



TIMOTHY P. JUNG, Ph.D.
SENIOR STAFF CONSULTANT

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Dr. Jung is an aeronautical engineer and a Senior Staff Consultant for Engineering Systems Inc. (ESi). He joined ESi following a 25-year career in the U.S. Air Force where his broad range of duties included advisor to the Ministry of Defense in Kabul, Afghanistan and Director of the Aeronautic Laboratory at the Air Force Academy. In the Air Force, Dr. Jung was also an aircraft commander and instructor pilot with over 2,400 flight hours in aircraft ranging from sailplanes to supersonic fighters and bombers including the T-1A, the Beech 400 business jet. In his final assignment he taught undergraduates flight test techniques in the T-41D (Cessna 172). Currently, he has a commercial and instrument pilot FAA rating for gliders, single-engine and multi-engine aircraft. He maintains his pilot proficiency in the Cirrus SR20.

Dr. Jung has a Ph.D. in aerospace engineering and is a licensed professional engineer in Colorado. He has extensive experience in wind tunnel testing, aircraft design and performance. He has investigated a wide variety of engineering problems spanning from rocket fin failures to the aerodynamics of rope for the Department of Defense and private sector companies. He taught courses in flight test, aerodynamics, aircraft design, and experimental methods at the Air Force Academy and Air Force Test Pilot School.

Areas of Specialization

- Piloting Expertise
- Aircraft Accident Reconstruction
- Unmanned Aircraft Systems (UAS) Development and Operations
- Aviation Operations
- Aircraft Design
- Aircraft Performance
- Aerodynamics, including Transonic Aerodynamics
- Wind Tunnel Testing

Education

- Ph.D., Aerospace Engineering, University of Colorado, 2012
- M.S., Aeronautical Engineering, Air Force Institute of Technology, 2005
- M.S., Technology Management, South Dakota School of Mines & Technology, 2000
- B.S., Aeronautical Engineering, Air Force Academy, 1992

Licensed Professional Engineer (P.E.)

State of Colorado.....License No.55109

January 2019

Professional Affiliations/Honors

American Institute of Aeronautics and Astronautics (AIAA)

Senior Member

Sigma Gamma Tau, Aerospace Engineering Honor Society

Member

Tau Beta Pi, Engineering Honor Society

Member

American Owners and Pilot Association

Member

Cirrus Owners and Pilots Association

Member

Bronze Star Medal, NATO – Afghanistan Training Command

DARPA Innovation Challenge Winner

Outstanding Academy Educator, Department of Aeronautics, Air Force Academy

Distinguished Graduate, B-1B Initial Qualification Course

Pilot Training Outstanding Second Lieutenant Award

Positions Held

Engineering Systems Inc., Colorado Springs, Colorado

Senior Staff Consultant, 2018 - present

USAF Academy, Colorado Springs, Colorado

Senior Military Faculty, Associate Professor and Instructor Pilot, 2013 – 2018

Ministry of Defense, Kabul, Afghanistan

Advisor, 2012 – 2013

USAF Academy, Colorado Springs, Colorado

Aeronautics Laboratory Director, Assistant Professor and Instructor Pilot, 2006 – 2009

Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio

Graduate Student, Intermediate Developmental Education, 2004 – 2005

Squadron Officer School, Maxwell Air Force Base, Alabama

Instructor, Asst. Operations Officer, 2003 – 2004

86th Flying Training Squadron, Laughlin Air Force Base, Texas

T-1A Instructor, Asst. Operations Officer, Alternate Wing Inspector General, 2000 – 2003

37th Bomb Squadron, Ellsworth Air Force Base, South Dakota

Aircraft Commander B-1B Bomber and Mobility Officer, 1996 – 2000

308th Fighter Squadron, USAF Luke Air Force Base, Arizona

Maintenance Officer, 1994 - 1996

54th Flying Training Squadron, Reese Air Force Base, Arizona

T-37 and T-38 Student Pilot, 1992 - 1994

Continued Education

Dan Raymer's Aircraft Conceptual Design Short Course

Air War College

Civilian Personnel Management Course

Air Command and Staff College

Squadron Office School

Installation Inspector General Training Course

AETC Flight Commander Course

Supervisor Safety Training

Air Advisor School

Air Force Academic Instructor Course

University of Southern California, Aircraft Accident Investigation Course

Cirrus SR20 Transition Training Course

Certifications

FAA Commercial Single Engine, Multiengine and Glider Pilot with Instrument Rating

Publications

"The Use of Virtual Reality in Accident Reconstruction", **Timothy Jung**, Steve Morris and Bob Winn, AT-2018 American Institute of Aeronautics and Astronautics Rocky Mountain Section Annual Technical Symposium, October 2018

"Quantification of Pressure Fluctuations in a Trisonic Wind Tunnel", **Timothy P. Jung**, Alex B Atwood, Anthony M. Ciccarello, STAI-127-AFA-2A, Supersonic Testing Association International, Bucharest, Romania, 2017

