

Robson Forensic

Engineers, Architects, Scientists & Fire Investigators

DALE J. CAGWIN, P.E., C.F.E.I.
Mechanical Engineer – Building Systems

PROFESSIONAL EXPERIENCE

1998 to **Robson Forensic, Inc.**
present *Associate*

Provide technical investigations, analysis, reports, and testimony for failure analysis, and towards the resolution of commercial and personal injury litigation involving all aspects of fire protection engineering and mechanical/electrical systems for buildings: design, analysis, construction, testing, and evaluation. Areas of expertise include:

Fire Science and Fire Protection Engineering:

- Thermodynamics, heat transfer, fluid mechanics, combustion, fire safety, smoke movement.
- Wet, dry, and double interlock preaction sprinkler systems, in-rack systems, ESFR systems, Halon suppression systems, fire pump systems, jockey pumps, vertical turbine fire pumps, water storage tanks and ponds, hydraulic analysis.
- Fire alarm systems, heat detectors, smoke detectors, carbon monoxide detectors.

HVAC:

- Heating equipment: furnaces, boilers, heaters, flues and chimneys, Unit heaters and ventilators, heat pumps. Heat recovery, heat exchangers.
- Cooling equipment: DX, closed circuit fluid coolers, chillers, cooling towers.
- Controls: temperature and humidity control, safety, energy management, DDC.
- Distribution: Air handlers and ductwork, pumps and piping, noise control, fire safety.
- Ventilation: outdoor air, sick building syndrome, indoor air quality.

Plumbing, Water and Sewage:

- Domestic cold and hot water: temperature controls, water hammer and surge suppression, washdown systems, water treatment, flooding, scalding.
- Sewage systems: Gravity and pumped, grease interceptors, sludge dewatering, belt filter presses, sludge pumping station, polymer feed system, odor control, chlorination, sand filters, overflows.
- Gas systems: Natural and propane gas, gas piping, regulators, appliances.

Industrial Systems:

- Process: High pressure air and steam, hydraulic systems, ammonia refrigeration, flash mixing, pumps and controls, flare systems, digester gas systems, engines, generators. Medical gas systems. Explosion-proof equipment.
- Air Quality and Ventilation: Fans, ductwork, exhaust hoods, fans, blowers. Clean air systems, wet scrubbers, carbon absorbers, cyclone separators, biofilters, activated carbon filtration, odor control, battery room ventilation.

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Types of Facilities and Buildings:

- Educational, health care, industrial, wastewater treatment, water treatment, communication, dairy plants, warehousing, vehicle maintenance, residential housing, offices, airport, kitchens, cold region, pharmaceutical, refrigerated storage

1999 to **Fournier Robson & Associates, LLC**

present *Associate*

Provide technical assistance and support to contractors and owners on matters involving HVAC and plumbing systems, and troubleshooting water and wastewater treatment plant problems.

2000 to **Frey Lutz Corporation**

2001 *Mechanical Engineer – Design Build Division*

Design, estimate, and manage construction of HVAC and plumbing systems for commercial, institutional, and industrial projects. Member of Safety Committee.

1992 to **Facilities Design, Inc.**

1998 *Associate Principal, Director of Mechanical Engineering*

Supervise engineers and designers. Responsible for all mechanical engineering including HVAC, plumbing, fire protection, and process design for institutional, commercial, industrial, and municipal projects. Develop standards, establish schedules and budgets, review all mechanical work. Manage projects for key clients.

Responsible for development and maintenance of company computer network and information systems.

1989 to **PSC Engineers & Consultants, Inc.**

1992 *Mechanical Engineer/Project Manager*

Responsible for HVAC, plumbing, fire protection, and process system design and specifications for industrial and commercial projects. Prepared proposals, developed new work, served as client contact, managed construction projects.

1986 to **Metcalf & Eddy, Inc.**

1989 *Mechanical Engineer*

Responsible for HVAC, plumbing, fire protection, and process system design and specifications for municipal and government (Navy and Air Force) projects.

Responsible for final review of all HVAC designs.

1981 to **Heat Extractor, Inc.**

1986 *Product Development Engineer*

Responsible for operation of research and development laboratory for direct contact flue gas heat recovery equipment. Evaluated product safety, performance and

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materials of construction. Functioned as liaison engineer with Underwriters Laboratories and American Gas Association in obtaining and maintaining equipment certification.

