EBIN BENNY

JUNIOR CHEMICAL PROCESS ENGINEER - Process Design, Aspen HYSYS & Safety Compliance

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SKILLS

- **Process Design & Engineering**: PFDs, P&IDs, Mass & Energy Balances, Equipment Sizing, Column Design.
- **Process Simulation, Optimization & Modeling**: Aspen Plus, HYSYS, Thermodynamics, Fluid Mechanics.
- **Safety & Compliance**: HAZOP, Risk Assessment, Root Cause Analysis, OSHA, ISO, WHMIS standards.
- **Project Planning & Process Documentation**: Cost Estimation, MS Office Suite, MS Project, Excel Sheets.
- **Data Interpretation & Analysis**: Performance Metrics, Energy Calculations, Raw Material Utilization.

WORK EXPERIENCE

Process Engineering Intern **February 2021 - June 2021**
Alpha Packaging Industries *India*

- Developed and optimized 5+ process flow diagrams (PFDs) for polyethylene systems, increasing production throughput by 20% through operational bottleneck elimination.
- Identified 10% cost reduction in raw material and utility usage by conducting end-to-end process analysis and implementing optimization strategies.
- Performed sizing and specification for material handling and extrusion systems, improving mechanical integrity and system reliability by 15%.
- Prepared detailed cost estimates leveraging raw material and energy consumption analytics, reducing project budgeting errors by 25%.
- Collaborated with 5+ plant and cross-functional teams to execute process improvements, contributing to consistent quality control and compliance standards.
- Conducted root cause analysis on recurring process deviations, implementing corrective measures that reduced unplanned downtime by 18% over a 3-month period.
- Coordinated in heat integration studies and energy audits, identifying opportunities, and improved overall thermal efficiency by 12% across the production line.

PROJECTS

Manufacturing of Low-Density Polyethylene
Role: Process Design

- Engineered a single-screw extrusion process for LDPE film with 152.4 mm diameter, achieving 800 kg/h output at 15.9 MPa, increasing scale up reliability.
- Validated metering section using flow rate and shear rate calculations (106 s^{-1}), ensuring performance met design expectations.
- Increased production efficiency by 62.5% by optimizing temperature profiles (100–180°C), reducing processing time from 2hr 40min to 1hr.
- Performed energy balance and thermal analysis for polyethylene operations, achieving ¿90% material recovery rate with enhanced process controls.

Process Optimization and Safety Enhancement in Batch Reactor System
Role: Process Simulation & Safety Analysis

- Modeled a multi-phase batch reactor using Aspen Plus to simulate reaction kinetics, improving conversion efficiency by 28%.
- Conducted pressure relief system sizing using API 520 standards, reducing over pressure risk scenarios by 40% through validated PSV configurations.
- Processed analysis of temperature rise and heat removal during exothermic reaction, preventing thermal runaway and increasing operational safety margin by 18%.
- Developed a HAZOP worksheet for 10+ process deviations, facilitating cross-functional team reviews and ensuring full compliance with OSHA protocols.

EDUCATION

PG Diploma in Project Management May 2023 - December 2024
Algoma University, Brampton, Canada
Bachelor's in Chemical Engineering July 2017 - May 2021
Anna University, Chennai, India

CERTIFICATIONS

- Applied for Engineer-in-Training (EIT) Registration - *APEGA, Alberta* (In Progress)