

Overview

Crux Consulting, LLC provides consulting services and performance-based design solutions for code / regulatory compliance, fire, life safety, and security systems. Our purpose is to apply comprehensive knowledge and analytical thinking of industry codes, standards, and modeling to help our clients solve complex challenges.

Services

- Code compliance reviews and recommendations related to fire protection, life safety, hazardous materials, permitting, MEP, OSHA, Process Safety Management (PSM), and Emergency Action Plans (EAPs).
- Detailed engineering design packages for suppression, alarm / detection, fire protection water storage tanks, fire pumps, smoke control, and special hazards.
- Performance-based design / evaluations including fire hazards analysis (FHA), quantitative risk analysis (QRA), modeling (hydraulic, CFD, radiation, egress), deflagration / explosion analysis, failure mode and effects analysis (FMEA), and dispersion modeling.
- Construction management

Key Personnel

Shane Cherney, PE – Principal

Shane Cherney is a licensed fire protection and mechanical engineer with experience in code and regulatory consulting, hazard and risk analysis, and fire protection systems engineering. Shane is the owner and founder of Crux Consulting.

Kyle Christiansen, PE – Senior Fire / Life Safety Engineer

Kyle Christiansen is a licensed fire protection engineer specializing in hazard and risk analysis, code/regulatory/permitting consulting, probabilistic risk analysis / fault tree / event tree modeling, and fire protection systems engineering. He also has experience with fire modeling and statistical analysis software.

Dustin Brand, PE, CBCP – Senior Mechanical Engineer

Dustin Brand is a licensed mechanical engineer and certified MEP system commissioning agent with experience in MEP system design and commissioning for a variety of building types including healthcare, DoD military facilities, higher education, and civic facilities.

Travis De Goei – Design Manager

Travis De Goei is a NICET Level IV certified technician with experience in design, management, installation, and commissioning of fire protection systems, fire alarm / detection, communications, life safety, voice evacuation and mass notification, special hazard detection, clean agent fire suppression, and others.

Sectors

- High-rises
- Higher education
- Battery energy storage systems (BESS)
- Oil & gas
- Power generation (RNG, LNG, hydropower, solar)
- Hazardous materials
- Manufacturing / production facilities
- Data centers
- Marine terminals, ports, and harbors
- Hospitals and ambulatory care
- Department of Defense facilities (UFC)
- Solid waste and wastewater
- Warehouse / storage

Project Highlights

Below is a list of some of our recent work providing code consulting and performance-based solutions:

- Code compliance, fire hazards analysis, and detailed engineering design for flammable liquid storage terminals
- Detailed engineering design for the sitewide fire protection system at a lithium production facility
- FMEA and code consulting services for BESS sites
- Code consulting and smoke control for university building
- Detailed design and construction management for fire protection water system replacement
- Dispersion analysis and blast study for chemical plants
- Ventilation evaluation and integrated system testing / survey
- NFPA 59A leak and fire hazard analysis for LNG facilities



Shane Cherney, PE, P.ENG
Principal | Fire Protection Engineer

RELEVANT EXPERIENCE

Education

Master of Science, Architectural Engineering, University of Nebraska, Lincoln, 2009

Bachelor of Science, Architectural Engineering, University of Nebraska, Omaha, 2008

Certificate, Fire Protection Engineering, Worcester Polytechnic Institute (WPI), 2011

Registrations

Professional Engineer, Nebraska, US, #E-14729 - Fire Protection Engineer/Mechanical Engineer

Professional Engineer – Fire Protection, additional jurisdictions:

South Dakota, US, #12506

Missouri, US, #2015011991

Colorado, US, #0050134

Minnesota, US #52465

Massachusetts, US, #51460

Alaska, US, #14786

Arizona, US, #74827

- **Commonwealth LNG Fire Protection Water Design Verification**, Cameron, Louisiana, United States.
- **El Dorado Lithium Facility Fire Hazards Analysis**, Arkansas, United States.
- **Fire Protection Design for Antigua / Caribbean LNG**, Antigua.
- **El Dorado Lithium Facility Fire Hazards Analysis**, Arkansas, United States.
- **Lee County RNG for Ameresco**, United States.
- **Fire Hazards Analysis and NFPA 59A Study for the Lynn LNG Facility for National Grid**, Lynn, Massachusetts, United States.
- **Fire Hazards Analysis and NFPA 59A Study for the Haverhill LNG Facility for National Grid**, Haverhill, Massachusetts, United States.
- **Fire Protection Basis of Design for Magnolia Renewable Natural Gas**, Summerdale, Alabama, United States.
- **Monitor Cooling Upgrade Project for the Hartwell Energy Facility**, Hartwell, Georgia, United States.
- **BRP Lincoln I Solar Fire Safety Study**, Lincoln, Nebraska, United States.
- **MUD LNG Fire Alarm Study Report**, Omaha, Nebraska, United States.

