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International Conference on

Oil and Gas

August 05-06, 2019 | Singapore

Workshop

30 YEARS
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Gautam Guin

Biqmind Pte Ltd, Singapore

How to deploy Positional safety, tracking & productivity / efficiency in harsh & hazardous areas

Gautam Guin
Biqmind Pte Ltd, Singapore

Biqmind is an Industrial IoT start-up addressing safety & security issues primarily in Harsh & Hazardous environment like Oil & Gas Industry across Upstream, Midstream & Downstream as well as Mining, Construction etc.

We have designed from ground up a Positioning Safety & Security Solution with hardware design and development as well as software architecture tool set to address the challenges and issues in workers safety.

To deliver the solution we deploy open technologies like Cloud native Container based microservice foundation & Edge computing with every single component rated for hazardous area. (ATEX/IECx) (pls verify the abbreviated form?)

• Intrinsically Safe battery powered tags to provide constant update on worker position

• Solution architecture and network components designed based on 2.4GHz ISM band Wireless mesh for inherent reliability and self-healing characteristics.

• Built in Software framework powering IT & OT anywhere including proprietary mapping software and robust & stable edge data computing platform for possible other usage model and applications.

Biography

Gautam has over three decades of experience in the infrastructure technology space across areas such as server, storage, networking, software defined technologies and cloud. Starting out as a software engineer, he moved into network architecture/consulting before finding a clear edge in channel enablement and partnership/alliance development. He has built effective regional partner ecosystems for companies such as IBM, Intel, Motorola, Seagate & Juniper. An avid technologist, Gautam is a founding member of the Internet Alliance Malaysia and has regularly spoken at regional industry events such as Cloud Expo Asia, Cloud Asia, Australia Data Center Summit, Data Center World, OpenStack Forum.

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Mimoun Elboujdaini

ACME, USA

Effect of hydrogen on mechanical properties of low strength steels in oil & gas applications

Mimoun Elboujdaini
ACME, USA

Hydrogen-induced cracking in steel & environmental cracking mechanisms is one of several related mechanisms whereby absorbed hydrogen atoms can compromise the integrity of components manufactured of low strength steels. This course principally addresses environmental embrittlement mechanisms active in sour gas production - i.e., occurrences in pipelines and pressure vessels handling sour gas and oil (upstream and downstream operations), gas transmission pipelines, etc. Sulphide Stress Cracking (SSC) is one of numerous "environmental embrittlement" mechanisms whereby a metal or alloy exposed to an aqueous or moist gaseous environment containing hydrogen sulphide (H_2S) – a "sour environment" - can fail catastrophically. The deleterious effects of hydrogen can be reduced or even eradicated through cautious selection of base metals, weld metals, and fabrication practices, as well as adherence to procedures.

• **Extent of the Problem:** Occurrences in pipelines and pressure vessels handling sour gas and oil (upstream and downstream operations), gas transmission pipelines, etc.

• **Mechanisms:** Including the metallurgical and environmental conditions affecting the likelihood of HIC development. The related mechanism "Stress-Oriented Hydrogen-Induced Cracking" will also be described.

• Laboratory Testing Methods, and HIC-resistant steel purchase, quality assurance testing and acceptance criteria; e.g. HIC-resistance tests and steel specification, quality...etc.

• **Metallurgical Control:** New construction or replacement materials and specification of HIC-resistant steel.

• **Environmental Control Options:** Chemical inhibition, coatings, development of protective scales, etc. Understanding these factors is of great importance to minimize and control corrosion and material failure in many industrial applications as well as pipeline.

Understanding these factors is of great importance to minimize and control corrosion and material failure in many industrial applications as well as pipeline.

Biography

Mimoun Elboujdaini is a Research Scientist with over 30 years in material R&D and management and coordinator of projects on engineering materials, their properties and performance in various service environments. The projects covered oil & gas, pipeline, aluminium base alloys, stainless steels, mining industry, and aerospace materials, etc. He is an Active member of several international professional societies as chairman and/or as member of Board of Directors. He is also Chaired several national and international conferences. He reviewed numerous papers for scientific journals, and acted as editor books, PhD thesis examiner and reviewer of graduate programs at the universities and Adjunct professorship at the University of Alberta. He has won several National & International awards and recognitions.

