1. Commercial application test of a FCC cocatalyst adaptability

Huang, Fenglin
Author affiliation: (1) Xian Petroleum Institute, Xian 710065, China
Database: Compendex
Data Provider: Engineering Village

2. Development of downhole closed-loop variable-gauge stabilizer

Yu, Zhiqing ; Fan, Zhengxiang
Author affiliation: (1) Xi'an Petroleum Institute, Xi'an, Shaanxi 710065, China
Abstract: The downhole closed-loop control technique of well trajectory is an advanced technique followed with interest by domestic and foreign drilling circles, even by all the petroleum circles. Its successful development marked a revolution in drilling technology. Since the 1990's, owing to economic reason, extended-reach wells have been first considered to be used for developing the beach and offshore oil and gas fields and downhole closed-loop variable-gauge stabilizer is the key of solving these problems, which are found in the extended-reach wells at present, such as how to exert weight on bit effectively, overcome frictional resistance and raise drilling speed, etc. The structure, working principle and well trajectory control method of the variable-gauge stabilizer are introduced in the paper, thus providing an effective way for solving the problem children of extended-reach wells, especially for raising drilling Speed and reducing drilling cost in beach and offshore oil and gas exploration in China. (3 refs)
Database: Compendex
Data Provider: Engineering Village

3. Advances in selective hydrogenation of C4 fraction

Xu, Hai-Sheng (1); Li, Qian-Ding (1); Ma, Jian-Ping (1)
Author affiliation: (1) Petrochem. Eng. Dept., Xi'an Petroleum Inst., Xi'an 710065, China
Abstract: Recfining process of C4 fraction via selective hydrogenation is an economic and convenient method. Typical selective hydrogenation processes of Institute Francais du Petrole (FR), Catalytic Distillation Technologies Corp. (USA) and Research Institute of Qilu Petrochemical Corp. are reviewed. Influences on the catalytic hydrogenation performance of catalysts by the support, the content and dispersion of palladium, and the promotor are also discussed. It is pointed out that combining the catalytic hydrogenation with distillation and solvent absorption, and developing innovative palladium-based bimetallic catalysts should become the focus of research work in the future. (15 refs)
Main heading: Hydrocarbons
Controlled terms: Butadiene - Catalysts - Economics - Hydrogenation - Palladium
Uncontrolled terms: Catalytic hydrogenation - Hydrocarbon fraction - Palladium dispersion - Selective hydrogenation
Classification Code: 802.2 Chemical Reactions - 803 Chemical Agents and Basic Industrial Chemicals - 804 Chemical Products Generally
Treatment: General review (GEN)
Database: Compendex
Data Provider: Engineering Village

4. Research and application of amine-gas desulphrization techniques in Changqing gas field

Wang, Yudong (1); Wang, Denghai (1)
Author affiliation: (1) Xi'an Petroleum Institute, Xinglongyuan Quarter, Xi'an, Shaanxi 710021, China
Abstract: Five sets of 2 × 106m3/d and one set of 4 × 106m3/d MDEA desulphrization devices were built up in Changqing Gas Field, however, the CO2 content in the purified gas didn't satisfy the pipeline transportation standard because of high H2S-CO2 ratios (90-160). For this reason, on the basis of analyzing the methyl diethanolamine (MDEA) selective desulphurization techniques applied in Changqing Gas Field at present, Some improved opinions

about the techniques of the desulphurization devices built up are proposed from the following aspects, such as the selection of desulphurization and decarbonization solutions, the determination of the crude material gas entering absorber temperature and the lean solution circulating procedure, the type selection of absorber structure, the selection of cylinder material of the stripping tower, and the distribution and detection of the temperatures in the absorber, etc., and some suggestions are offered on the techniques of the desulphurization devices planning to go to being built up. (17 refs)
Main heading: Natural gas fields
Controlled terms: Carbon dioxide - Decarbonization - Desulfurization - Gas fuel purification - Natural gas pipelines - Natural gas transportation
Uncontrolled terms: Desulphurization plants
Classification Code: 512.2.1 Natural Gas Fields - 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines - 802.2 Chemical Reactions - 804.2 Inorganic Compounds
Treatment: Applications (APP) - Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

5. Karst-controlled diagenesis and reservoir development: Example from the Ordovician main-reservoir carbonate rocks on theeastern margin of the Ordos basin, China

