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Engineering & Scientific Consulting

Brian Ott, Ph.D., P.E., CFEI

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Professional Profile

Dr. Ott uses his expertise as a chemical engineer to analyze chemical processes in the petroleum refining and petrochemical industries. He has experience conducting investigations of refinery incidents and performs analyses related to the prevention of future failures. He performs hazard and regulatory compliance reviews in the context of OSHA PSM, EPA RMP, and DOT/PHMSA regulations, including safer technology and alternative analyses (STAAs) and off-site consequence analyses. He reviews and performs gap analyses of corporate practices and procedures against regulations and industrial consensus standards, including API, NFPA, and ASTM.

Dr. Ott's primary expertise is in the engineering investigation and prevention of loss-of-containment, fire, and explosion incidents involving hazardous chemicals caused during their production, manufacture, storage, transport, consumer use, and disposal. He has specific expertise in evaluating flammable and reactive chemicals, particularly in relation to fuel concentration, ignition source, flame propagation, chemical reaction, heat transfer, and fluid mechanics involving industrial, commercial, and residential fires and explosions.

Dr. Ott has field experience at chemical processing facilities, including refineries, and analyzes the integrity of crude distillation, vacuum distillation, fluid catalytic cracker (FCC), HF Alkylation, coker, and other refinery units. He analyzes process data such as temperature, pressure, composition, and flow rate and Process Safety Information (PSI) to simulate chemical processes using HYSYS/AspenOne. He also analyzes winterization practices, hydrogen transformation strategies, RMP incident data, and CSB accidental release reporting data.

Dr. Ott investigates fire and explosion incidents, including industrial incidents at petrochemical, refinery, semiconductor, food processing, and water treatment plants. He investigates explosions and fires involving explosible dust, natural gas, and reactive chemicals. He also investigates residential and commercial fires and fires involving large format lithium-ion batteries, recreational vehicles, construction vehicles, and home appliances.

Dr. Ott performs flammability and explosion testing of reactive and flammable liquids and refined petroleum products. He recreates large scale fires and explosions, including those involving recreational vehicles and lithium-ion battery systems, and analyzes chemical hazards using ARC, DSC, explosivity testing, and supplemental analyses, including GC-MS, FTIR, SEM, and analytical chemistry techniques.

Dr. Ott has testified as an expert witness and presently serves on the NFPA committees on Classification and Properties of Hazardous Chemical Data (NFPA 704) and Hazardous Waste (NFPA 401) and served as the Chair of the NFPA 401 Explosives Task Group. He is a registered chemical engineer in the state of California and a Certified Fire and Explosion Investigator (by the National Association of Fire Investigators). He also holds certifications as a corrosion and materials professional (API 571) and risk based inspection professional (API 580) from the American Petroleum Institute and assists clients with

evaluating their process safety management programs, including asset integrity, damage mechanisms, and equipment inspections.

Prior to joining Exponent, Dr. Ott was a Research Assistant at Michigan Technological University's (MTU's) Center for Environmentally Benign Functional Material (CEBFM), where he conducted research on polymerization reactions and polymer/solvent interactions. In addition, Dr. Ott researched point-of-care blood diagnostic systems as a research scientist at Diametrics Medical, Inc..

Academic Credentials & Professional Honors

Ph.D., Chemical Engineering, Michigan Technological University, 2009

M.S., Chemical Engineering, Michigan Technological University, 2008

B.S., Chemical Engineering, University of Minnesota, 1999

Licenses and Certifications

Professional Engineer Chemical, California, #6520

Professional Engineer, Minnesota, #64189

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

Certified Corrosion and Materials Professional (API 571)

Certified Risk Based Inspection Professional, American Petroleum Institute, API 580

Confined Space Entry (29 CFR 1910.146)

Competent Person for Fall Protection (29 CFR 1926.500)

Certified Fire and Explosion Investigator (CFEI)

Fire Investigation 1A (Cause and Origin), California Office of State Fire Marshal

Prior Experience

Graduate Research/Teaching Assistant, Michigan Technological University, 2003-2009

Associate Scientist, Diametrics Medical, Inc., 2000-2003

Professional Affiliations

National Fire Protection Association (NFPA)

• Principal Member: NFPA Technical Committee on Classification and Properties of Hazardous Chemical Data, which is responsible for NFPA 704: Standard System for the Identification of the Hazards of Materials for Emergency Response

• Principal Member: NFPA Technical Committee on Hazardous Waste, which is responsible for NFPA 401: Recommended Practice for the Prevention of Fires and Uncontrolled Chemical Reactions Associated with the Handling of Hazardous Waste

• Chair of NFPA 401 Explosives Task Group (2022)

International Society of Offshore and Polar Engineers (ISOPE)

• Session Co-Chair for Asset Integrity: Structure, Asset Integrity Management at the 29th (2019) ISOPE Conference

• Peer Reviewer

American Institute of Chemical Engineers (AIChE)

National Association of Fire Investigators (NAFI)

Society of Petroleum Engineers (SPE)

Patents

US Patent 6794877, Apparatus and Method for Analytical Determinations, 2004 (Blomberg S, Sin KV, Ott B).

