

## WORK EXPERIENCE

### **ENCON**, Hooksett, New Hampshire

May 6, 2013 – October 2, 2014 Project/Design Engineer

Designed and supported batch and single effect continuous evaporators. Responsibilities included:

- Programmable Logic Controls (PLCs)
- Piping & Instrumentation Diagrams (P&IDs)
- Equipment & Instrument Specifications
- Electrical Schematics

Evaluated and found root cause of issues plaguing designs for years. Problems included stress fractures, instrument failures, unreliable burners, multiple fire/safety issues and improper operation.

### **TREXEL**, Wilmington, Massachusetts

May 1, 2013 - May 3, 2013 Consultant/Independent Contractor

July 2, 2012 – April 26, 2013 Senior Design Engineer

Supported legacy, existing and development of the next generation. Responsibilities included:

- Programmable Logic Controls (PLCs)
- Controls Interface (HMI/ SCADA)
- Equipment, Process & Instrument Evaluations
- Electrical Schematics
- Software and Manual Updates
- External Engineers and vendors

Evaluated and found root cause of issues such as low injection limitations, faulty control algorithm and other electrical, software and process bugs. Created customer specific software solutions.

### **CAMBRIDGE CHEMICAL TECHNOLOGIES, Inc.**, Cambridge, Massachusetts

2007 – May 11, 2012 Senior Process Engineer / Project Manager

Feb 22, 2007 – 2007 Consultant/Independent Contractor

Responsibilities ranged from conceptually design to on-site start-up and trouble shooting. Bulk of work was documentation and designs for Basic Engineering Packages (BEP) which including:

- Block Flow Diagrams (BFD)
- Process Flow Diagrams (PFDs)
- Heat & Material Balances (HMBs)
- Piping & Instrumentation Diagrams (P&IDs)
- Equipment Specifications
- Instrument Specifications
- Heat Exchanger Design
- Working with Vendors
- Complex Controls Descriptions
- Cause and Effect Description
- Utility Summaries
- Startup Procedures

Position changed as need for a small company. Worked independently on small projects. Headed small teams on medium projects or large projects that had a good foundations. Worked as part of a team on large projects. Generally lead issues in core strengths such as controls, instrumentation, complex piping systems involving pump selection and basic electrical reviews.

### **Independent Process Controls & Instrumentation Consultant**

1998 – 2001, 2003 – 2004, 2006 & 2007, 2015 Consultant/Independent Contractor

Scope and responsibilities depending on the client's existing need. Reoccurring items included:

- Hands on support of pilot plant /production facility operation, development & upgrades.
- Wrote process / software specifications, user requirements manuals, and project documentation.
- Programmed programmable logic controllers (PLCs) and microprocessors.
- Configured supervisory control & data acquisition (SCADA) software.
- Performed startups and provided field service.
- Debugged software, instrumentation, communications, and process design issues.
- Supported cGMP validation department with execution of IQs and OQs.
- Trained operators, technicians, scientists & engineers.

Major projects included custom high temperature vacuum/controlled atmosphere process furnaces and Bio/Pharma cGMP production facilities. Took on lead roles to resolve technical and design issues. Worked with clients to meet process design requirements. Responded to emergency calls. In more than one case resolved issue in hours that teams had not been able to resolve for months.

## **CENTORR VACUUM INDUSTRIES, Nashua, New Hampshire**

Manufacturer of vacuum / positive pressure high temperature furnaces

2006 – 2007

Electrical Project Engineer

2000 – 2001

Controls Engineer (Independent Contractor)

- Engineered custom and standard high temperature vacuum/controlled atmosphere furnaces.
- Created wiring schematics, control panel layouts, bills of material (BoM) and assembly diagrams.
- Programmed PLCs and configured human machine interfaces(HMI).

Projects included high temperature furnaces with various options such hydraulic press, incinerator, conveyors, high temperatures fans, multi-stage vacuum systems and positive pressure systems.

## **UNIVERSITY OF MASSACHUSETTS LOWELL, Lowell, Massachusetts**

2001 – 2012

Guest Lecturer

1997 – 2000

Chemical and Nuclear Engineering Department Technician

Was hired to update labs and meet previous failed accreditation requirements. Was in charge of undergraduate lab facilities. Assisted with graduate labs. Responsibilities quickly expanded to include lectured during lab recitations and reviewed student presentations. Other responsibilities included:

- Designed and built new lab equipment.
- Upgraded controls, instrumentation.
- Maintained inventories and spare parts.
- Performed preventative maintenance and repairs.
- Updated and modified student lab and pilot plant equipment
- Supported thesis and research projects.
- Brought labs toward OSHA compliance.
- Student organization advisor.

Helped to instruct classes and labs in PLC controls, PC controls, SCADA systems, instrumentation, process engineering, fluid dynamics, heat transfer, PID control, and piping & instrumentation diagrams (P&IDs). Continued to guest lecture for years on the subjects of PLCs, SCADA systems and P&IDs.

## **COMPUTER EXPERIENCE**

Windows, Word, Excel, Power Point, AutoCAD (2D), Visio (CAD), basic hardware experience

## **EDUCATION & LICENSING**

### **THE DIVISION OF PROFESSIONAL LICENSURE**

EIT-MA # 19505

### **UNIVERSITY OF MASSACHUSETTS LOWELL**

Bachelors of Chemical Engineering

Minor in Chemistry

### **XAVIER UNIVERSITY**

Certified Project Manager (CPM)

## **CONTROLS & PROCESS EXPERIENCE**

**PLC Hardware:** Modicon, Allen-Bradley, Siemens, GE and other hardware

**PLC Software / Languages:** IEC 1131: Ladder Logic / Ladder Diagram (LD), Sequential Function Charts (SFC), Function Block Diagram (FBD) and Structured Text (ST)

**SCADA (HMI, MMI) Software:** GE/Intellution, Intouch, Allen-Bradley, Siemens and other software

**Other:** DeviceNet, Interbus, Modbus, Modbus Plus, DeviceNet, Profibus, Yokogawa (Daqstation DX200P), Telog / Teloger, KEP (Masstrol & Supertrol II), NetBotz and other systems

**Test Equipment:** DMM, oscilloscopes, calibrators/signal generators, data loggers, and other equipment

**Process Systems / Functions:** Wastewater, lyophilizers, clean steam generators, WFI, distillation, loop tuning (PID), calibration, heating, gas burners, cooling, pressure, vacuum, temperature, flow, filtration, sterilization, conveyors, VFDs, frequency, force, position, pneumatics, hydraulics, fluid dynamics, line sizing, pump sizing, NPSH, voltage, current, power, communications, etc...

## Previous Projects

### Design and Startup of Major and Minor Equipment



- Designed major and minor plant equipment
- Verification of field installation
- On-site start-up, commissioning and acceptance testing

## Controls Systems: Software, Instrumentation & Schematics



- Designed electrical systems
- Created bills of material
- Programmed PLCs
- Configured SCADA and HMI systems
- Wrote and executed factory acceptance tests
- Wrote manuals
- Provided on-site start-up and field service

## Design of Chemical Plants



- Block Flow Diagrams (BFD)
- Process Flow Diagrams (PFDs)
- Heat & Material Balances (HMBs)
- Utility Summaries
- Startup Procedures
- Piping & Instrumentation Diagrams (P&IDs)
- Equipment Specifications
- Instrument Specifications
- Complex Controls Descriptions
- Cause and Effect Description
- HTRI Software