



**Exponent**<sup>®</sup>  
Engineering & Scientific Consulting

**Dan Getsinger, Ph.D., P.E.**

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## Professional Profile

Dr. Getsinger specializes in accident investigation and design/performance/safety reviews of thermal-fluid processes and equipment, with primary experience in propulsion and power generation systems. He applies his expertise in fluid mechanics, heat and mass transfer, thermodynamics, and experimental design across a wide range of complex industrial problems involving fires, explosions, and thermal or flow-driven failures.

Dr. Getsinger has extensive experience in using laboratory testing and analysis to break down complex phenomena and drive technology development. Dr. Getsinger has performed origin and cause evaluations of fires, explosions and failures involving gas turbines, air compressors, fuel gas compressors, pumps, hydraulic systems, industrial heat exchangers, furnaces, consumer appliances, fireworks, and munitions. He is regularly called upon to evaluate incidents in the context of relevant codes and standards, equipment installation and maintenance requirements and recommendations, and federal, state and local regulations.

Dr. Getsinger has over three years of experience in turbomachinery R&D, coupled with an academic background geared towards fundamental studies of fluidic mixing as utilized in propulsion and energy systems. Prior to joining Exponent, Dr. Getsinger worked in the Aero-Thermal and Mechanical Systems organization at GE Global Research. In this role, he led and worked within teams on innovative problem-solving for GE's Aviation and Power gas turbine engines. This work made critical design improvements possible by using fundamental building-block tests to gain insight into flow physics. His efforts resulted in two patents, and enabled advanced turbine cooling technologies in several fielded and future engine products.

Dr. Getsinger's academic experience includes positions as a postdoctoral scholar and graduate student researcher in the Energy and Propulsion Research Laboratory at UCLA. He conducted experimental work on shear layer instabilities in gaseous jets in crossflow, with applications including pollution efflux, high-speed projectile control, and gas turbine cooling/NO<sub>x</sub> emissions tuning. He gained significant experience with instrumentation and techniques for fluid velocity measurement and mixing quantification. Dr. Getsinger also taught an undergraduate course in fluid mechanics in the UCLA Mechanical & Aerospace Engineering Department during his time as a postdoctoral scholar.

## Academic Credentials & Professional Honors

Ph.D., Aerospace Engineering, University of California, Los Angeles (UCLA), 2012

M.S., Aerospace Engineering, University of California, Los Angeles (UCLA), 2008

B.S., Aerospace Engineering, University of Maryland, College Park, 2007

Outstanding Ph.D. Recipient in Aerospace Engineering, UCLA, 2012-2013

NASA Graduate Student Researchers Program (GSRP) Fellowship, 2008-2011

## Licenses and Certifications

Professional Engineer Mechanical, Arizona, #82319

Professional Engineer Mechanical, California, #39560

Professional Engineer, Colorado, #PE.0059956

Professional Engineer Mechanical, Nevada, #033216

40-Hour Hazardous Waste Operation and Emergency Response Certification (HAZWOPER)

Certified Fire and Explosion Investigator (CFEI)

## Prior Experience

Mechanical Engineer, General Electric Global Research, Aero-Thermal & Mechanical Systems, 2013-2017

Postdoctoral Scholar, Energy & Propulsion Research Laboratory, University of California, Los Angeles (UCLA), 2012-2013

Graduate Student Researcher, University of California, Los Angeles (UCLA), 2007-2012

Aerospace Intern, Arnold Engineering Development Center Hypervelocity Wind Tunnel 9, 2006-2007

## Professional Affiliations

American Institute of Aeronautics and Astronautics (member)

American Society of Mechanical Engineers (member)

National Fire Protection Association (member)

## Patents

US 10,577,944 B2: Engine Component with Hollow Turbulators, Mar 2020. (Clark ER, Winka JR, Getsinger DR, Dyson TE, Brzek BG, Wiedenhoefer JF, Stewart WR).

US 10,577,942 B2: Double Impingement Slot Cap Assembly, Mar 2020. (Dyson TE, Getsinger DR).

## Publications

Gevorkyan L, Shoji T, Getsinger DR, Smith OI, Karagozian AR. Transverse jet mixing characteristics. *Journal of Fluid Mechanics* 2016; 790:237-274.

Getsinger DR, Gevorkyan L, Smith OI, Karagozian AR. Structural and stability characteristics of jets in crossflow. *Journal of Fluid Mechanics* 2014; 760:342-367.

Getsinger DR, Hendrickson C, Karagozian AR. Shear layer instabilities in low-density transverse jets.

Experiments in Fluids 2012; 53:783-801.

Davitian J, Getsinger D, Hendrickson C, Karagozian AR. Transition to global instability in transverse-jet shear layers. Journal of Fluid Mechanics 2010; 661:294-315.

Davitian J, Hendrickson C, Getsinger D, Karagozian AR. Strategic control of transverse jet shear layer instabilities. AIAA Journal 2010; 48:2145-2156.

### Conference Papers and Presentations

Osorio-Amado CH, Getsinger DR, Morrison D. The role of management of change in incident root cause analysis. 8th CCPS Latin American Conference on Process Safety. Buenos Aires, Argentina, 2018.

Getsinger DR, Dees JE, Rodebaugh GP. Flowfield and film performance measurements of axial shaped cooling holes on a flat plate. Paper AIAA-2015-2929, 45th AIAA Fluid Dynamics Conference, Dallas, TX, 2015.

Getsinger D, Gevorkyan L, Smith O, Karagozian A. Structural variation in convectively and absolutely unstable jets in crossflow. 65th Annual Meeting of the APS Division of Fluid Dynamics, San Diego, CA, 2012.

Getsinger D, Gevorkyan L, Hendrickson C, Smith OI, Karagozian AR. Shear layer instabilities in variable density transverse jets. Proceedings of the 23rd International Congress of Theoretical and Applied Mechanics, Beijing, China, 2012.

Getsinger D, Gevorkyan L, Hendrickson C, Smith OI, Karagozian AR. Scalar and velocity field measurements in acoustically excited variable density transverse jets. Paper AIAA-2012-1225, 50th AIAA Aerospace Sciences Meeting & Exhibit, Nashville, TN, 2012.

Getsinger D, Gevorkyan L, Hendrickson C, Smith OI, Karagozian AR. Scalar and velocity field measurements in variable density jets in crossflow. 64th Annual Meeting of the APS Division of Fluid Dynamics, Baltimore, MD, 2011.

Getsinger D, Hendrickson C, Karagozian AR. Transition to self-excited oscillations in low density transverse jet shear layers. Paper AIAA-2011-0040, 49th AIAA Aerospace Sciences Meeting & Exhibit, Orlando, FL, 2011.

Getsinger D, Hendrickson C, Sung A, Smith O, Karagozian A. Low density transverse jet shear layer instabilities and their control. 63rd Annual Meeting of the APS Division of Fluid Dynamics, Long Beach, CA, 2010.

Getsinger D, Canzonieri K, Hendrickson C, Smith O, Karagozian A. Shear layer instabilities in low density transverse jets. 62nd Annual Meeting of the APS Division of Fluid Dynamics, Minneapolis, MN, 2009.

### Additional Education & Training

Gas Turbine Engine Accident Investigation Course, University of Southern California Aviation Safety & Security Program

Fire Investigation 1A: Basic Fire Investigation, California Office of the State Fire Marshal

### Peer Reviews

ASME Turbo Expo (2017)

Experimental Thermal and Fluid Science (2010)

International Society of Offshore and Polar Engineers (2018 to 2021)

Journal of Fluid Mechanics (2021)