

CURRICULUM VITAE

December 2024

MATTHEW MCMAHON, P.E.

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SUMMARY

Mr. McMahon is a seasoned Mechanical Professional Engineer with 30+ years of expertise in design, construction and forensic investigations. His work spans all disciplines of large-scale commercial buildings, research, manufacturing and mission-critical facilities from site selection to facility operations across five continents.

Mr. McMahon conducts forensic investigations for fire origin and cause, mechanical and electrical equipment & systems failures, construction defects, water loss investigations, including areas for expertise in mechanical systems, plumbing, HVAC controls, refrigeration, process cooling, facility automation including building controls and fire life safety systems.

Starting his career in the industry as an apprentice plumber in his family's business, he has an educational background in heating, air conditioning, refrigeration, as well as energy and mechanical engineering. He has completed the California State Fire Marshal Fire Investigator Courses. Additionally, Mr. McMahon, practices traditional Japanese karate as a first degree black belt and is a substitute karate teacher.

EDUCATION

Rochester Institute of Technology, Rochester, New York
Bachelor of Technology, Energy Engineering Technology, 1991

University of Saarland, Saarbruecken, Germany
One semester as guest student in German engineering courses, 1988

Canton Agricultural and Technical College, Canton, New York
Associate of Applied Science, Air Conditioning Engineering Technology, 1987

PROFESSIONAL LICENSE AND CERTIFICATIONS:

California Professional Engineer - Mechanical #M-31223
NFPA Fire Alarm Code Seminar
OSHA-10 Safety Training
Previously held California State Mechanical (C-20) Contractor License
Previously held California State Electrical (C-10) Contractor License
Previously held New York State Forced Air Heating License
Previously registered Apprentice Plumber, Onondaga County, NY

FIRE INVESTIGATION TRAINING AND CERTIFICATIONS:

California State Fire Marshal Fire Investigator Certification Courses:

Fire Investigation 1A	Tested and passed August 2024
Fire Investigation 1B	Tested and passed September 2024
Fire Investigation 1C	Tested and passed November 2024

California Conference of Arson Investigators October 2024 Training Seminar:

Professional training, including passing a written performance examination in the following categories:

Artificial Intelligence and the Fire Investigator	Maui Fire Case Study
High Voltage Electricity and Wildland Fires	2024 Updates to the NFPA 921
Enhanced Cognitive Interviewing	Serial Arsonist Case Study
	Fundamentals of Fire Investigation

CFITrainer Courses; Completed, tested and certified:

Basic Electricity	Introduction to Evidence
Fire Chemistry	Introduction to Appliances
Ethics and the Fire Investigator	Charleston Sofa Super Store Fire
Fire Behavior and Combustion	Station Nightclub Fire
Motive, Means, and Opportunity of the Arson	

MEMBERSHIPS

International Association of Arson Investigator (IAAI)
California Conference of Arson Investigators (CCAI)
National Fire Protection Association (NFPA)
American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)
Seido Karate International

MAJOR INDUSTRY EXPERIENCE

Data Centers, Co-location Facilities	Cogeneration Plants
Mission Critical Facilities	District Heating and Cooling Plants
Cleanroom Manufacturing Facilities	Water Treatment Facilities
(Bio, Pharma & Semiconductor)	Wastewater Water Treatment Facilities
Research and Biotech Facilities	Electrical Utilities
Controlled Environment Agriculture	Commercial High-Rise Office Buildings
(indoor farming)	Hospitals and operating rooms
Food Processing Plants	Real Estate and Property Managers
Power Plants, Substations,	Schools and Universities
Switching Stations	Hotels and Restaurants
Refineries	Breweries and Casinos

PROFESSIONAL EXPERIENCE

MYRIAD ENGINEERING AND TECHNICAL SERVICES, Oakland, CA

May 2024 - Present

Principal Engineer

- Providing forensic engineering and investigations for fire origin and cause. Conducting failure analysis, reviewing product and construction defects, mechanical, electrical system failures analysis including life safety systems, water losses investigations, personal injury claims, industrial accidents, and design, construction, and code compliance analysis.
- Providing end-to-end program management for capital projects including site selection, site preparation, facility planning, design & construction, and operation & maintenance activities for all projects including mission critical facilities and electronic/biopharma cleanroom manufacturing environments.
- Providing program review, design assistance, evaluations and commissioning for commercial and industrial building controls and automation expertise, including physical security and fire-life safety systems.

