

## PROFESSIONAL EXPERIENCE

2022 to present     **Robson Forensic, Inc.**  
*Associate*

Provide technical investigations, analysis, reports, and testimony toward the resolution of commercial and personal injury litigation involving all aspects of HVAC, plumbing and fire protection system for buildings and facilities, mechanical systems including design, engineering, construction, testing, evaluation, failure analysis, operation, and maintenance. Areas of expertise include:

### HVAC

- **Heating equipment:** Boilers, gas and oil-fired burners, heating & ventilating units, furnaces, gas & electric heaters, cabinet unit heaters, heat pumps, heat exchangers, safety relief valves, base board radiators, radiant tubing, balancing valves, strainers, electric & steam heat trace.
- **Cooling equipment:** Centrifugal chillers, absorption chillers, packaged rooftop units, air handlers, make-up air units (MAU), DOAS, DX split systems, cooling towers, air-cooled condensers, variable refrigerant flow (VRF) heat pump systems, chilled beams, energy recovery units, desiccant units, and fan coils units.
- **Controls:** HVAC DDC /Building management controls including temperature, pressure and humidity control, safety, chilled water systems controls, heating/hot water/steam systems controls, burner control, control valves, variable frequency drives (VFD's), freeze protection, fire safety/ smoke control, pressurization controls, humidification and de-humidification systems.
- **Air distribution:** Air handlers, ductwork, variable air volume boxes (VAV), dampers, general and process exhaust, laboratory fume hoods, kitchen exhaust and outdoor/makeup air.
- **Mechanical piping and distribution:** Chilled water, heating hot water, high/medium/low pressure steam, condenser water, primary/secondary/tertiary pumping systems, pump type selection, variable and constant pumping systems, acid waste distributions and collection.
- **Ventilation:** Outdoor/makeup air system, exhaust system, indoor air quality.
- **TAB:** Testing, adjusting, and balancing of air and hydronic systems.

### Plumbing

- **Domestic hot and cold-water systems:** Water heaters, mixing valves, temperature controls, pumps, circulators, valves, water hammer/surge suppression, water treatment and filtration systems.
- **Sanitary and storm drainage systems:** Gravity and pumped drainage, grease, and sediment interceptors, plumbing fixtures, primary & secondary storm drains, sand filters and septic system.
- **Gas systems:** Natural gas and propane, regulators and venting, hood safety interlock, gas fired generators and gas fired appliances.
- **Oil systems:** Fuel oil storage and containment, distribution pumps, diesel generator, fuel oil controls & piping, alarms, and safety interlocks.
- **Compressed air systems:** Air compressors, distribution systems, piping, hose, receivers, regulators, and controls.

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 Facilities Management/Building Systems

**Fire Protection**

- **Fire protection systems:** Wet, dry, and pre-action sprinkler systems, chemical fire suppression systems.
- **Equipment:** Fire pump systems (electric/diesel), jockey pumps, and water storage tanks.
- **Fire alarm systems:** Heat detectors, smoke detectors, carbon monoxide detectors, flow switches, OS&Y valve tamper switches.

**Process/Laboratory/Industrial Systems**

- **RO/DI:** Reverse Osmosis and De-Ionized process water systems.
- **Gases:** Natural gas, compressed air, O<sub>2</sub>, N<sub>2</sub>, and process gas piping, regulators, appliances; medical gas systems.
- **Steam and hot water:** High-pressure and low-pressure steam, high temperature hot water, pressure regulating valves (PRVs) and hot water booster heaters.
- **Specialized systems:** Dust collections, baghouses, dryers, heat exchangers, centrifuges, desiccant dehumidifiers, laboratories, pharmaceutical.
- **Practices and procedures:** cGMP, process validation, standard operating procedures (SOP) development, user/functional requirements specifications (URS/FRS), preventive maintenance orders (PMO) and mitigation investigation reports (MIR) for HVAC, plumbing, process, and utilities.

2000 to  
2022

**A&J Consulting Engineering Services**

*Director of MEP Engineering*

*2012-2022*

*Senior Project Manager (MEP)*

*2009-2012*

*Project Manager (MEP)*

*2006-2009*

*Senior Project Engineer*

*2003-2006*

*Project Engineer*

*2000-2003*

Responsible for the design, engineering, project management and construction administration of HVAC, plumbing, and fire protection system for commercial, institutional, industrial, and pharmaceutical buildings and facilities.

Responsibilities included but were not limited to:

- Feasibility Studies for existing condition evaluation, failure analysis, retrofits & renovation scope, energy evaluation and life cycle cost assessment.
- Engineered calculations for HVAC, plumbing and sprinkler system.
- Developed designed and construction documents (drawings and specifications) for HVAC, plumbing and fire protection sprinkler system.
- Developed control system schematics, and sequence of operation for HVAC systems.
- Selection of HVAC, plumbing and fire protection equipment and incorporation of energy conservation methods in design.
- Reviewed and complied with applicable codes and standards.
- Coordinated with the clients, consultants, and contractors.
- Construction administration - Reviewed shop drawings, Request for Information, responses, site inspections, reviewed equipment testing, start-up, and commissioning reports.
- Verified construction work for conformance with contract documents
- Led a team of engineers and designers to accomplish the project in timely and efficient manner.

