



Michael K. Frempong, PE, LEED AP BD+C

PROFESSIONAL OVERVIEW

Mechanical Engineer and LEED accredited professional with over 24 years of experience in design, analysis, and consulting engineering of building mechanical and plumbing systems for Laboratory and Research, Educational, Healthcare, Commercial, Institutional, Industrial, and Residential Facilities. Successfully completed numerous engineering projects across the State of Florida, and performs forensic evaluations of buildings and structures to assess cause and origin of distressed conditions for Omega Forensic Engineering.

EDUCATION

- Masters in Architectural Engineering, Building Mechanical Systems, University of Kansas, 2001
- University of Science and Technology, Ghana, Bachelor of Science, Mechanical Engineering, 1997

LICENSES AND CERTIFICATION

- Registered Professional Engineer: Florida # 63104
- LEED Accredited AP BD+C USGBC # 10135730

PUBLICATION

- Evaluation of Ceiling Heat Fluxes in Residential Buildings with Attic Radiant Barriers In Prevalent Climates Across The United States Architectural Engineering 2003, Building Integration Solutions

REPRESENTATIVE PROJECTS

Structural Evaluation for Cause, Duration, and Origin of Roof Damages
Number of Cases Evaluated-40

Cause, Duration, and Origin Investigation of Water Damage to Dwelling Resulting in Microbial Growth
Number of Cases Evaluated-5

Structural Evaluation for Cause, Duration, and Origin of Roof and Interior Damages of Dwelling

Number of Cases Evaluated- 20

Cause, Duration, and Origin Investigation of Plumbing Leak Resulting in Microbial Growth in Dwelling

Number of Cases Evaluated-5

Cause, Duration, and Origin Investigation of Water Damage from HVAC Systems

Number of Cases Evaluated-5

- Ocean Park Condominium, Cape Canaveral

Forensic study of the mechanical and plumbing (MP) systems serving the two-story 14168sf condominium building that was damaged due to hurricane Irma in September 2017.

The objectives of the study included:

1. Examination and documentation of existing conditions of MP systems.
 2. Performed engineering calculations to verify capacities of MP systems.
 3. Determined whether systems were code compliant or not.
 4. Provided an estimated cost of construction to repair and bring affected MP systems to current code.
 5. Provided engineered repair specifications and designed new MP systems for the facility.
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- Hilton Rialto, Melbourne

Provided facility assessment for the 8-story hotel building comprising of 237 guestrooms, meeting rooms and ancillary. Examples of the systems assessed included: boilers, booster pumps, air compressors, water cooled chillers, cooling towers, chilled and condenser water pumps, air handling units, fan coil units, packaged direct expansion systems, fire pumps, and laundry equipment.

- Ocean Four Condominium, Daytona

Provided facility assessment for the 20-story 114-unit building located at Daytona Beach.

The assessment was provided to resolve the following issues:

1. The hallway on the first floor was experiencing thermal comfort issues, as unconditioned air was being drawn into the hallway from adjacent parking garage.
2. The parking garage was under ventilated.
3. Warm humid air was being drawn into the elevators making them uncomfortable to ride in.
4. There were indoor air quality issues associated with the lobby on the first floor.

- Piping Renovation at Windjammer Condominiums, St Augustine

The facility was experiencing water leakages under the slabs in the parking area. The purpose of the project was to provide a design solution to route the main pipe from the pump room, bypass the pipes under the slabs, and suspend a new main pipe from the concrete ceiling in the garage. All existing branch lines serving the condominium were reconnected to the new pipe.

- Apollo Surgery Center HVAC & Control System Corrections, Melbourne

Provided mechanical engineering services to resolve high relative humidity issues in operating rooms. Scope of work included trend data logging, control setpoint changes, and retro commissioning of HVAC system.