ONE YEAR SABBATICAL

Apr 2023 - Apr 2024

One year personal and professional development sabbatical

- Achieved 1st degree black belt rank in Japanese Karate; mandatory in-person testing in NYC
- Completed 90-day, 16k-mile overland road trip to the Canadian Arctic Ocean and Alaska
- Proved mentoring for drug and alcohol recovery programs
- Established an engineering/building services consulting business in California

PLENTY UNLIMITED, S. San Francisco, CA

Jul 2021 - Apr 2023

Sr. Director Technical Product Management

- Led the TPM group to develop and build first-of-a-kind modular, scalable products and Farms creating new fruit and vegetable cultivars grown in a highly automated and controlled environment
- Led the TPM group driving cross functional collaboration to develop, design and manufacturer state-of-the-art automated vertical farming products, integrated systems and full farm facilities
- Created and managed a technical product 3-year roadmap tied to specific farm projects, driven by internal business and external customer needs, goals and metrics
- Led TPMs as key stakeholders to develop project requirements based upon specific farm product configurations driving infrastructure planning, site selection and master planning activities that establish baseline project cost and schedule & delivery models

Sr. Director of Construction

Aug 2021 - June 2022

Leafy Green Farm Project, Compton, CA

- Managed all aspects of construction for a \$160M fully integrated Leafy Greens Farm
- Established standard roles & responsibilities, and rules for engagement for all Plenty staff, prime contractor and subcontractor teams, AHJs, as well as the external design teams
- Established and maintained a working relationship with the City of Compton's planning & permitting departments, architectural review board, fire department, public works and LA county water and sanitary for continued agency review and approvals
- Managed project change control and claims mitigation efforts with contractors, vendors, consultants, the landlord and Plenty internal/external legal counsel
- Provided project reporting to senior leadership and the governance body (including board meetings) on key project metrics for cost, schedule, safety, risk, milestones, etc.

GOOGLE CLOUD / DATA CENTERS, Sunnyvale, CA

2010 - 2021

Sr. Global Program Manager

Systems Architecture and Integration

Jan 2018 - Jul 2021

- Drove strategic programs with global (US, LATAM, EMEA & APAC) cross-functional and cross-organizational teams, organizing and tracking Global Plan of Record (gPOR) designs, products, critical technology changes and new delivery strategies impacting a multi-billion dollar portfolio, improving time to delivery and other key metrics.
- Collaborated and provided subject matter expertise to the global capacity supply demand build matching teams, working closely with campus planning, design execution and supply chain teams to ensure business capacity forecasts and delivery are aligned.
- Transformed the gPOR tracking program by creating and maintaining the semi-automated companywide *single source of truth* for the canonical data center designs, products catalog, and the unique building configurations enabling dozens of business partner teams to make strategic capacity decisions.
- Key team member in developing a vision for the development of new *digital design initiatives* to automate data center design, establish configuration rule sets, simplify campus planning and reduce cost and timelines, taking traditional bespoke construction to canonical design, including modular highly productized data center assemblies.

Global Process Manager

Jan 2016 - Jan 2018

DC[x] Automation and Robotics Team

- Investigated and identified critical operations with high-touch, high-exposure to risk, and high security activities and implemented solutions leveraging ergonomics, automation and robotics to improve employees health & safety, amplify the worker impact, and improve data security.
- Led a multi-million dollar global program for the deployment of a confidential robotic cell including the development of a global deployment plan, management of design and construction, incorporation of utilities and security interfaces, as well as start up and commissioning of the robotic cell systems.

Regional Program Manager (NA-East & LATAM)

Jan 2015 - Jan 2016

Data Center Design and Engineering

- Managed Regional critical capacity data center deployment for Google owned data center sites in the North America Eastern region and the Latin America region.
- Provided regional program level strategic planning for multiple data center sites including support for new site acquisitions, managing campus & critical infrastructure planning, and pre-facility construction services from *Basis-of-Design* to *Pad-Ready*. Managed all design and construction contracts.
- Accountable for weekly and monthly progress reporting to senior leadership on scope, cost, schedule and risks against program metrics, including mitigation efforts if required.

