Tom DeBold, P.E., IAAI-CFI, CFEI

Managing Engineer - Explosion and Fire Safety

Phone: 301 915-9926 Mobile: 240 499-5024
Email: Thomas.DeBold@gexcon.com Fax: 301 656-2953

Professional Profile

Tom DeBold is a Managing Engineer within the Explosion and Fire Safety group at Gexcon US, Inc. He specializes in fire protection, mechanical, thermal and fluid engineering. Mr. DeBold performs post-incident investigative work related to fires and explosions and is experienced in evaluating origin and cause. Mr. DeBold has investigated numerous fire and explosion incidents, including natural gas and propane incidents, fire protection systems, carbon monoxide exposures, chemical and industrial facilities and equipment, dust explosions, general residential fires, and commercial fires. He performs incident reconstruction, on/off-site testing, and computational fluid dynamics (CFD) to assess the feasibility of accident scenarios. Additionally, Mr. DeBold uses CFD to perform safety studies including gas dispersion and explosion consequence analyses. His fire protection engineering expertise includes post-incident fire suppression/extinguishment system failure analyses, fire alarm and detection failures, and review of compliance with applicable codes.

Mr. DeBold has also spent time in Norway developing modeling skills for use with FLACS and PHAST, focusing on modeling large process facilities. These skills have been applied to a wide variety of projects including large loss investigations, floating production, storage and offloading vessels, production plants, and other on and offshore process facilities. These projects include dispersion of flammable and toxic gasses, hydrogen, low burning velocity refrigerants, ventilation studies, ignition of flammable gas build up, jet fire analysis and analysis of blast waves and explosion overpressures. Additionally, Mr. DeBold uses FDS to evaluate suppression or detection system activation, fire spread and growth, and smoke management systems.

Mr. DeBold is currently an adjunct lecturer at the University of Maryland in the Department of Fire Protection Engineering, where he teaches an undergraduate and graduate level course in Fire and Explosion Investigation and Reconstruction. Prior to joining Gexcon, Mr. DeBold worked in the nuclear safety field as well as in the experimental testing field.

Academic Credentials

B.S., Fire Protection Engineering, University of Maryland, 2011
M.S., Fire Protection Engineering, University of Maryland, 2012

Adjunct Lecturer: University of Maryland, Department of Fire Protection Engineering, 2021-present

Licenses and Certifications

Licensed Professional Engineer (P.E.), Maryland, #41455

Licensed Professional Engineer, Texas, #133581

Certified Fire Investigator (IAAI-CFI) in accordance with the International Association of Arson Investigators, Pro Board Certified, #53-072265

Certified Fire and Explosion Investigator (CFEI) in accordance with the National Association of Fire Investigators National Certification Board per NFPA 921 Section 13.6.4.2, #19790-11525

Certified FLACS Users per Gexcon AS.

Publications

DeBold, T., Davis, S., Pagliaro, J., Slipping Through the Cracks – How Underground Gas Leaks Can Preferentially Migrate and Cause Explosions. Tenth International Symposium on Fire Investigation Science and Technology (ISFI 2024). Orlando, Florida, USA, 16-18 September 2024.

Davis, S., DeBold, T., Pagliaro, J., Lessons Learned When Low-Pressure Natural Gas Components are Overpressurized. Tenth International Symposium on Fire Investigation Science and Technology (ISFI 2024). Orlando, Florida, USA, 16-18 September 2024.

Davis, S., DeBold, T., Pagliaro, J., When Investigators Resist the Scientific Method: A Case Study Showing Increased Burning Hazards Caused by Flame Jetting. Tenth International Symposium on Fire Investigation Science and Technology (ISFI 2024). Orlando, Florida, USA, 16-18 September 2024.

Davis, S., Pagliaro, J., DeBold, T., Part 1 – 2012 Flaminia Explosion and Fire, How to Accurately Predict Thermal Runaway: Experimental Study Involving Lab-scale and Full-scale Tests. Tenth International Symposium on Fire Investigation Science and Technology (ISFI 2024). Orlando, Florida, USA, 16-18 September 2024.

Davis, S., Pagliaro, J., DeBold, T., Odor Fade: When Propane Tanks Need Extra Conditioning. Tenth International Symposium on Fire Investigation Science and Technology (ISFI 2024). Orlando, Florida, USA, 16-18 September 2024.

