, San Luis Obispo: Professor of Mechanical Engineering, 2012-present
- California Polytechnic State University, San Luis Obispo: Associate Professor of Mechanical Engineering, 2007-2012
- California Institute of Technology: Graduate Teaching & Research Assistant, 1994-1999

Other Relevant Experience:

- Mechanical Systems Subgroup Leader, "SMART Wind Consortium: Developing a Consensus-Based Sustainable Manufacturing, Advanced Research and Technology Roadmap for Distributed Wind", [$488634 Grant from U.S. Department of Commerce: National Institute of Standards (NIST)], 2014-2016
- Expert Witness (including trial testimony), Los Angeles Superior Court

Membership in Professional Associations:

- Technical Committee Member:
  - American Institute of Aeronautics and Astronautics (AIAA), Hybrid Rockets (2014-present)
  - National Fire Protection Association (NFPA), Aircraft Maintenance Operations NFPA 410 (2005-2008)
- Senior Member: American Institute of Aeronautics and Astronautics (AIAA)
- Member: American Society of Mechanical Engineers (ASME)
- Licensed Mechanical Engineer, M 32617: California Board for Professional Engineers and Land Surveyors (2003-present)
- Licensed pilot, Multi-Engine Land

Patents:

- "Improved Gas Turbine Cycles with Compressed Air Energy Storage", (pending)
- "Air-Cycle Environmental Control Systems and Methods for Automotive Applications", Patent No.: US 9,249,998 B2, 2016
- "System, Method and Apparatus for Cooling Rocket Motor Components Using a Saturated Liquid-Vapor Coolant Mixture", Patent No.: US 8,776,494 B2, 2014

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Selected Publications:

Arribas PS, Lemieux P, Pastrone D "Modeling of N_2O Heat Transfer Rates in the Nucleate Boiling Regime, with Experimental Verification", AIAA/ASME 51st Joint Propulsion Conference, Orlando, Florida, 2015

Lemieux P, Fara A, Sanchez P, Murray WR "Development and Test of an Experimental Apparatus to Study Thermal-Choking in Ideal Gases and Self-Decomposition in Superheated N2O", Journal of Energy and Power Engineering, 2014

Lemieux P, Murray WR, Cooke T and Gerhard J "An 'Inefficient Fin' Non-Dimensional Parameter to Measure Gas Temperature Efficiently", NASA Tech Briefs, Vol. 36, No. 5, 2012

Lemieux P, Moore CD and Nahab A "Performance Measurement and Analysis of Vertical Shaft V-Twin Engines, and Comparison with Horizontal Engines of the Same Model Class", ASME Internal Combustion Engine Division Fall Technical Conference, 2012

Katsanis G and Lemieux P "Transient Small Wind Turbine Tower Structural Analysis with Coupled Rotor Dynamic Interaction", American Wind Energy Association, Windpower2012 Conference, Atlanta, Georgia, June 2012

Pastrich D, Lemieux P and Owen F "Design of a Safety System for Wind Turbine Tower Tilt-Down Operations" , American Wind Energy Association, Windpower2012 Conference, Atlanta, Georgia, June 2012

Lemieux P, Moore CD, Gerhardt JG and Dershowitz A "Engine Performance Measurements of Four V-Twin Engines, Using SAE J1349 Correction Factors", SAE/JSAE Small Engine Technology Conference, Sapporo, Japan, 2011

Hornung HG, Lemieux P, Kaneshigue M and Valiferdowwsi B "Two Effects of High Density Ratio Across Bow Shocks, Part I", 41st AIAA Fluid Dynamics Conference and Exhibit, Honolulu, 2011 [Note: Paper received '2011 Fluid Dynamics Award']

Lemieux P "Nitrous Oxide Cooling in Hybrid Rocket Nozzles", Progress in Aerospace Sciences, V46, Issue 2, 2010

Lemieux P and Ridgely J "The Cal Poly Wind Power Center", American Wind Energy Institute Windpower, 2008

Nosti C and Lemieux P "Performance Analysis and Life Prediction for Small Wind Turbine Blades: A Wood Laminate Case Study", American Wind Energy Institute Windpower, 2008

Katsanis, G. and P. Lemieux "Dynamic Simulation of Small Wind Turbine Towers", American Wind Energy Institute Windpower, 2008

Schroeder, S., D. Slee and P. Lemieux "Pfizer Motor Bearing Failure Investigation", Pfizer Facilities Management and Engineering, San Diego, CA, 2006.

Lemieux, P., and H.G. Hornung "Development and Application of Streakline Visualization in Hypervelocity Flow", Experiments in Fluids, 2002.

Lemieux P. and R. Carnahan "Transient Pressure and Momentum Balance Failure Analysis in a Two-Phase Flow Geothermal Power Generation Pipeline", CalEnergy Generation, 2002.

Hornung, H.G., and P. Lemieux "Shock Instability Near the Newtonian Limit Of Hypervelocity Flows," Physics of Fluids, 2001.