MAHDI ALAVI

Petroleum Engineer | Python and .NET Developer

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Tehran, Iran

Petroleum Engineer (Reservoir) working as Petroleum Production and Reservoir Operations in upstream sector of oil and gas industry, having years of experience in well modeling, nodal analysis, produced water analysis interpretation and salt scaling simulation, flow assurance chemicals application, design and deployment. Software developer with solid knowledge of .NET and Python programming that helped me to the best of my abilities and to utilize my Petroleum Engineering skills in big scale projects related to digital transformation. I am a quick learner for programming languages and extremely motivated to always develop my programming skills.

Professional Experience

Current
October 2018

Python and .NET Developer
Pars Oil and Gas Company (POGC), Iran

- Analyzed factors contributing wells downtime and developed a new program lowering downtime by 8%
- Designed algorithms performing data validations and cross check reducing human-based data entry errors by more than 90%
- Created and maintained databases, data collection and data-warehouses
- ETL processes for gas wells data reducing man-hour workload by more than 80%
- Developed online Well Production Monitoring software for gas producing wells located offshore Iran
- Created Well Test Analysis software for biannual routine gas well productivity test
- Designed water sampling validation and water analysis software
- Developed web based application for well integrity management system in production life cycle - Gas Wells
- Developed windows based software for tracking, monitoring, documentation and reporting of well defects

Current
November, 2017

Reservoir Operations and Production Engineer
Pars Oil and Gas Company (POGC), Iran

- Flow after flow (Backpressure test) planning, data QC and interpretation
- Preparing monthly well production rate programme and semi-annual production forecast
- Well modeling of South Pars giant gas field gas producing wells using Pipesim
- Produced water surveillance, water anaylsis QC and interpretation
- Feasibility study of scaling formation in South Pars gas field wells in different scenarios of formation water production
- Involved in planning and supervision of Wireline/Slickline operations: Production Logging, Static and Dynamic PT Survey, Electromagnetic Defectoscope, High Precision Temperature and Spectral Noise Log (HPT-SNL)
- Proactive well integrity work including well barrier monitoring and planning of preventive actions
- Involved in development of localized well integrty management standard for gas producing wells in production life cycle
- Supervised well acidizing job and clean up

November 2017 – March 2017 | **Business Development Engineer**
Black Gold Production (BGP), Iran

- Following up ongoing projects, potential market assessment and market development strategy planning
- Leading technical and commercial team in all tenders procedure, including tender document preparation and technical and commercial meetings with client
- Budget planning for upcoming projects and potential market in the future
- Involved in negotiations with Norwegian and Canadian service companies that led to exclusive representative agreement between *BGP*, *FourPhase AS*, *Penetrators Canada* and *EMC AS*.

November 2017 – February 2016 | **Petroleum Engineer**
Black Gold Production (BGP), Iran

- Designed and supervised asphaltene inhibitor/dispersant, wax inhibitor/dissolver, scale inhibitor/dissolver and drag reducing agent laboratory performance test
- Water analysis interpretation, running scaling simulation and planning for effective scale inhibitor/dissolver treatment
- Preparation of proposals and chemical deployment procedures for squeeze applications, downhole and surface injection of above-mentioned flow assurance chemicals, e.g. , Offshore (Siri Zone, Abouzar Platform), Onshore (Cheshme Khosh, Azar, Dalpari Oilfields and NISOC's Water disposal wells)
- Developed several in-house models and C# codes for squeeze application and downhole injection job design [initial calculations and optimizations]
- Modeling flow lines and pipelines networks using Pipesim

Education

2011-2015 | **Bachelor of Science, Petroleum Reservoir Engineering**
Petroleum University of Technology, Iran

Thesis : Design and Construction of a High Pressure and High Temperature Apparatus for Measuring Rock Thermal Conductivity

Publications

2016 Impacts of Spatial Distribution of Pore Fluids and Heat Flow Direction on Effective Thermal Conductivity of Rocks DOI: 10.3997/2214-4609.201601065