Davis, S., Pagliaro, J., DeBold, T., Part 2 – 2012 Flaminia Explosion and Fire, Investigation Findings and Lessons Learned From the 2012 Flaminia Incident. Tenth International Symposium on Fire Investigation Science and Technology (ISFI 2024). Orlando, Florida, USA, 16-18 September 2024.

Davis, S, Pagliaro, J, and Engel, D, and DeBold, T, (2024), Safety Strategies to Avoid Possible Pitfalls and Ensure the Safe Use of Hydrogen, 2024 Spring Meeting and 20th Global Congress on Process Safety, New Orleans, LA, March 24-28, 2024.

Davis, S, Pagliaro, J, and Engel, D, and DeBold, T, (2024), How to Accurately Predict Thermal Runaway: Experimental Study Involving Lab-Scale and Full-Scale Tests, 2024 Spring Meeting and 20th Global Congress on Process Safety, New Orleans, LA, March 24-28, 2024.

Davis, S, DeBold, T, Engel, D, and Pagliaro, JL, (2022), Why Do Devastating Ammonium Nitrate Detonations Still Occur? Lesson still not learned in Beirut, Tianjin and West Texas, 2022 Spring Meeting and 18th Global Congress on Process Safety, San Antonio, TX, April 10-14, 2022.

Davis, S, Pagliaro, J, Engel, D, and DeBold, T, (2022), Propane Cylinder BLEVE: Investigation Findings and Lessons Learned in the 2014 Philadelphia Food Truck Explosion, 2022 Spring Meeting and 18th Global Congress on Process Safety, San Antonio, TX, April 10-14, 2022.

Davis, S, Pagliaro, J, Engel, D, and DeBold, T, (2022), Improving our understanding of hydrogen through testing and advanced modeling to avoid possible pitfalls and ensure its safe use, 2022 Spring Meeting and 18th Global Congress on Process Safety, San Antonio, TX, April 10-14, 2022.

Davis, S., Pagliaro, J., Botwinick, D., DeBold, T., van Wingerden, K., Allason, D., Johnson, D., "Do not believe the hype: Using case studies and experimental evidence to show why the HSE is wrong about excluding deflagration-to-detonation transitions. Journal of Process Safety Progress. Volume 38, Issue 2, June 2019: https://doi.org/10.1002/prs.11998

DeBold, T., Pagliaro, J., Davis, S., Could this gas leak have caused the explosion? Case study showing why air infiltration needed to be considered to explain flammable gas accumulation. Ninth International Symposium on Fire Investigation Science and Technology (ISFI 2018). Itasca, Illinois, USA, 24-26 September 2018.

Davis, S., Pagliaro, J., DeBold, T., Propane safety: Investigation findings and lessons learned in the 2014 Philadelphia food truck explosion. Ninth International Symposium on Fire Investigation Science and Technology (ISFI 2018). Itasca, Illinois, USA, 24-26 September 2018.

Davis, S., DeBold, T., Pagliaro, J., Are liquid propane leaks really 270 times larger than vapor? Case study regarding the physics of liquid and vapor propane leaks. Ninth International Symposium on Fire Investigation Science and Technology (ISFI 2018). Itasca, Illinois, USA, 24-26 September 2018.

Davis, S, Pagliaro, J, DeBold, T, Botwinick, D, van Wingerden, K, Allasan, D, and Johnson, DM (2018). Don't believe the hype: Using Case Studies and Experimental Evidence to Show why the HSE is wrong about Excluding DDTs. 14th Global Congress on Process Safety. Orlando, Florida, April 22, 2018.

Davis, S, Pagliaro, J, DeBold, T, van Wingerden, M, van Wingerden, K (2018). Large Scale Flammability and Explosivity Testing of Ammonia: Impact on Ammonia Safety in Refrigeration Applications. 2018 IIAR Natural Refrigeration Conference & Expo. Colorado Springs, Colorado, March 18, 2018.

