

Colin Sturm, PhD, PE

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SENIOR ENERGY CONSULTANT, AI/ML & DIGITAL TRANSFORMATION

Digital transformation leader with 20+ years in oil and gas and a PhD, PE in Chemical Engineering. Architect of production-grade AI/ML solutions for upstream, midstream, and downstream operations, from agentic AI field assistants to enterprise data platforms. Proven track record of translating complex petroleum engineering challenges into cloud-native solutions that deliver measurable business outcomes for Fortune 100 energy companies.

TECHNOLOGY

Python, R, JavaScript, AWS (Bedrock, SageMaker, Glue, Redshift, Lambda, EKS, IoT), Databricks, Cygnet, OSIPI, Petrel, ComboCurve, WellView/SiteView, Spotfire, Machine Learning (Neural Networks, XGBoost, SHAP), GenAI/LLM, Amazon Quick, Hydraulic Fracturing, Well Integrity, Drilling, Completions, Production Engineering, Reservoir

EXPERIENCE

AMAZON WEB SERVICES (AWS) ENERGY BUSINESS UNIT | Denver, CO 2020 to present

Senior Energy Consultant, AI/ML & Digital Transformation

BPX Energy: Agentic AI Operations Assistant (2024-2025)

- Led development of the first agentic AI operations assistant deployed to production in the energy sector, a voice-enabled digital assistant for field operators managing daily well routes
- Designed multi-agent architecture and built initial prototype to secure stakeholder buy-in
- Delivered **5% production uplift** and **~50% operator productivity improvement**; CEO public endorsement at industry conference; Bloomberg media coverage
- Architected for scale to 1,000+ operators

Occidental Petroleum: Drilling & Completions Digital Transformation (2024-Present)

- Technical lead on multi-year platform integrating 6+ oilfield service vendor data pipelines into unified analytics environment
- Designed GenAI chatbot translating natural language to SQL, enabling engineers to self-serve operational data
- Achieved **400% ROI** and **12,000 engineering hours/year eliminated**
- Presented at **CERAWEEK 2026**; platform expanding enterprise-wide

Baker Hughes: AI/ML Platform Strategy (2025-Present)

- Originated and grew Fortune 500 oilfield services account from zero to four concurrent AI/ML workstreams within 8 months, establishing CIO-level strategic relationship
- Designed platforms for subsea asset intelligence, tender response automation (reducing 5-6 week cycles to ~2 weeks), and geoscience workflow modernization

Continental Resources: Supply Chain Transformation (2024-Present)

- Architected cloud-native supply chain platform from greenfield engagement
- Reduced supplier onboarding from **30-45 days to 3-5 days** (90% automation); eliminated **\$50M/year in production delays**
- VP Supply Chain: "worked as a direct extension of our team... brought valuable industry knowledge and deep technical expertise"

GE Vernova: Enterprise AI Transformation (2026)

- Led technical strategy for AI program spanning 29 use cases targeting **\$4B+** in quality cost reduction
- Designed engagement model coordinating three SI partners; secured executive approval for dedicated architecture team

Shell: Subsurface Data Platform Leadership (2021-2026)

- Led 7 engagements deploying the energy industry's open subsurface data platform on AWS, the only global implementation at the time

- Designed multi-region architecture serving **80,000+ users**; pioneering work directly informed a commercial product offering
- CIO personal thank-you letter citing platform as a "breakthrough"

NextEra Energy: Capital Allocation Analytics (2022-2024)

- Built analytics platform affecting **\$900M/year** in well development decisions, delivering **90% faster decision-making** and ~\$2.5M/year savings
- Succeeded where a prior consulting firm failed; CEO/COO endorsements

Phillips 66: ML Refinery Process Optimization (2023-2025)

- Independently developed neural network models achieving **92.5% accuracy**, outperforming incumbent vendor's timeline
- Introduced SHAP explainability and dynamic what-if analysis for safety-critical refinery operations
- Work influenced partner-delivered deployment across 13 refinery units

Boardwalk Pipeline: Project Intelligence Platform (2026-Present)

- Designed and built AI-powered project health dashboard aggregating 4+ enterprise systems into unified executive view

Additional: TotalEnergies (well integrity, France), Cenovus/Vital Energy (GenAI workover automation), Vital Energy (16-use-case digital roadmap), AWS Energy Symposium (GenAI workshop, 90+ leaders)

APACHE CORPORATION | Houston, TX 2014 to 2020

Senior Production Engineer (2017-2020)

- **Dynamic Optimized Pumping Routes:** Developed Python algorithm optimizing pumper routes. Reduced drive time 30%, increased cash margin 75%. Scaled to 100+ users (5 MBBLD, 20 MMSCFD). Led team of five.
- **Predicted seismic induced activity:** Collaborated with Auckland University. Co-authored best paper (600 submissions) at US Rock Mechanics Symposium.
- **Completion data collection:** Raspberry Pi algorithm connecting to service company network. Cut data delivery from days to seconds, reduced per-well cost by \$3,000.
- **StimPlan analysis automation:** Reduced fracture simulation analysis from days to minutes using Python.
- Organized and led monthly completion data networking and governance meeting for all North America.

Production Engineer III (2014-2017)

- **Tank leak detection:** ML in Python with Cygnet/OSI PI. Reduced false positives 30%, increased true positives 50%.
- **Designed well completion database** adopted across all Apache North American districts.
- Managed rotational engineers and interns.

PROCTER & GAMBLE (P&G) | Brussels, Belgium 2011 to 2013

Modeling & Simulation, Research & Development Engineer

- **Saved \$2.5MM/year** by optimizing a manufacturing process.
- Led design and implementation of \$2MM customized 3D FEM particle tracking software (with Altair Engineering).
- Designed internal global engineering software for pipe flow and rheology modeling.

EDUCATION

Doctor of Philosophy, Chemical Engineering | University of Florida | Gainesville, FL

Bachelor of Science, Chemical Engineering / Minor: Chemistry | University of Oklahoma | Norman, OK

PUBLICATIONS

- AWS Industries Blog: "How Amazon Bedrock Transforms Microsoft Teams Conversations into Actionable Insights" (2026)
- AWS Industries Blog: "OSDU Data Platform on AWS, Ingestion Series #1: Overview of Data Types" (2022)
- GitHub (aws-samples): Oil & Gas Well Report Data Extraction with Amazon Bedrock Data Automation (2026)
- Lavoie, V., Sturm, C., et al., "A Method to Assess Potential Induced Seismicity Hazard with Application to the Duvernay." ARMA 18-881 (2018, co-author, best paper finalist)

CERTIFICATIONS & AFFILIATIONS

- AWS AI Practitioner (2025)
- AWS Solutions Architect, Associate
- Licensed Professional Engineer #121960, Texas Board of Professional Engineers | 2015 to present
- Member, Society of Petroleum Engineers (SPE)