"Trisonic Wind Tunnel Investigation of Porous Wall Effects on Shock Wave Attenuation", **Timothy P. Jung**, Michael P. Wilkinson, Jacob T. McCubbins, Jesse N. Montgomery, STAI-127 AFA-2B, Supersonic Testing Association International, Bucharest, Romania, 2017

- "Transonic Wind Tunnel Study of Damaged AIM-9L/M Fins and Comparison to Missile DATCOM", Layne C. Barrett, Hans W. Kollar and **Timothy P. Jung**, Department of Aeronautics, U.S. Air Force Academy, December 2015
- "Modified Linear Theory Sonic Booms Compared to Experimental and Numerical Results", **Timothy P. Jung**, Ryan P. Starkey, and Brian Argrow, Journal of Aircraft, Vol. 52, No. 6, September 2015, pp. 1821-1837, doi: 10.2514/1.C033088
- "The Value of Semi-Empirical Analysis Models in Aircraft Design", Steve A. Brandt, Martiqua Post, David W. Hall, Fred Gilliam, **Timothy P. Jung**, and Thomas R. Yechout, 16th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, AIAA Aviation, June 2015. AIAA Paper, 2015-2486, <http://dx.doi.org/10.2514/6.2015-2486>
- "Investigation of Transonic Stability and Performance of Atlas V Rocket", Marc Corey, Andrew Hood and **Timothy P. Jung**, Department of Aeronautics, U.S. Air Force Academy, May 2015
- "Wind Tunnel Testing to Evaluate Static Stability of SURG Micro Air Vehicle", Ramy Korkis-Kanaan, Jacob Laheta, Moussa Wade, and **Timothy P. Jung**, Department of Aeronautics, U.S. Air Force Academy, May 2014
- "Lobe Balancing Design Method to Create Frozen Sonic Booms Using Aircraft Components", **Timothy P. Jung**, Ryan P. Starkey, and Brian Argrow, Journal of Aircraft, Vol. 49, No. 6, December 2012, pp. 1878-1893, doi: 10.2514/1.C031709
- "Methodology for Conducting Scaled Sonic-Boom Flight Tests Using Unmanned Aircraft Systems", **Timothy P. Jung**, Ryan P. Starkey, and Brian Argrow, Journal of Aircraft, Vol. 49, No. 5, September 2012, pp. 1234-1244, doi: 10.2514/1.C031449
- "Modified Linear Theory Aircraft Design Tools and Sonic Boom Minimization Strategy Applied to Signature Freezing via F-Function Lobe Balancing", **Timothy P. Jung**, PhD. Dissertation, Department of Aerospace Science Engineering, University of Colorado, Boulder, Colorado, August 2012
- "Wind Tunnel Study of Drag of Various Rope Designs", **Timothy P. Jung**, 27th AIAA Applied Aerodynamics Conference, June 2009, AIAA Paper 2009-3608, <http://dx.doi.org/10.2514/6.2009-3608>
- "LDV Wake Measurements of a Cyclical Wave Power Energy Converter", Franklin Baker, Spenser Bell and **Timothy P. Jung**, Department of Aeronautics, U.S. Air Force Academy, May 2009

“Supersonic Fin Drag Sensitivity Analysis and Comparison to Missile DATCOM”, Lauren Matthews, Chris Wolff and **Timothy P. Jung**, Department of Aeronautics, U.S. Air Force Academy, December 2007

"Wind Tunnel Study of Interference Effects Relating to Aft Supersonic Ejection of a Store", **Timothy P. Jung**, Mark Reeder, Raymond Maple, and Jim Crafton, 36th AIAA Fluid Dynamics Conference and Exhibit, June 2006, AIAA Paper 2006-3363, <http://dx.doi.org/10.2514/6.2006-3363>

“Wind Tunnel Study of Interference Effects Relating to the Aft Supersonic Ejection of a Store”, **Timothy P. Jung**, Master’s Degree Thesis, Department of Aeronautics and Astronautics, Air Force Institute of Aeronautics, Wright Patterson, AFB, OH, December 2005

Presentations

“The Use of Virtual Reality in Accident Reconstruction”, **Timothy Jung**, Steve Morris and Bob Winn, ATS-2018 American Institute of Aeronautics and Astronautics Rocky Mountain Section Annual Technical Symposium, October 2018

“Supersonic Testing Capabilities at the US Air Force Academy – Trisonic Wind Tunnel and Ludwig Tube”, Tim Hayden, **Timothy Jung** and Eric Stevens, Supersonic Tunnel Association, International, 2015

“Wind Tunnel Stability Test of SURG MAVs at Low Reynolds Numbers”, **Timothy Jung**, Ramy Korkis-Kanaan, Jacob Laheta and Moussa Wade, AIAA-Rocky Mountain Section Annual Technical Symposium, Colorado Springs, October 2014

“Wind Tunnel Study of Interference Effects Relating to Aft Supersonic Ejection of a Store”, **Timothy Jung**, Dayton Engineering Sciences Symposium, October, 2005