NON-CRUX PROJECT EXPERIENCE

- **174 Power Global Corp., East River Site Battery Storage**, New York, United States.
- **Alliant Energy Corporation, Alliant-Marshalltown OE**, Ackley, Franklin, Iowa, United States.
- **Bonneville Power Administration, 500kV Castle Rock Substation**, Washington, United States.



Utah, US, #9661810-2202
 California, US, #2193
 Pennsylvania, US, #PE095007
 Illinois, US, #62.075786
 South Carolina, US, #42048
 North Carolina, US, #55611
 Iowa, US, #ENG-21-00596
 Kansas, US, #28620
 Maryland, US, #05 - 61320;
 Michigan, US, #6201312890APP23
 New York, US, #108956-01
 New Jersey, US, #2764811
 Wyoming, US, #PE18746
 Oregon, US, #103891PE
 Ohio, US, #PE.89832
 Texas, US, #144390
 Alberta, Canada, #212855
 Ontario, Canada, #100549393

Professional Engineer –
 Mechanical and Fire Protection –
 Hawaii, US, #PE-19065
 Nevada, US, #31864

Professional Memberships

American Society of Heating,
 Refrigeration and Air
 Conditioning Engineers (ASHRAE),
 2010

Society of Fire Protection
 Engineers, Great Plains Chapter,
 2010

Industry Tenure

Since 2006

- **Bonneville Power Administration, Morrow Flat Substation 230 kV/115 kV Substation**, Oregon, United States.
- **Cty & Co Honolulu Dpt Env Svc, CCHHPWR FacExpansion – Solid Waste to Energy Facility Third Boiler Expansion**, Ewa, Honolulu, Hawaii, United States
- **City of Westminster, Semper High-Service Pump Station (H and Rehabilitation (R&R))**, Westminster, Colorado, United States
- **Doosan GridTech, Austin Energy Pilot ESS**, United States; SEA Washington, United States.
- **Duke Energy, EEOC1 Belews Creek 2020**, Belews Creek, North United States
- **Eagle LNG Partners, Talleyrand Marine Terminal LNG Fuel De Jacksonville**, Florida, United States.
- **Hawaiian Electric Co. Inc., HECO-Dry Vault Guidelines**, Honolulu, Hawaii, United States.
- **McKenzie Electric Coop, Service Center Preliminary Design**, McKenzie, North Dakota, United States.
- **MEI LLC., National Grid – HX Foam System Design for Two LN Waltham**, Middlesex, Massachusetts, United States.
- **Metropolitan St. Louis Sewer District, MSD-Grand Glaize Bldg Fenton**, St. Louis, Missouri, United States.
- **Moorhead Public Service, MPS – High Service Pump Station Construction Phase**, Moorhead, Clay, Minnesota, United States
- **Oklahoma Gas and Electric Company, Red Bud Water Desig Luther**, Oklahoma, Oklahoma, United States.
- **Omaha Public Power District, OPPD Facil Assmt 2020**, Nebraska, United States.
- **Snohomish County PUD, Snohomish County PUD MESA Batterie Storage System**, Washington, United States.
- **USAC E - Baltimore District, Intelligence, Surveillance, and Reconnaissance (ISR) Facility**, Norfolk, Norfolk City, Virginia, United States
- **Yuba Water Agency, YCWA_LL_Fire Protection**, California, United States
- **Alegent BMMC Master Life Safety Plans**, United States