Davis, S, DeBold, T, & Marsegan, C (2017). Investigation Findings and Lessons Learned in the West Fertilizer Explosion. Journal of Fire Science. Volume 35, Issue 5, September 5, 2017: pp. 379-395. https://doi.org/10.1177/0734904117715649

Davis, S, Pagliaro, J, DeBold, T, van Wingerden, M, van Wingerden, K (2017). Flammability and explosion characteristics of mildly flammable refrigerants, Journal of Loss Prevention in the Process Industries. Volume 49, Part B, September, 2017: pp: 662-674. http://dx.doi.org/10.1016/j.jlp.2017.05.019

Davis, S, DeBold, T, Marsegan, C, & Hendrickson, B (2017). Overfill to Overpressure – Investigation Findings and Contributing Events to the CAPECO Explosion. 13th Global Congress on Process Safety. San Antonio, Texas, March 29, 2017.

Davis, S., Pagliaro, J., DeBold, T., van Wingerden, M., van Wingerden, K. Large scale flammability and explosivity testing of low burning velocity gases: Validity of prediction tools and impact on siting studies and risk assessments. 13th Global Congress on Process Safety (AICHE 2017). San Antonio, Texas, March 27, 2017.

Davis, S., DeBold, T., Marsegan, C., & Hendrickson, B. (2016). Investigation Findings and Lessons Learned in the West Fertilizer Explosion. Eighth International Symposium on Fire Investigation Science and Technology (ISFI 2016). Scottsdale, Arizona, USA, 22-24 September 2016.

Davis, S., Pagliaro, J., DeBold, T., van Wingerden, M., van Wingerden, K. Flammability and explosion characteristics of marginally flammable refrigerants. 11th International Symposium on Hazards, Prevention, and Mitigation of Industrial Explosions. Dalian, China, July 2016.

Davis, S., Hendrickson, B., Marsegan, C., & DeBold, T. (2016). Investigation Findings and Lessons Learned in the West Fertilizer Explosion. 12th Global Congress on Process Safety. Houston, Texas, April 11-23, 2016.

Davis, S., DeBold, T., Engel, D., Hendrickson, B., & Hinze, P. (2014). A Case Study of an Alleged CO Poisoning in a Moving Truck. Seventh International Symposium on Fire Investigation Science and Technology (ISFI 2014). University of Maryland, USA, 22-24 September 2014: 149-160.

Davis, S., Engel, D., DeBold, T., Hinze, P., & Hendrickson, B. (2014). Misuse of Simple Explosion Tools in Complex Explosion Investigations. Seventh International Symposium on Fire Investigation Science and Technology (ISFI 2014). University of Maryland, USA, 22-24 September 2014: 173-184.

DeBold, Thomas. Laminar Smoke Points of Coflowing Diffusion Flames in Microgravity. Thesis, University of Maryland, College Park. Ann Arbor: ProQuest/UMI, 2012. (Publication No. AAT 1533862).

Presentations

DeBold, T., Davis, S., Pagliaro, J., Slipping Through the Cracks – How Underground Gas Leaks Can Preferentially Migrate and Cause Explosions. Tenth International Symposium on Fire Investigation Science and Technology (ISFI 2024). Orlando, Florida, USA, 16-18 September 2024.

DeBold, T.F. CFD Case Study: House Explosion Involving Long-Term Gas Leak. University of Maryland Fire Protection Engineering Faculty Summer Lecture Series. College Park, MD. July 26, 2021.

DeBold, T., Pagliaro, J., & Davis, S. Could This Gas Leak Have Caused the Explosion? Case Study Showing Why Air Infiltration Needed to be Considered to Explain Flammable Gas Accumulation. Ninth International Symposium on Fire Investigation Science and Technology (ISFI 2018). Itasca, IL, USA, 24 September 2018.

Work Experience

Managing Engineer at Gexcon US, 2022-present

Senior Engineer at Gexcon US, 2019-2022

Engineer at Gexcon US, 2013-2019

Graduate Research Assistant at FireTec, 2011-2012

Student Engineer at Nuclear Regulatory Commission, Fire Research Branch 2009

Student Engineer at Nuclear Regulatory Commission, Uranium Enrichment Branch 2010

Professional Affiliations
National Fire Protection Association– NFPA (member)
Society of Fire Protection Engineering – SFPE (member)
National Association of Fire Investigators – NAFI (member)
International Association of Arson Investigators – IAAI (member)