2016 Design and Construction of a High Pressure and High Temperature Apparatus for Measuring Rock Thermal Conductivity DOI: 10.3997/2214-4609.201600201

2016 Comparative Study of Different Oil and Gas Relative Permeability Models for Iranian Carbonates [A Statistical Approach] DOI: 10.3997/2214-4609.201600206

Skills

Industry Knowledge	Well Modeling, Well Production Optimization, Water Production Surveillance, Salt Scaling Analysis, Flow Assurance Chemicals
Programming	Python (Django, FASTAPI, SQLAlchemy, Pandas, pySpark, scikit-learn, Microsoft .Net (VB, C#), Javascript, React, Tailwind, Git, Github, Linux
Databases	Microsoft SQL Server, PostgreSQL, MongoDB
Data	data analysis, data quality assessment, visualization of data insight, pattern and trend Identification, data warehousing, data ingestion
Petroleum Modeling Softwares	Pipesim,Eclipse 100, ScaleChem
Modeling and Design Softwares	Solidworks 2D & 3D, Photoshop
Soft Skills	Negotiation and Communication, Team Work, Problem Solving Attitude

Languages

English *Professional Working* **Persian** *Native*

Honors and Awards

2020	Best employee award at Pars Oil an Gas Company
2013-2015	EAGE Student Chapter President
2014	2nd place winner in 9th national Chem-E-Car competition
2013	3rd place winner in 8th national Chem-E-Car competition
2011	National Iranian Oilfield Company's Scholarship for Petroleum Engineering Studies at Petroleum University of Technology

Projects

WELL INTEGRITY MANAGEMENT SYSTEM SOFTWARE 2020-2021

The software developed on top of already developed well production monitoring system to assess well integrity of more than 390 wells in South Pars Gas Field. Algorithms optimized to process hundreds of thousands of data for each well.

FEASIBILITY STUDY OF SALT SCALING IN DOWN-HOLE TUBULARS AND DOWNSTREAM PRODUCTION FACILITIES IN SOUTH PARS GAS FIELD 2017 - 2018

The study went through in-depth analysis of salt scaling potential in different well-type and downstream conditions for various scenarios of formation water production in South Pars giant gas field

DEVELOPING DIRQ SOFTWARE, DRA INJECTION RATE CALCULATION 2016

DIRQ written in C# language based on an in-house developed correlation that assist field operators and engineers to optimize Drag Reducing Agent injection rate to reach planned and desired pressure reduction or throughput increase in pipelines and flowlines carrying low to moderate viscosity crude oil. It can be coupled to Pipesim or any well flow modeling software, for modeling well flow rate boost calculation in cases that excessive pressure loss in flowlines choke back the production rate.

DESIGN AND CONSTRUCTION OF A HIGH PRESSURE AND HIGH TEMPERATURE APPARATUS FOR MEASURING ROCK THERMAL CONDUCTIVITY 2014 - 2015

An apparatus designed and manufactured for measuring rock thermal conductivity at elevated pressure and temperature. The apparatus is able to work at reservoir conditions (pressure up to 400 bar and temperature up to 250 °C) and investigate the effect of different fluids saturation. It also reduces the effect of significant heat loss due to high temperature gradient with the help of state of the art lateral heater stack and temperature controlling unit.

Professional Membership

Since 2015	Society of Petroleum Engineers (SPE)
2013-2015	EAGE Student Chapter President at Petroleum University of Technology
2013,2014	Executive Committee Member of Scientific Association at Petroleum University of Technology
Since 2013	European Association of Geoscientists & Engineers (EAGE)
2013	Chem E Car Team's Chair at Petroleum University of Technology

Certifications

2017	Safety Induction, HUET, Fire Fighting, First Aid, Sea Survival and H2S
2013	Operation Well's Safety
2013	HSE Aspects in Drilling Campaigns