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Scientific Tracks & Abstracts

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The monitoring system for oil pipeline

Ahri Lee
AP Technologies, South Korea

In this paper, we propose monitoring system for protecting oil pipeline using DAS (Distributed Acoustic Sensing) and FOC (Fiber Optic Cable). DAS and FOC are based on the fact that outdoor events could change the amplitude or speed of signal propagation and is based on the Rayleigh backscattered light. TPI (Third Party Intrusion) including oil pipeline theft produces an acoustic noise around the place of incidents.

In this proposed method, we installed FOC and oil pipeline the 150 cm underground. And when TPI occurs, it can detect the location of event location in real time and quickly.

This method can create a specific feather as well as a specific pattern in monitoring system.

One of this advantage can detect long distance monitoring system. It can be monitored up to 70km oil pipeline. This system might protect oil pipeline from oil theft as well as TPI.

DAS technology expands the applications for fiber optics use in the oil and gas industry.

Biography

Ahri Lee received the B.S. M.S. and PhD. Degree in Computer Science from the Kwangwoon University, Rep. of Korea, in 1994, 1996 and 2001, respectively. Since 1996, she has been a member of the teaching staff at Shinhan University and Seoil University, Rep. of Korea. Also, she has been at AP Technologies in Korea since 2016. Her research interests include image processing, pattern recognition, and DAS and DTS analysis.

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Gasoline Production Enhancement: Bench blend analysis using tertiary amyl methyl ether (TAME) – Case Study

Mohammed Alduhaimi
Saudi Aramco, KSA

Operating local Kingdom refineries to yield maximum gasoline production has always been a strategic approach to efficiently supply the gasoline network at minimum possible cost. Thus, with the rapid increase of automobile users the gasoline demand has increased significantly, therefore it is vital to sustain maximum gasoline production supply especially during Berth limitations, MTBE supply shortages, importation interruptions, etc.

This paper highlights a new gasoline blending strategy which considers an alternative octane booster supply for gasoline blending namely Tertiary Amyl Methyl Ether (TAME). A bench blend study was conducted at Ras Tanura Refinery Lab and the preliminary results indicated the feasibility of the blend and an opportunity to upgrade the light component streams to minimize Gasoline Reid Vapor Pressure (RVP) giveaway.

The benefits associated with adequate TAME blending results in upgrading the light components in the gasoline pool, minimizing export Naphtha and avoid 3MBD of gasoline production loss for every 1MBD of MTBE deficit which translates into an estimated cost saving of $2.5MM/year.

Biography

Mohammed S Alduhaimi is a chemical engineer graduated from University of Surrey in the United Kingdom. He joined Saudi Aramco in November 2015 and worked as a process engineer at Ras Tanura Refinery and then joined Refinery's Manufacturing Planning & Economics Unit. Mohammed is currently working in SA Oil Supply Planning & Scheduling Department and his main function is to engineer and optimize the Kingdom's East & Central refined products supply network by planning, operating and monitoring daily the integrated hydrocarbon system.

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Shale oil and shale gas potentialities of Barremian-Albian source rocks in Northern Tunisia