- Florida Institute of Technology, Melbourne

Performed HVAC system assessment for 40,000sf science building. Systems assessed included: chilled water air handling units, water cooled chillers, boilers, laboratory exhaust systems, fume hoods, ductwork, pneumatic control systems, and pressure independent variable air volume boxes.

- Orbit Cafeteria, Cape Canaveral

Performed HVAC system assessment for 20,000sf cafeteria. Systems assessed included: Rooftop DX units, ductwork, exhaust systems, kitchen hoods, and chilled water air handling units.

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- Florida Power and Light, Daytona

Performed HVAC and Plumbing systems assessment for 25,000sf office building. Systems assessed included: rooftop DX units, ductwork, exhaust systems, lavatories, sinks, and water closets.

- Florida Power and Light, Port St. Lucie

Performed HVAC and Plumbing systems assessment for 30,000sf office building. Systems assessed included: water cooled chillers, cooling towers, chilled water air handling units, split dx systems, direct digital control systems, ductwork, lavatories, water closets, sinks, and floor drains.

- Florida Tech, Fume Hood Modernization, Olin Physical Science Building, Melbourne

Provided mechanical engineering design and construction administration services for 40,000sf laboratory and research facility. Systems comprised of roof mounted utility exhaust air fans with variable frequency drives and bypass dampers, fume hoods with general exhaust air valves, VAV supply air valves, fume hood monitors, sensors, and HVAC controls.

- Army Reserve Center, West Palm Beach

Mechanical and plumbing engineering design and construction administration services for 60,000sf Army Reserve Center, USGBC LEED Silver Certified project. Systems included 150 Ton air cooled chiller with variable primary flow pumping, VAV air handling units, single duct VAV boxes, energy recovery units, HVAC controls, grease traps, kitchen hood, water efficient fixtures, and solar hot water heating panels.

- Florida Tech, Harris Design Center, Melbourne

Provided mechanical and plumbing engineering services for the 8000sf student's design center. The building comprised of 1500sf air-conditioned offices and 6500 mechanically ventilated workshop. The scope of work included LEED fundamental commissioning. The mechanical and plumbing systems included spray booth ventilation system, welding exhaust systems, compressed air system, mechanical ventilation system for workshop, VAV air

handling unit with direct expansion air conditioning system, HVAC control system, and low flow water consumption fixtures.

- Florida Tech, Air Handling Unit Replacement, Olin Physical Science Building, Melbourne

Replaced existing air handling unit. Provided new chilled water valves and hydronic specialties. Reconfigured chilled water piping for new air handling unit.
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- Florida Tech, Air Handling Unit Replacement, Engineering and Olin Physical Science Buildings, Melbourne

Provided mechanical engineering design and construction administration services for replacement of air handling units, hot and chilled water piping, and hydronic specialties. Scope included HVAC controls upgrade for facility.

- Apollo Surgery Center Expansion, Melbourne

Provided mechanical, plumbing and fire protection engineering design and construction administration services for 8,000sf expansion to 16,000sf outpatient surgical facility. Systems included packaged air-cooled chillers with variable primary pumping, dedicated outside air units, variable air volume (VAV) air handling units, constant air volume boxes, VAV boxes, exhaust fans, duplex medical air compressors, duplex medical vacuum pumps, oxygen cylinders, chilled water piping, medical gas piping, water based fire protection system, sensors, and controls.

- Applied Research Laboratory, Cooling Tower Replacement, Melbourne

Provided mechanical engineering design services for 600 Ton cooling tower replacement. Cooling tower was replaced with a closed-circuit cooler. New controls and pumps were provided to serve the existing water source heat pumps.

- Compounding Room Upgrade, Holmes Regional Hospital, Melbourne

Designed a mechanical system to serve an ISO 7 and ISO 8 non-hazardous compounding cleanrooms rooms per USP 797. Systems included fan powered HEPA filters, supply and return ductwork, and temperature, relative humidity, and pressurization controls. The existing chilled water air handling unit provided the necessary conditioned air.