Kyle J. Christiansen, PE
Senior Fire and Life Safety Engineer

RELEVANT EXPERIENCE

Education

Master of Engineering, Fire Protection, Worcester Polytechnic Institute, 2016

Bachelor of Engineering, Chemical Engineering, University of Connecticut, 2012

Registrations

Professional Engineer - Fire Protection, Connecticut, US, #PEN.0031752

Professional Engineer - Fire Protection, Guam, US, #2124

Professional Engineer - Fire Protection, Kentucky, US, #36130

Professional Engineer - Mechanical, Maine, US, PE16559

Professional Engineer - Fire Protection, Massachusetts, #56097

Professional Engineer - Fire Protection, New Hampshire, US,

- **Fire Hazards Analysis and NFPA 59A Study for the Lynn LNG Facility for National Grid, Lynn, Massachusetts, United States.**
- **Fire Hazards Analysis and NFPA 59A Study for the Haverhill LNG Facility for National Grid, Haverhill, Massachusetts, United States.**
- **Fire Protection Basis of Design for Magnolia Renewable Natural Gas, Summerdale, Alabama, United States.**
- **Monitor Cooling Upgrade Project for the Hartwell Energy Facility, Hartwell, Georgia, United States.**
- **Code / Fire Hazard Analysis and Detailed Engineering Fixed Foam Suppression Design for the Stolthaven Houston Terminal, Houston, Texas, United States.**
- **Code / Fire Hazard Analysis and Detailed Engineering Fixed Foam Suppression Design for the Stolthaven New Orleans Terminal, New Orleans, Louisiana, United States.**
- **Code / Fire Hazard Analysis and Detailed Engineering Fixed Foam Suppression Design for the Corpus Christi Polymers Site, Corpus Christi, Texas, United States**

NON-CRUX PROJECT EXPERIENCE

- **Hiwassee Hydro Plant Fire Protection Upgrade Phase 1 Study for the Tennessee Valley Authority, Murphy, North Carolina, United States**
- **Lynn LNG Foam Detailed Engineering Design for National Grid, Lynn, Massachusetts, United States**
- **Holtsville LNG Fire Protection Water Demand Study, Holtsville, New York, United States**
- **Fire Hazards Analysis and NFPA 59A Study for Temporary LNG Facility at National Grid, Rhode Island, United States**
- **Salem Fire Hazards Analysis and NFPA 59A Study for**



#16640

Professional Engineer – Fire Protection, North Carolina, US, #49921 – Fire Protection Engineer

Professional Engineer – Fire Protection, Rhode Island, US, #PE.0013459

Professional Engineer – Fire Protection, South Carolina, US, # 41968

Professional Engineer – Fire Protection, Vermont, US, #18.0134652

Professional Memberships

Society of Fire Protection Engineers, National, 2014

Society of Fire Protection Engineers, Charlotte Chapter, 2019

Industry Tenure

Since 2012

- **National Grid, Salem, Massachusetts, United States**
- **Exeter Foam Fire Protection Detailed Engineering Design for National Grid, Exeter, Rhode Island, United States.**
- **South Yarmouth Boiloff Gas Compressor Upgrade for National Grid, South Yarmouth, Massachusetts, United States.**
- **Turner Cut and Whisky Slough Fire Protection Upgrades for Pacific Gas & Electric, Stockton, California, United States.**
- **Fire Probabilistic Risk Analysis for the Comanche Peak Nuclear Power Plant, Glen Rose, Texas, United States.**
- **Fire Probabilistic Risk Analysis for the AP1000® Nuclear Power Plant, United States.**
- **NFPA 801 Fire Hazards Analysis for the Columbia Fuel Fabrication Facility, Columbia, South Carolina, United States**
- **Fire Probabilistic Risk Analysis for the Onagawa Nuclear Power Plant, Onagawa, Japan.**
- **Performance-Based Fire Modeling for the Beznau Nuclear Power Plant, Beznau, Switzerland.**



