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PROFILE

Mr. Charles Volk is the Principal Engineer of Volk & Associates PLLC with over 10 years of experience practicing engineering. He specializes in forensic investigations of mechanical, plumbing, and HVAC system failures for residential, commercial, and industrial buildings. Charles has experience with design, construction, operation, and troubleshooting of building facility systems from complex cleanrooms to residential buildings and homes and has extensive knowledge in US building codes and standards. Charles provides professional expert opinions as to root cause and scope of damages, including repair estimates, and has testified in court proceedings as an expert witness.

EDUCATION

Bachelor of Science, Mechanical Engineering with honors, 2010
California Polytechnic State University – San Luis Obispo, California

PROFESSIONAL EXPERIENCE

Principal Engineer

March 2020 – Present: Volk & Associates PLLC – Crossville, Tennessee

I provide expert witness services on a nationwide basis for litigation and insurance coverage determination purposes. Forensic investigation and analysis services are available for mechanical and plumbing system failures, as well as product liability examination of appliances, heat transfer products, plumbing components, and HVAC equipment. Also available are repair versus replacement assessments and cost reviews. Evidence collection and preservation services are available for the purposes of conducting future laboratory examinations to further efforts to determine root cause(s) of failure.

Senior Project Engineer

November 2017 – March 2020: Envista Forensics – Denver, Colorado

My responsibilities included investigation and analysis of mechanical and plumbing system failures, and identification and collection of components to be examined during future laboratory examination(s). Inspections I participated in included, but were not limited to, appliances, heat transfer products, plumbing components, and HVAC equipment. Due to the climate of Colorado, my work primarily, although not exclusively, involved malfunctions or failures of heating appliances which resulted in freeze or fire losses, as well as hail damage assessments.

Project Engineer

October 2014 – April 2017: S-E-A, Limited – Fort Lauderdale, Florida & Denver, Colorado

I was responsible for conducting investigations and analysis of mechanical system failures, plumbing components and systems, appliances, heat transfer products, and HVAC equipment. Losses associated with mold due to excessive heat and humidity, as well as water purification system failures were the primary focus of my investigations due to the climate and water quality of Florida. Product liability examinations of appliances and plumbing components were also a focus of my work in Florida. My duties also included collection of evidence in the field for the purpose of conducting future laboratory examinations.

Facilities Engineer

July 2010 – August 2014: Intel Corporation – Hillsboro, Oregon

In my role at Intel, I acted as an operation and construction engineer on both green field and brown field projects. My responsibilities included design specification creation and maintenance for cleanroom HVAC equipment, and design review to ensure construction plans met specifications. During construction, I audited the progress and performance of contractors and commissioned equipment once construction was complete. Upon completion my duties included daily operation and troubleshooting of cleanroom HVAC equipment including components such as air handlers, boilers, chillers, pumps, fans, and vacuums, as well as the electrical and control equipment required for operation.

LICENSES

Professional Engineer (PE):

Florida 79036

Montana PEL-PE-LIC-49201

Tennessee 123462

(More states available upon request)

ASSOCIATIONS

American Society of Heating Ventilation and Air Conditioning Engineers (ASHRAE)

National Fire Protection Association (NFPA)

American Society for Testing and Materials (ASTM)

Pi Tau Sigma Honor Society – Former Member

United States Patent No. US 11,027,897 B2

SAMPLE PROJECT EXPERIENCE

Envista Forensics

Fire Protection Pipe Burst – Determined the cause of failure of a ski lodge fire protection supply pipe burst which resulted in flood damage.

Natatorium Humidity Control – Reviewed construction documents, HVAC system controls, and expert disclosures to determine the cause of excessive condensation.

Water Treatment Plant Flood – Conducted an investigation to determine the root cause of a flood that occurred at a rural water treatment plant.

HVAC System Malfunction – Review of HVAC system controls to determine the cause of an over-pressure event in the building that damaged the roof membrane.

Hail Damage Assessment – Assessed the extent of damage and cost of repairs for rooftop HVAC units damaged as a result of a hailstorm.

Steam Boiler Failure – Investigated the cause of a boiler failure and reviewed replacement costs of a steam boiler used at a dry-cleaning facility.

Domestic Water Chiller Freeze – Performed a joint destructive exam of a domestic water chiller to determine the root cause of a suspected freeze failure.

Carbon Monoxide Poisoning – Conducted an investigation to determine the cause of carbon monoxide poisoning sustained in a single-family home.

Mechanical Room Flood Damage – Assessed the extent of damage to a public pool mechanical room following a sump pump failure, and reviewed repair costs.

S-E-A Ltd.

Air Handler Evaluation – Assessed damage to a rooftop air handling unit serving the city water treatment plant that was reportedly damaged by wind to determine feasibility of repair.

Ice Maker Flood – Investigated a water loss that reportedly originated from an ice maker by securing it as evidence and completing testing during a joint destructive lab exam with the manufacturer.

Vessel Chiller Failure – Led a multiparty and multi-disciplinary inspection into a reported chiller and chilled water system failure on board a 155-foot motor yacht.

Data Center Shutdown – Inspected and documented the configuration of a 100% up-time data center that experienced a reported HVAC system failure and secured the reportedly failed component for future inspection.

Fountain Drink System Flood – Field and lab tested a fountain drink system that reportedly leaked which caused a water loss at a two-story restaurant.

Exhaust Fan Failure Investigation – Reviewed expert reports, testimony, and documentation associated with a steel manufacturing plant exhaust system failure that resulted in catastrophic injuries to a worker.

Fireplace Malfunction – Inspected a reported chimney flue failure that resulted in carbon monoxide buildup and soot damage to a single-family home.

Intel Corporation

Semiconductor Manufacturing Plant Startup – Identified the root cause failure mode of a multi-cleanroom pressure control system at factory startup, provided solution options, associated costs, and schedules to bring the system online.

Freeze Failure Investigation – Provided emergency troubleshooting and startup support following a total cleanroom facility shut-down due to freeze conditions during abnormally cold weather.

Control Network Transfer – Transfer of the cleanroom HVAC control system from PLC5 to Control Logix network while maintaining cleanroom parameters.