Rachida Talbi
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The Lower Cretaceous is a major petroleum source rock of the North, Northwest, and Northeast of Tunisia. These source rocks are spread over the paleogeographic area of the country which corresponded to the deep-sea paleogeographic domain "the Tunisian furrow" constituting the Northeast end of the southern margin of the Tethys (Fig1). The Hawk pyrolysis results with the geological and mineralogical data make it possible to define three types of unconventional source rock systems related to this domain. These mainly argilo-carbonated and marine-type II organic source rocks can be qualified as three types of unconventional system resources: Low thermal maturity shale oil hybrid system with a combination of juxtaposed organic-rich and organic-lean facies associated with open fractures, combination gas/oil hybrid system, and shale gas hybrid mudstone system. The first system is associated with very high organic matter richness. The transformation ratio recorded in this system ranges from 40 to 50%, hence the hydrocarbon generating potential (HGP) ranges from 50 to 60%. A fraction of this HGP, stored in the rock, is of free hydrocarbons associated with numerous faults creating tow "oil crossover" effects that indicate oil-saturated source rock levels. In the other two systems, the organic matter richness is greatly reduced by the high to a very high degree of maturity (corresponding to the dry gas window in the NW and the combination of oil and/or wet gas window for the NE). Retained hydrocarbons yet stored in shales can potentially be extracted via hydraulic fracturing. They are conserved as a dry gas (methane) in the NW basin and as oil and wet gas in the North and NE basins. The storage capacities in those basins are calculated using organic porosity as a result of the transformation and expulsion of hydrocarbons from the source rocks.

Biography

Rachida Talbi has her expertise in organic geochemistry applied to petroleum source rocks. Her in-depth knowledge of the basic disciplines of geology, in particular, geochemistry, sedimentology, biostratigraphy, and tectonics, allows her to carry out synthesis work on the genesis, migration and possible trapping of hydrocarbons on the geologic basin scale, both in the field of conventional and unconventional oil research. She has built this know-how after years of experience in academic research, teaching and supervision, as well as in the follow-up of research projects. The compilation of organic geochemistry data with observations and geological field studies explains many phenomena that organic geochemistry alone does not elucidate. After trying to work in the field of organic geochemistry of recent environments, she started research on biogenic methane produced in paralic areas (laguna and sebkha) as a future source of energy.

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A hybrid model for selecting horizontal candidate wells for Re-fracturing of tight oil reservoirs - A case study in MH oil field, Junggar Basin, Western China

Rui He
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The tight sandstone gas reservoir in southern Songliao Basin is naturally fractured and is characterized by its low porosity and permeability. Large-scale hydraulic fracturing is the most effective way to develop this tight gas reservoir. Quantitative evaluation of fracability is essential for optimizing a fracturing reservoir. In this study, nine fracability-related factors, particularly mechanical brittleness, unconfined compressive strength (UCS), mineral brittleness, cohesion, internal friction angle (IFA), natural fracture, fracture toughness, horizontal stress difference, and fracture barrier were obtained based on a series of petrophysical and geomechanical experiments. Taking above factors into consideration, a modified comprehensive evaluation model is proposed based on analytic hierarchy process (AHP) method. The UCS and IFA were removed from the AHP model based on the results of factor correlation analysis. The transfer matrix in the weighting procedure was applied to improve the consistency of judgment matrix, and the fuzzy matrix was employed to promote the objectiveness of final decision. The fracability evaluation of four reservoir intervals in Jinshan gas field was analyzed. Field fracturing tests were conducted to verify the feasibility of the proposed evaluation model. Results showed that the tubing pressure curve is more fluctuated in the reservoir interval with more developed natural fractures, and gas production is higher in the reservoir interval with greater fracability coefficient. The field test data coincide with the results of the proposed evaluation model.

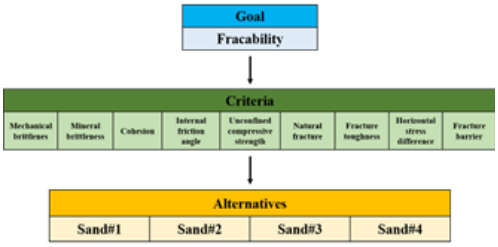

Figure 1. Hierarchy structure of analytic hierarchy process model for optimizing reservoir candidates

Biography

Rui He has his expertise in oil and gas reservoir stimulation mechanical and engineering technology. His fracability evaluation model based on AHP method creates a new pathway for candidate selection in naturally fractured sandstone reservoirs. The model is improved in many ways compared with previous similar models, and it was firstly applied in field test. The results show that the field test data coincide with the results of the proposed evaluation model very well. His work can help reduce irrational judgments of well selection for prioritized fracturing operation, and the engineering cost will decrease and more oil & gas may be obtained if his model is applied more widely.

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