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Facilities Management/Building Systems

Design, engineering, management, and construction administration of several projects involving HVAC, plumbing and fire protection equipment and building system such as:

- Central cooling plants with centrifugal chillers, absorption chillers, air-cooled chillers, ice storage tanks, primary/secondary chilled water pumps, distribution piping, cooling towers.
- Steam boilers, hot water boilers, burners, heating and ventilation units, radiators, strainers, control valves, hot water pumps, condensate pumps.
- Air handling units (AHUs), rooftop units (RTUs), split systems, energy recovery units, fan coil units, ductwork distribution, dust collection system, building management control system.
- HVAC systems for clean room facilities to meet the pressurization, air changes, filtration and humidity control requirements for different classification/grades.
- Water heaters, hot water heat exchangers, domestic cold & hot water systems, mixing valves, pressure and temperature regulators, backflow preventers (RPZ/DCV), plumbing fixtures, acid waste, sanitary, vent & storm systems, process cooling, steam and condensate systems, compressed air systems, reverse osmosis and de-ionized (RO/DI) process water systems, natural gas, vacuum, compressed air, O<sub>2</sub>, N<sub>2</sub>, and process gas piping.
- Wet and dry fire sprinkler systems, standpipe systems, pre-action suppression systems, diesel and electric fire pumps, fire water storage tanks, fire hose valves, floor control valve assemblies.
- On-site engineering support for developing cGMP documentation such as standard operating procedures (SOP), user/functional requirements specifications (URS/FRS), preventive maintenance orders (PMO) and mitigation investigation reports (MIR) for HVAC, plumbing, process, and utilities.
- Condition assessment of boiler plants and facilities due to damages caused by Hurricane Sandy.

1999 to  
2000

**Roots Air Systems Limited, New Delhi, India**

*Project Engineer*

Responsible for the HVAC system design, engineering, cost estimation, project planning and construction management for installation of HVAC equipment such as chillers, cooling towers, pumps, air handlers and ductwork.

EXPERT WITNESS

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Facilities Management/Building Systems

- 1998 to 1999 **Kamal Engineering Corporation, New Delhi, India**  
*Design Engineer*  
Responsible for design, engineering, cost estimation, production of fabrication drawings, and supervision of installation of mechanical equipment at construction site such as pressure vessels, heat exchangers, column trays, dampers, expansion joints, actuators and diverters used in the refinery and chemical industries.
- 1996 to 1998 **Bachmann Industries India Limited, Faridabad, India**  
*Design Engineer*  
Responsible for design, engineering, cost estimation, production of fabrication drawings, and supervision of installation of mechanical equipment at construction site such as dampers, expansion joints, actuators and diverters used in the refinery and chemical industries.

## PROFESSIONAL CREDENTIALS

Registered Professional Engineer: New Jersey, New York  
LEED AP BD+C Certification from U.S. Green Building Council

## EDUCATION

B.S., Mechanical Engineering, University of Pune, India

### Continuing Education

Sustainable Design for Restrooms, Locker Rooms, and Public Spaces, 2021  
Impact of DOAS Dew Point on Space Humidity, 2021  
Applying VRF for a Complete Building Solution, 2021  
Simplifying Control Systems, 2021  
Smart & Sustainable Laboratory Glassware Washers, 2021  
Sustainable Plumbing Design for LEED Projects, 2021  
Thermal Comfort and Air Movement with HVLS Fans, 2021  
Thermal Storage Applications, 2021  
Understanding Structured Plumbing and Demand Controlled Systems, 2021  
Decarbonization and Electrification of HVAC Systems, 2021  
Confined Space Entry, 2020  
Energy Efficient Kitchen Ventilation Design, 2020  
Ethics for Professional Engineers-Case Reviews, 2020  
Introduction to Controls, 2020  
Laboratory Fume Exhaust, 2020  
Life Safety Dampers, 2020  
Make-up Air Systems, 2020  
Motor Technology in the HVAC Industry, 2020  
Variable Speed Compressors on Chillers, 2019  
Upgrading Existing Chilled Water System, 2019  
Radiant Ceiling Panels and Applications, 2019  
Air Handling System, Energy and IAQ, 2019  
Airside Economizers and HVAC System, 2019  
Central Geothermal System Design and Control, 2019  
Chilled Water Terminal Systems, 2019

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Dedicated Outdoor Air Equipment, 2019  
Ice Storage Design and Application, 2019  
Maximum Efficiency with Hydronic Heating, 2019  
Niagara and IP Controllers in Building Automation, 2019  
HVAC Acoustics, 2019  
Air to Air Energy Recovery, 2018  
Single Zone VAV System, 2018  
New York - Laws, Rules, and Ethics for Professional Engineers, 2018  
Variable Frequency Drive, 2017  
Optimization in Water Pumping Systems, 2017  
Active Chilled Beams Overview, 2016  
Basics of Acoustics for HVAC Applications, 2016  
Dedicated Outside Air Systems, 2016  
Geothermal Systems Design and Installation Considerations, 2016  
Kitchen Ventilation Solutions, 2016  
Laboratory Design Basics and Special Waste Piping Systems, 2016  
SMACNA - Fire, Smoke and Radiation Damper Installation for HVAC Systems, 2016  
New Tomorrows for Today's Buildings - Existing Building Commissioning, 2015  
Active Chilled Beams in K-12 Schools, 2014  
Application & Design of Absorption Chillers, 2014  
Commercial Hydronics, 2014  
Commercial Radiant Systems, 2014  
Condensing Boilers and Efficient Systems, 2014  
Healthcare & Laboratory Valve & Control Solutions, 2014  
Munters Desiccant Dehumidification Technical Training, 2014  
Steam Basics & Optimization, 2013  
The Art and Science of Domestic Hot Water Design, 2013  
Controlling Condensing Boilers and Water Heaters, 2013  
FEMA - Improving Critical Facilities Safety from Flooding and High Winds, 2013  
IAQ, Air Cleaning and Energy, 2012  
Professional Ethics for Engineers, 2012  
Air-cooled Variable Refrigerant Flow Systems, 2012

**PROFESSIONAL MEMBERSHIPS**

American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE)  
American Society of Plumbing Engineers (ASPE)  
Society of Indo-American Engineers and Architects (SIAEA)