North/South Carolina Site Program Manager

Sept 2010 - Jan 2015

Data Center Design and Engineering

- Managed one of Google's largest multi-billion dollar datacenter deployments to date, delivering multiple large scale buildings, including critical infrastructure upgrades (water, power, sanitary, roads, etc); delivering under budget and ahead of schedule.
- Directed internal and external design-build teams to build (4) concurrent data centers projects with an average of over 1,700 daily onsite construction workers. Achieved an all-time new data center build milestone of 2 million man-hours worked without lost-time due to injury.
- Actively managed all contracts and associated scope for owner furnished/contractor installed equipment interfacing directly with engineering, supply chain, vendors and contractors to ensure on time delivery, proper installation and testing of equipment.
- Worked closely with community relations and commerce teams to ensure all public announcements were properly timed. Led any required mitigation strategies to reduce or eliminate any construction delay due to official announcements.

Additional Notable Programs & Projects at Google:

- Developed the first of a kind global data center support office build programs
- Managed Physical security upgrade projects for eight sites in four countries
- Managed design and construction for standalone data storage facilities
- Managed the initial construction & project management vendor selection program
- Developed & managed US contractor selection program evaluating over 50 consultants and general contractors with 10 cross functional teams

RECOGNITION AT GOOGLE:

- Received 20+ gThanks; (6) kudos, (6) peer bonuses and (9) spot bonuses
- 2019 Spot Bonus for global dissemination and training of a new data center design
- 2019 Spot Bonus for working globally on the design integration
- 2019 Spot Bonus for contributions to the Project Lifecycle Management program
- 2018 Spot Bonus for LATAM data center design and engineering documentation
- 2018 Spot Bonus for presenting at the annual data center design and engineering summit
- 2015 Spot Bonus for presenting at the annual regional program management summit

- 2015 Technical Infrastructure Award team member (E-2-E Capacity Delivery)
- 2014 Technical Infrastructure Award team member (Global design integration)
- 2014 Technical Infrastructure Award for managing the South Carolina construction site that achieved an all-time new milestone for Google Data centers by hitting 2-Million hours of work without lost time due to injury
- 2013 Spot Bonus for managing the North Carolina construction site that achieved 1-million hours of work without lost time due to injury
- 2013 Award for managing the South Carolina construction site that achieved that achieved 1-Million hours of work without lost time due to injury
- 2012 VP nominated and served as committee member to design "the coolest Google campus"
- 2012 Certificate of Excellence & spot bonus for completing a North Carolina project
- 2011 Certificate of Excellence & spot bonus from the SVP for delivering two critical projects under budget and ahead of schedule.

Community at Google:

- 2010-2021 participated in numerous annual google-serve local community volunteer events
- 2010-2021 Conducted over 300 interviews & candidate phone screens
- 2018 Allyship fundamentals
- 2017 10-day in-county (New Delhi, India) hackathon to benefit Low income schools in India and to help stop human trafficking
- 2016 10-day in-county (Kathmandu, Nepal) hackathon to benefit earthquake relief efforts and to help stop human trafficking
- 2010 Participated in the 1st DC Delegate Program mentoring two DC technicians resulting in one hire/transfer to DCDE Program Management

ACCO ENGINEERED SYSTEMS, San Leandro, CA

2000 - 2010

Project Manager

Managed commercial construction and retrofit projects for HVAC, plumbing and Energy Management Systems from inception of sales to successful project completion.

- Lead generation, proposing, estimating, engineering, managing and scheduling of engineering, technicians, and subcontractors for plan/spec and design build projects
- Communicated and coordinated with clients, design & construction teams and end users on project status and cascading commitments
- Used forensics investigations to determine root cause analysis of mechanical equipment failures and proposed solutions
- Provided supervision, leadership, and coordination between all internal departments including Engineering, Purchasing, Accounting, Construction, and Service during project construction
- Actively participated in coordination, construction and commissioning meetings
- Monitored all project tasks, made modifications or adjustments to meet deadlines
- Developed and rigorously managed cost and labor budgets of each project
- Provided project communications for good business procedures and legal protection

COMMAIR MECHANICAL, Oakland, CA

1999

Operations and Sales Manager

Managed sales and operations for the internal building controls group including group profit and loss, cost estimate and proposals reviews, risk analysis and business development.

- Supervised sales, engineering, CAD and controls technicians in day to day operations
- Worked with internal management team on business development and growth strategies

CPC TECHNOLOGIES, San Francisco, CA

1997 - 1999

Program Manager

Authorized distributor for Johnson Controls building automation systems with primary focus on design and installation of temperature controls and integrated fire life safety systems.