Travis De Goei
Design Manager

RELEVANT EXPERIENCE

- **Air Force Civil Engineering Center, T_Tyndall 2 Flight Ops** *United States*
- **Brookhaven National Laboratory (BNL), Core Facility Revitalization Design Services - Data Center (B725)** *Upton, New York, United States*
- **National Park Service, T EVER Housing Full Design** *United States*
- **New York City Department of Sanitation, DSNY, Bronx 9/10/11 Mahwah (Township of), Bergen, New Jersey, United States; New York, New York, New York, United States**
- **NYCDEP-BEDC, DEP/SWD/OAKWOOD TRC** *Brooklyn, Kings, New York, United States; Corona, Queens, New York, United States*
- **University of Maryland Medical Center, Comprehensive Cancer Center** *Baltimore, Maryland, United States*
- **University of New Mexico Hospitals, New Hospital Tower** *Albuquerque, New Mexico, United States*
- **USACE - Charleston District, B8 & B60- Fire Prot. Title II, 0,** *0, Virginia, United States; California, United States*
- **Wildlife Foundation of Florida, WFF/BC/TO#9 Const Admin RH** *Florida, United States*

Education

Bachelor of Science, Industrial Technology, University of Nebraska at Omaha, 2004

Associate of Science, Fire Protection, University of Nebraska at Omaha, 2004

Coursework in Fire Protection and Safety Engineering Technology, Eastern Kentucky University, 2020

Registrations and Certifications

NICET Fire Alarm Systems, Level IV, Nebraska, US, #109733, October 2021

NICE T Special Hazard Systems, Level II, Nebraska, US, #109733, October 2021

State of Iowa Alarm System RME AS-0674

State of Nebraska Fire Alarm Inspector License #668

State of Nebraska Fire Alarm



Installer License #23153

Manufacturer Honeywell
Gamewell-FCI fire alarm
factory trained and certified

Manufacturer Ansul, Kidde,
Janus, and Minimax clean
agent fire suppression system
factory trained and certified

Manufacturer Retrotec
enclosure integrity testing Level
II factory trained and certified

**Professional
Memberships**

Member/board member,
Society of Fire Protection
Engineers, Great Plains Chapter

Nebraska Association of Alarm
Companies

Fire Suppression Systems
Association

National Independent Fire
Alarm Distributors

Industry Tenure

Since 2004





Dustin S. Brand, PE, CBCP, LEED AP

Sr. Mechanical Engineer
Commissioning Agent

RELEVANT EXPERIENCE

Education

Master of Architectural Eng,
Architectural Engineering,
University of Nebraska, Lincoln,
2006

Bachelor of Science,
Architectural Engineering,
University of Nebraska, Omaha,
2005

Registrations

Professional Engineer,
Nebraska, US, #E-13574 -
Mechanical Engineer

Certified Building
Commissioning Professional
(CBCP), The Association of
Energy Engineers

Professional Memberships

American Society of Heating,
Refrigeration and Air
Conditioning Engineers
(ASHRAE)

Industry Tenure

Since 2005

- **Ft. Jackson AHU Ventilation Assessment**, Columbia, SC, United States.
- **Veterans Affairs West Palm Beach – Replace Boilers – Dispersion Analysis**, West Palm Beach, FL, United States.
- **Veterans Affairs Oklahoma City – Replace Cooling Towers – Dispersion Analysis**, Oklahoma City, OK, United States.
- **USACE Construct Combat Arms Training Maintenance (CATM) Facility – MEP Cx and QFPE**, US Military Yokota Air Base, Japan.
- **VA Lovell Expand SPS – Dispersion Analysis**, Chicago, IL, United States.

NON-CRUX PROJECT DESIGN EXPERIENCE

- **Veterans Affairs Hospital New Build**, Tulsa, OK, United States.
- **CHI Health Clinics (3 Locations)**, Omaha/Lincoln, NE, United States.
- **Veterans Affairs Hospital New Build**, Omaha, NE, United States.
- **Phelps Memorial Hospital Major Renovation**, Holdrege, NE, United States.
- **Misawa Air Base Major Hospital Renovation**, US Military Misawa Air Base, Japan.
- **Yokota Air Base Major Hospital Renovation**, US Military Yokota Air Base, Japan.
- **Peterson Dental Clinic New Build**, Peterson Air Force Base, Colorado Springs, CO, United States.
- **CHI Bergan Mercy Lab Major Renovation**, Omaha, NE, United States.



NON-CRUX PROJECT MEP COMMISSIONING EXPERIENCE

- **Ft. Knox Medical Clinic New Build Commissioning**, *Ft. Knox, KY, United States.*
- **Mayport LCS Office Building New Build Commissioning**, *Jacksonville, FL, United States.*
- **Camp Kinser Tower 869 Renovation Commissioning**, *US Military Camp Kinser, Japan*