Devan Munn

Process Design Engineer

Whatcom County, WA | Open to the right role | devan.munn@thebiggshoson.com | linkedin.com/in/devan-munn

PROFESSIONAL SUMMARY

Process Design Engineer with 13 years in refining, including 8 years at bp Cherry Point. Lead capital projects from opportunity framing through FEL-2 and EPC detailed design across the process block and utilities — specifying heaters, exchangers, vessels, rotating equipment, hydraulic networks, relief, and flare. Combine process modeling, economics, permitting, and contractor oversight to take unit constraints from idea through startup.

CORE COMPETENCIES

Front-End / FEL Development · Process Simulation · Hydraulic & Relief Design · Fired Heaters & Exchangers · Hydroprocessing · Renewable Co-processing · Energy Optimization · Process Safety (HAZOP / LOPA) · Contractor Oversight · Business Development

EXPERIENCE

bp | Cherry Point Refinery | Blaine, WA | November 2018 – Present

Process Design Engineer / Business Development Engineer

Lead projects from framing through FEL-2, then direct EPC detailed design to site standards through startup and post-startup safety review. Work spans crude, coker, hydrocracker, DHDS, isomerization, sulfur recovery, tail gas, and flare.

- Lead replacement strategy for two fired heaters (40 and 190 MMBtu/hr; ~$20–150MM) driven by tube integrity in the radiant and convection sections, including NSPS Ja reconstruction/BACT NOx limits and Washington Ecology air permitting.
- Led a waste-heat project recovering ~40 MMBtu/hr from vacuum resid into vacuum distillate bottoms ahead of the vacuum tower heater, unloading fired duty and emissions and eliminating mid-cycle heater outages so the heater stays on the planned outage cycle.
- Led hydroprocessing modifications (reactor, exchangers, high-pressure separators, condensers) that enable co-processing of renewable feedstocks up to 25% of unit capacity; now in operation, providing lower carbon-intensity fuels to West Coast markets.
- Designed mitigations for slug-flow-induced vibration in the DHDS feed/effluent exchanger and heater piping after renewable co-processing created two-phase flow; a fresh-feed and recycle-gas bypass control system restored unit capacity without rate cuts.
- Designed a recovered-oil route to downstream diesel hydrotreating that eliminated recycle to fresh feed, freeing up to 1,400 bpd of crude capacity.
- Develop at least six capital ideas or process studies per year and present them to gatekeepers with a proceed-or-kill recommendation based on the business case; about half typically proceed.
- Led a refinery-wide spent-caustic recovery study of how unit discharges combine in the utilities collection tank and the upset risk from hydrocarbons, HCl, and H2S, setting the basis for a capital project to treat the combined stream for safe discharge to the oily-water sewer.

Anvil Corporation | Bellingham, WA | May 2013 – November 2018

Process Engineer

Process design for bp, Chevron, Phillips 66, and independents, concept through detailed design.

- Seconded to bp Cherry Point for FEL on 20+ relief systems, closing 75 risk findings across five process units: HYSYS/Excel hydraulics, API 521 overpressure scenarios, and updated PSV sizing.
- Redesigned Cherry Point's lean-amine header relief system, checking hydraulics from each scrubber so the limiting vessel stayed within allowable accumulation and header backpressure did not derate PSV capacity.
- Built a HYSYS Dynamics model of a 100+ railcar crude gravity-offload system to prove feasibility before construction.
- Developed a lubricity-additive injection system for ULSD that enabled Cherry Point to meet the new marine-fuel spec and sell ULSD to West Coast vessels.

Rio Tinto | Kennecott Utah Copper | Magna, UT | December 2010 – May 2013

Process Engineer (work-study)

Mass balances, bottleneck studies, and turnaround support in copper smelting.

EDUCATION

B.S. Chemical Engineering | University of Utah | Salt Lake City, UT | May 2013
FE Chemical, NCEES | 2012

TECHNICAL SKILLS & TOOLS

Process Simulation: Aspen HYSYS (Dynamics), Aspen EDR, Petro-SIM, ProMax, HTRI, MySep, KG Tower

Engineering Tools: Hydraulic modeling, relief-system design, vessel & equipment design, control-valve sizing, fluid separation

Programming & Analysis: Python, VBA, advanced Excel; AI-assisted project planning and development

Standards & Methods: API, ASME, NFPA, PSM/MOC, HAZOP, LOPA, FEL 1/2/3/Execute

LANGUAGES & SERVICE

English (Native) | Portuguese (Fluent)

Eagle Scout (1999) | Volunteer missionary service, Paraná, Brazil (2003–2005)