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Development of a web portal knowledge base EOR screening/design expert system

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The current work is concerned with the development of a web-portal knowledge-based Enhanced Oil Recovery (EOR) expert system for screening and designing EOR process. Conducted and ongoing projects including all the spectrum of laboratories, pilot, and full-fields scale implementation need to be shared among oil and gas community for the ultimate goal of sharing of best practices, technology transfer and lessons learnt in such highly demanded area. On the other hand, on local scale oil and gas operators would benefit from such expert system in setting an informed workflow and screening/design tool aims at selecting the most appropriate. The industry is currently lacking such system and there is no single source of knowledge on EOR technologies and their application. The industry has clearly expressed a need for an expert system to aid operators in selecting optimum EOR applications and procedures. The project creates an “enabler” for oil and gas operators and financial institutions, thus helping to popularize EOR screening as a routine aspect of field development planning even in early stages of a field's life cycle. The EOR KB will address these technology gaps. The ultimate aim of this industrial is to develop a computer module (expert system) in the form of web portal knowledge bases EOR system to be used as a screening /design tool for adopting the most suitable EOR. The methodology used here includes published data on completed projects and world-wide experience and expertise. Existing analytical models and correlations on the three methods (Gas-Chemical-Thermal) are used to develop the module. The web portal contents include reservoir properties, reservoir performance, operations & lessons, and costs & economics. The system allows different scenarios to be run including cost and Net Present Value (NPV) comparison, availability of gas, CO₂, Chemicals, and other commodities. It enables companies to screen and prioritize EOR technique potential as applicable to the specific field opportunities. The developed EOR KB addresses the need for an Expert System to aid EOR decision making and will provide a comprehensive single resource for best practices, lessons learned and case histories across the EOR spectrum. In fact, the development tool adds a new customised tool to the engineers and earth scientist in general working kit including handling new technologies such as LowSal and MEOR.



Biography

Ali Qubian is currently a TPL (RE/PE) Senior Specialist at Subsurface Team of R&T Group at Kuwait Oil Company (KOC). Prior to this, he occupied a number of both industrial and academic positions in UK. He holds a First Class Honors BEng in Petroleum Engineering and a PhD in Steam-foam Drive Process in EOR from University of Strathclyde, Glasgow, UK. He has over 30 years of academic, industrial and research experiences mainly associated with the upstream sector of the oil and gas industry. He is currently the EOR Cluster Leader within the Subsurface Team. The job involves advanced technology screening and implementation for relevant reservoir subsurface challenges and adopting the most efficient and economic ones to address them. His major areas of interest are: EOR, reservoir monitoring and simulation, uncertainty analysis, new technologies and innovation, unconventional reservoirs, and production optimization.

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