- Established all corporate standards and procedures for Start-up Company in engineering, project management, and sales
- Generated technical proposals for owner negotiated and competitive bid projects, service and maintenance proposals for energy management systems, and fire/life safety systems
- Held and maintained active contractor licenses (C-10 and C-20) as the company's *Responsible Managing Employee* accountable for all project management duties including full profit and loss accountability, scheduling, job site meetings, and billing schedule of values

JOHNSON CONTROLS, Hayward, CA

1993 - 1997

Account Manager, Construction

Managed a portfolio of commercial energy management systems projects

- Designed, estimated and proposed systems for owner negotiated and competitive bids
- Provided technical support and presentations to consulting engineers and planners
- Supported the internal performance contracting team on large energy retrofit projects
- Developed sequences of operation, selected all control components and valves, created engineered drawings and all associated project documentation

CLESTRA CLEANROOM TECHNOLOGY, Syracuse, New York

1991-1993

International Sales Engineer

Involved in all aspects of selling turn-key pre-engineered modular cleanroom facilities.

- Provided on-site visit to assist in the development of clients design criteria, prepared, presented proposals, and negotiated final terms and conditions. Generating AutoCAD design plans, sizing, selecting and estimating all HVAC equipment and cleanroom building components

HEALY PLUMBING AND HEATING Syracuse, New York

1984-1989

Summer employment: Apprentice Plumber, HVAC & Plumbing Designer

SELECT PROJECT EXPERIENCE

CONSULTING, INVESTIGATIONS, INCIDENTS AND EXPERT SERVICES

- **Stellaria Lane, San Ramon Residential house fire:** Insurance claim coverage: Assisted in the investigation of a residential house fire to identify possible ignition sources, the materials first ignited, and any contributing factors to determine the origin and cause of the fire.
- **Pacific Producers, Central Valley:** Insurance claim coverage: Provided forensic engineering services to investigate the failure of large Clever Books industrial Type-D boiler (1,050 F and 1,800 psi). Determined the tube damage failure was due to refractory damage from a failed gas seal. Approx value of repair \$400k.
- **HOA, San Leandro, CA:** Insurance claim coverage: Provided forensic engineering services to investigate a damaged Fire Alarm Control Panel. Determine the cause of loss, nature of the failure and extent of the damages to the system. Evaluated proposed solutions and costs for repair versus full replacement costs. Approx value of repair \$100k
- **NorCal School District - High School:** Insurance claim coverage: Provided forensic engineering services to investigate the failure of a package boiler system. Confirmed the cause of loss, nature of the failure and extent of the damages to the system (water tube failure resulting in control panel water damage). Review service providers recommend replacement.
- **Commercial Bank facility Elko, NV:** Insurance claim coverage: Provided forensic engineering services (desktop review) to investigate a geothermal heating system failure (y-strainer failure), flooded basement, water and moisture damage throughout the facility. Review system configuration, piping arrangements and report filed from service provider.
- **Consultant on Data Center Site Selection, Latin America:** Provided industry expertise in the preplanning and deployment strategies for a new data center development in LATAM. Provided insight to preplanning, scheduling, site selection delivery options, risk identification, long lead equipment logistics, engineering and contractor selection, government agency and permitting processes, and in-country labor considerations.
- **10-MW Data Center Building Distribution Center failure, North Carolina:** Product defect: Responsible for conducting root cause analysis for catastrophic building distribution center failure, and creating an emergency recovery plan. Determined root cause was the internal 3rd party control power transformer failure upon starting destroying the entire building distribution center.

PUBLICATIONS, PRESENTATIONS, SEMINARS

- Created, published numerous a Google Plan of Record and Basis of Design documents for data center development and design for high seismic zones in the US, Chile and Japan
- Created published and presented a global Google data center standard basis of design to design and build non-mission critical Facilities Services/Operations Buildings
- 2019 Created published and presented a global Google data center standard for Failure Domains
- 2018 Created, published and presented to 3 US regions North America unified data center design Plan of Record standard
- 2019 Created, published and presented to the EU design team in Dublin European unified data center design Plan of Record standard
- 2019 Created, published and presented to the APAC design team in Taiwan APAC unified data center design Plan of Record standard