

# ANDREW LAMARCHE

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## CANDIDATE SUMMARY

Systems, process engineer, and programmer with 10 years of experience in mobile power system development, water electrolysis, and engineering management. Energized to develop systems and lead

### SKILLS & EXPERTISE

Process Sim • Functional Safety • P&ID • Trade Studies • Fault Management • DFMEA • HARA • MBSE  
Electrochem. Devices • PEM Electrolysis • PEM Fuel Cells • High Pressure Gas Systems • Flow Batteries

### ENGINEERING SOFTWARE & PROGRAMMING

DWSIM • OpenModelica • Matlab/Simulink • Aspen Plus • Panasonic FPO • Capella (MBSE) • COMSOL  
Python • Go • TypeScript • Node • svn • git • VSCode Ext. • Eclipse RCP • GraphQL • SQL

## EXPERIENCE

### **NUVERA FUEL CELLS | MANAGER, SYSTEMS DEVELOPMENT**

November 2019 - Present | Billerica, MA

- Architected, lead, and coded "EngineCalc" project - a Python module adding new capabilities and unit operations that improve upon existing process modelling software to simulate and understand candidate engine designs from a variety of viewpoints. Developed engineer and handed off project for low-level development
- Developed requirements and re-architected engine control software to support distributed collaboration and FuSa design aspects (among other system viewpoints and SW missions)
- Managed team of 8 engineers in the development of several new fuel cell engine products and platforms from project genesis to pre-production (E45, E60, EN125 platforms). Developed engineers to successfully complete requirements and test deliverables, and electrical subsystem designs.
- Transitioned systems engineering organization away from manual document-based approach toward an MBSE and database-focused approach
- Developed department roles, process, and deliverable definitions, enabling quality product development and consistent understanding of responsibilities

### **NUVERA FUEL CELLS | LEAD SYSTEMS ENGINEER**

April 2018 - November 2019 | Billerica, MA

- Lead systems engineer for Nuvera's new engine product class (E-45), generating and managing technical product requirements, proposing system/subsystem architecture based on trade studies and internal/external stakeholder inputs.
- Rearchitected engine control software fault management strategy to comply with standards and expectations across a broad section of target markets.
- Championed development of engine reliability growth campaigns and drove development of test infrastructure, leveraging results to improve and comply with service, reliability, and safety requirements/targets.
- Trained design engineers on codes/requirements allocated to their subsystems/interfaces, leading HARA/DFMEA activities, and verification campaigns.

## **NEL HYDROGEN | ELECTROCHEMICAL TEST SYSTEMS ENGINEER**

May 2014 - April 2018 | Wallingford, CT

- Design lead for mechanical balance-of-plant, electrical, and controls subsystems of prototype R&D systems, inclusive of CO<sub>2</sub> electrolyzers, differential pressure water electrolyzers (up to 3 ksi oxygen and 5 ksi hydrogen), and safety-critical halogen-hydrogen flow batteries.
- Modified an existing commercial PEM water electrolysis stack design to implement a proof-of-concept continuous electrodeionization process.
- Contributed to megawatt-scale water electrolyzer product designs by sizing equipment and justifying sized safety equipment against selected codes and standards.
- Automated formerly manual analyses of field service datasets in Python to identify areas for system reliability growth while saving company resources.

## **UNIVERSITY OF CONNECTICUT | RESEARCH ASSISTANT**

January 2012 - August 2013 | Storrs, CT

- Performed testing and developed Python/VBA scripts for multivariate analysis of chemiresistive sensor array data.
- Contributed to two peer-reviewed publications regarding novel chemiresistive vapor sensors.

## **EDUCATION**

### **UNIVERSITY OF CONNECTICUT | B.S. CHEMICAL ENGINEERING**

May 2014 | Storrs, CT | GPA 3.8/4.0 | Minor - Materials Science & Engineering

Focus: Process Simulation, Surface Reactions & Catalysis, Electrochemical Devices

## **PUBLICATIONS**

- K. Fu et al., "Polynucleotide-functionalized gold nanoparticles as chemiresistive vapor sensing elements," *SENSORS*, 2013 IEEE, 2013, pp. 1-4, doi: 10.1109/ICSENS.2013.6688518.
- (Acknowledged) K. Fu et al., "DNA Gold Nanoparticle Nanocomposite Films for Chemiresistive Vapor Sensing". *Langmuir* 2013 29 (46), pp. 14335-14343. DOI: 10.1021/la402626p