PROFESSIONAL CREDENTIALS

Professional Engineer: NCEES, Pennsylvania, New York, Maryland, Virginia, Oregon, District of Columbia, Connecticut, North Carolina, New Hampshire, West Virginia, Indiana
Certified Fire Protection Specialist, CFPS
Certified Oil Burner Technician: Massachusetts (1985-1988)
Chairman, Lancaster Township Building Code Board of Appeals, Lancaster, PA
Certified Fire and Explosion Investigator (CFEI), No. 9413-6237
Certified Fire Investigator Instructor (CFII), No. 9413-6237I

EDUCATION

A.A.S. in Civil Engineering, Mohawk Valley Community College, Utica, NY
Additional study in Solar Engineering, 1978-1980
Certificate, Comprehensive Oil Heat Installation and Maintenance Course, New England Fuel Institute, 1985
Pennsylvania State University, Harrisburg, PA campus, 1990
(Experimental Methods for Engineers)
Northeastern University, Boston, MA, 1982-1986
(Calculus Review, Physics Review, Differential Equation 1&2, Dynamic 1&2), Structural Mechanics, Strength of Materials, Economics, Numerical Methods, Thermodynamics, Fluid Mechanics, Heat Transfer, Thermal Design)

Continuing coursework:

Fire Cause Determination Using the Revised Chapter 18, NFPA 921, National Fire Protection Association, 2011
Natural Gas Piping and Purging: Safe Work Practices, NFPA, 2011
Flammable and Combustible Liquids in Plastic Containers: Understanding the Code, Case Study Implementation, and New Research, NFPA, 2011
New Requirements in the 2012 NFPA 70E, Standard for Electrical Safety in the Workplace, NFPA, 2011
NFPA Combustible Dust Standards Update, NFPA, 2011
Residential Fire Tenability, NFPA, 2011
Society of Fire Protection Engineers, Introduction to Fire Dynamics Simulator and Smokeview, 2010
Society of Fire Protection Engineers, Principles of Fire Protection Engineering, 2010
Society of Fire Protection Engineers, Engineering Technology Conference, 2010

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National Institute of Standards & Technology, 2009 Building and Fire Research Annual Fire Conference, 2009
ASTM International, Major Testing Techniques for Plastic, 2008
2007 National Fire, Arson & Explosion Investigation Training Program
Investigation of Gas and Electric Appliance Fires, 2002
Natural Gas and LPG Fire/Explosion Investigation Seminar, Public Agency Training Council, 2001
National Electrical Code Seminar, National Fire Protection Association, 1999
Automatic Sprinkler System Seminar, National Fire Protection Association, 1993

PROFESSIONAL MEMBERSHIPS

American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE)
Technical Peer Reviewer, ASHRAE Journal, 1996-present
Current member of Technical Committee (TC) 9.8 Large Building Air Conditioning Applications, TC 1.4 Control Theory and Application, TC 9.1 Industrial Air Conditioning, and Standard 62.1 Ventilation for Acceptable Indoor Air Quality
Central Pennsylvania Chapter, past president
National Fire Protection Association (NFPA), member
American Society of Plumbing Engineers (ASPE), member
Technical Editor, Plumbing Systems & Design Magazine
Technical Editor, Illustrated Plumbing Code Handbook
Society of Fire Protection Engineers (SFPE), member
American Society for Testing and Materials Committees:
E05 – Fire Standards
E05.15 – Furnishings and Contents
E05.23 – Combustibility
E05.33 – Fire Safety Engineering
E05.44 – Fire Safety Engineering

PRESENTATION/PUBLICATIONS

“Fire/Explosion Origin and Cause Investigations,” Lorman, 2006

“Fundamentals of Fire Science & Engineering, Robson Lapina, 2001

“Fundamentals of Fire Science & Engineering, Robson Lapina, 2000

“HVAC Design Wastewater Treatment Plants,” Water Environment Federation, 1991

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“Control Technologies for VOC Emissions,” Water Pollution Control Federation, 1990

“Design Considerations for VOC Emission Control Systems at Wastewater Treatment Plants,” Water Environment & Technology, June 1990

EXPERT NOT RETAINED