Publications

Ott B, Delafontaine L, Welchert N, Frajnkovič M, Reza A. Considerations for the safe handling and processing of unstable materials. Process Saf Prog. 2024; 1-9. doi:10.1002/prs.12652. Also published in Chemical Engineering Progress, 121, 2 (2025): 38-46 and presented at the 2024 AICHE Spring Meeting and 20th Global Congress on Process Safety, Houston, Tx, March 2024.

Ott, B, Delafontaine, L, Welchert, NA, Dee, S, Reza, A. Ensuring natural gas infrastructure is suitable for hydrogen service. Process Safety Progress. 2023; 42 (2): 213- 224.

Ott B, Reza A. Considerations in Developing an Inspection Plan for Petrochemical Equipment in Sulfidation Service. The 30th International Ocean and Polar Engineering Conference, Shanghai, China, October 2020.

Ott B, Reza A, Osorio-Amado C. The role of a piping material verification program to minimize loss of containment incidents in the oil and gas industry. The 29th International Ocean and Polar Engineering Conference, Honolulu, HI, June 2019.

Ott B, Reza A, Veloo P. Considerations in developing an inspection plan for equipment in wet H2S and Carbon Dioxide service. The 28th International Ocean and Polar Engineering Conference, Sapporo, Japan, June 2018.

Ott, B, Reza, A, Veloo, S. Assigning API 570 pipe classifications based on the composition and temperature of complex hydrocarbon streams. The 27th International Ocean and Polar Engineering Conference, San Francisco, California, June 2017.

Reza A, Veloo P, Ott B. Damage mechanisms in the petrochemical industry: identification, influencing factors, and effective monitoring strategies. The 26th International Ocean and Polar Engineering Conference, Rhodes, Greece, June 2016.

Bosco, Jeffrey; Tanaka, Zuki; Ott, Brian; Slee, Daren. The efficacy of fire-fighting foams for disrupting power generation from silicon solar panels. IEEE Explore, December 17, 2015.

Hetrick TM, Morrison DR, Ramirez JC, Ott BA, Karnesky J. Analysis of flammable liquid ejection from a container following headspace vapor ignition. Proceedings, International Symposium on Fire Investigation Science and Technology, College Park, MD, National Association of Fire Investigators, Sarasota, FL, September 22-24, 2014.

Ott B. Phase equilibrium as modeled by the Statistical Associated Fluid Theory (SAFT) Equation of State. Ph.D. dissertation, Michigan Technological University, 2009.

Caneba G, Renier M, Ott B. Towards the development of CO2 separation membranes. Journal of Minerals & Materials Characterization and Engineering 2008; 7(2):175-191.

Selected Reports

Ott, B. Investigation of the MSC Flaminia explosion and fire. Rebuttal Report in the matter of M/V MSC Flaminia. Exponent, PC. September 2016.

Ott, B. Investigation of the MSC Flaminia explosion and fire. Expert Report in the matter of M/V MSC Flaminia. Exponent, PC. June 2016.

Ott, B. Affidavit in the matter of Safety-Kleen Solvent Cases. Exponent Failure Analysis Associates. May 2014 - February 2015.

Ott, B. Affidavit in the matter of Lauren Sclafani v. Brother Jimmy's BBQ, Inc, et al. Exponent Failure Analysis Associates. February 2014.

Reza A, Ott B. Assessment of the extent of damage due to the hydrochloric acid spill at Chartered Semiconductor, Singapore. Exponent Failure Analysis Associates, May 2010.

Project Experience

Evaluated reactive and flammable chemicals via calorimetry and analytical chemistry data.

Evaluated process data, inspected process units, reviewed process safety information, and performed chemical process simulations to evaluate asset integrity programs and identify active damage mechanisms.

Evaluated the flammability and explosivity of refinery products, flammable beverages, and flammable liquids through full scale testing of alleged incidents.

Evaluated the safety of consumer products, including lithium ion battery systems and recreational vehicles, through the use of full scale testing.

Performed fire origin and cause investigations of residential, commercial, and industrial incidents.

Performed non-destructive and destructive testing of evidence related to fires and explosions.