MUTHUKRISHNAN ANAND

muthu.krishnan1@hotmail.com bit.ly/mk-website

PERSONAL STATEMENT

Motivated chemical engineering graduate student starting with 5 years of professional experience in the energy sector. Currently, exploring process intensification for adsorption-based carbon capture. Committed to advancing sustainable energy by uniting innovative research with practical industry realities.

EDUCATION

Master of Science, Chemical and Materials Engineering **Sep 2024 - Present**

University of Alberta, Edmonton, Alberta
GPA:3.9/4.0

Bachelor of Technology (Hon.), Chemical Engineering **Aug 2015 - Jun 2019**

National Institute of Technology Trichy(NIT-T), India
GPA: 9.39/10.0

RESEARCH EXPERIENCE

Undergraduate Thesis, National Institute of Technology Trichy, India **Jan 2019 - Jun 2019**

- Conducted literature review on grade-2 biorefinery concept and 2,5-Furan Di Carboxylic Acid(FDCA) biopolymer production and evaluated lab to industrial scale production.
- Performed overall plant balance, provided cost estimates and sizing for major equipment involved in production process

Research Intern, Institute of Drilling Technology, Dehradun, India **May 2018 - Jul 2018**

- Formulated thermally stable drilling fluids for commercial applications that involved high temperature applications (up to 100°C)
- Conducted field feasibility assessments on these formulations by performing tests in accordance with API standards

HONOURS, AWARDS AND RECOGNITIONS

Captain Thomas Farrell Greenhalgh Memorial Graduate Scholarship **2024 - 2025**

University of Alberta Graduate Recruitment Scholarship **2024 - 2025**

Early Competency Milestone(Process Engineering), ExxonMobil **2022**

Academic Proficiency Prize, NIT-T, India **2020**

Smt. G.S. Rajalakshmi Memorial Award, NIT-T, India **2019**

Academic Proficiency Prize, NIT-T, India **2018**

TEACHING EXPERIENCE

Teaching Assistant, CME Department, University of Alberta, AB

CME 265 Process Analysis **Sep 2024 - Dec 2024**

CME 265 Process Analysis **Jan 2025 - Apr 2025**

CHE 314 Heat Transfer **Sep 2025 - Dec 2025**

WORK EXPERIENCE

Process Engineer, ExxonMobil Canada, St.John's (NL), Canada **Dec 2022 - Aug 2024**

Provided onsite technical support for Hebron operations focusing on troubleshooting, process optimization and identifying opportunities for asset modifications and improvements

- **Led $1.7M project** to remediate MPG#A exhaust stacks on Hebron, collaborated with cross-functional teams to assess stack health and implemented risk based remediation strategies. Delivered improved design and fabrication requirements by managing the scope from planning to offshore execution.
- **Mitigated risk** worth **$11.7M** by implementing a risk-based maintenance and sparing strategy for control valves at Hibernia. Assessed process impact based on valve failures from historical data, optimizing spares to maintain operational integrity.
- **Realized production uplift** of **3.5kBD** by managing and implementing viscosity reducing agent chemical trial offshore. Reduced offshore execution risk by implementing compatible hoses.

Process Surveillance Engineer, ExxonMobil GBC, Bengaluru,India **Jun 2019 - Nov 2022**

Performed remote process monitoring for ExxonMobil upstream operations to provide short-term and long-term insights for improving asset reliability and profitability.

- **Reduced operating expenditure by US$50k per year** by investigating tri-ethylene glycol losses and establishing baseline performance for the gas lift system using Aspen HYSYS modeling and optimization for Hibernia asset.
- **Enhanced reliability** of **process-critical equipment** valued at **US$250M** by implementing advanced exception-based surveillance monitoring, utilizing SEEQ and Python tools for the EAP asset.
- **Served** as **process lead** for the cross-functional upstream maintenance transformation initiative for Hebron, achieving a **reduction of 4,000 maintenance man-hours**. Conceptualized and implemented a methodology to quantify the process impact of key equipment, which was adopted by all upstream business units for broad organizational impact.
- **Achieved 30% reduction in GHG emissions** and **power savings of 2MW** by implementing optimal operating conditions identified through Aspen HYSYS sensitivity analysis for Bonny River Terminal.

SKILLS

- **Process Simulations** : Aspen HYSYS, HTRI and ProMax
- **Languages** : English, Tamil and Hindi
- **Programming** : Python, MATLAB, HTML and C++
- **Data Analytics** : SEEQ,SAS JMP,AVEVA PI and PowerBI

EXTRACURRICULAR ACTIVITIES

Volunteer, Canadian Separations Symposium **May 2025**

Coordinated lab tours at NRC and CME departments in the University of Alberta, enhancing engagement for academic and industry visitors. Supported the planning and execution of conferences and workshops.

Volunteer, ExxonMobil United Way Campaign **Oct 2023**

Helped organize and execute silent and live auctions for the United Way corporate campaign, raising $19K to support community initiatives in Newfoundland and Labrador.