Wang, Baoqing (1); Al-Aasm, Ihsan S. (1)
Source: *AAPG Bulletin*, v 86, n 9, p 1639-1658, September 2002; **ISSN:** 01491423; **Publisher:** American Association of Petroleum Geologists
Author affiliation: (1) Department of Petroleum Geology, Xi'an Petroleum Institute, Xi'an 710065, China
Abstract: The Ordovician Majiagou Formation contains the main reservoir of the Ordos Central gas field in the Ordos basin. The producing zone at the top of member 5 consists of carbonate rocks modified during a long period of subaerial exposure and karstification from the Late Ordovician to the middle Carboniferous. On the eastern margin of the Ordos basin, the porosity of the exposed carbonate rocks of this unit ranges from 0.5 to 15.1%, and permeability ranges from 8%, and permeability ranges from <0.1 to 5 md. The main reservoir porosity is a dissolution-enhanced vuggy porosity, associated with dolomite. The carbonate rocks show great heterogeneity, reflecting the varying effects of karstification in creating and modifying porosity. Petrographic and geochemical analyses of various components in these carbonates provided evidence for depositional and diagenetic processes. The reservoir carbonates were deposited in shallow and restricted hypersaline environments and were later modified by karstification and burial diagenesis. Dolomitization appears to have resulted from mixing of marine and meteoric waters and probably occurred in both shallow and deep burial settings. Cementation by calcite also occurred in both shallow and deep environments, under different hydrodynamic conditions. Both depositional settings and diagenetic processes, such as leaching by meteoric water, paleokarstification, dolomitization, and cementation, controlled reservoir development. The outcrop and subsurface samples show similar petrographic features, porosity types, and geochemical characteristics, but the exposed section of the formation shows evidence of more alteration by meteoric water. (45 refs)
Main heading: Petroleum geology
Controlled terms: Calcite - Catchments - Leaching - Porosity
Uncontrolled terms: Diagenesis
Classification Code: 931.2 Physical Properties of Gases, Liquids and Solids - 804.2 Inorganic Compounds - 802.3 Chemical Operations - 512.1 Petroleum Deposits - 482.2 Minerals - 481.1 Geology - 444 Water Resources
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

6. The relation between demulsifying performance and structure of chain-extended polyethers modified with hexanedioic acid

Xu, Jia-Ye (1); Chen, He-Ping (1); Wang, Xiao-Ling (1)
Source: *Shiyou Xuebao, Shiyou Jiagong/Acta Petrolei Sinica (Petroleum Processing Section)*, v 18, n 2, p 48-53, April 2002; **Language:** Chinese; **ISSN:** 10018719; **Publisher:** Science Press
Author affiliation: (1) Dept. of Petroleum Chem. Eng., Xi'an Petroleum Inst., Xi'an 710065, China
Abstract: A kind of polyether was modified by chain extension method with hexanedioic acid, the relative molecular mass of which was detected through the terminal analysis method. The demulsifying properties of the products were evaluated through demulsification with Bohai viscous crude oil. The structural changes of the reactants during the reaction were followed by infrared spectrometry. Finally the relation between the demulsifying effect and the chain

extending modifiers at different reaction times was studied through the interfacial tension measurement with the mixture of crude oil, kerosene and the modifiers by the method of drop volume. It was shown that the demulsifying ability of the modifiers enhanced substantially, the percent of water separated increased with reaction time increase during initial half and five hours but decreased afterwards. The same tendency was observed in interfacial tension measurement with these modifiers. (18 refs)

Main heading: Polyethers
Controlled terms: Crude petroleum - Demulsification - Molecular structure - Surface tension - Thermoanalysis
Uncontrolled terms: Bohai viscous crude oil - Chain extension - Function groups - Hexanedioic acid
Classification Code: 512.1 Petroleum Deposits - 801 Chemistry - 802.3 Chemical Operations - 815.1.1 Organic Polymers - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Applications (APP) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

7. Effects of microstructure and heat-treatment on grooving corrosion of electric resistance welded pipes

Wang, Rong
Source: *Jinshu Xuebao/Acta Metallurgica Sinica*, v 38, n 12, p 1281, December 2002; **Language:** Chinese; **ISSN:** 04121961; **Publisher:** Chinese Academy of Sciences
Author affiliation: (1) Inst. of Mech. and Mat. Engineering, Xi'an Petroleum University, Xi'an 710065, China
Database: Compendex
Data Provider: Engineering Village
Compilation and indexing terms, Copyright 2023 Elsevier Inc.

8. Realizing hole trajectory closed-loop control by controllable decentralizer

Hu, Jinyan (1); Zhou, Jing (2); Fu, Xinsheng (2)
Source: *Tianranqi Gongye/Natural Gas Industry*, v 22, n 6, p 58-60+6-7, 2002; **Language:** Chinese; **ISSN:** 10000976; **Publisher:** Natural Gas Industry Journal Agency
Author affiliation: (1) Xi'an Jiaotong University, Xi'an, Shaanxi 710049, China (2) Xi'an Petroleum Institute, Xi'an, China
Abstract: At present, drilling is in a surface open-loop control condition on the whole and its frequent tripping operations make the drilling efficiency be reduced, the drilling cost be raised and even the designed well trajectory be difficult to be realized. Along with the unceasing increase in both displacement distance and well depth, the closed-loop control which can solve the question mentioned above has become a forward problem in drilling industry. The controllable decentralizer is an intelligent steering tool developed in combination with these techniques as microelectron, information, hydraulic pressure and control, etc. The hole trajectory automatic control can be realized through the closed-loop control system formed with the decentralizer, thus raising the accuracy of controlling hole trajectory and reducing the drilling cost. For this reason, according to the steering mechanism of the controllable decentralizer, the hole trajectory closed-loop control system with the controllable decentralizer and its control tactics are put forward and the closed-loop control method of wing panel cylinder pressure composite vector of the controllable decentralizer is discussed in the paper. The feasibility of this method was examined by simulation experiment, which is of important guiding significance for the controllable decentralizer's being applied on the spot.
Main heading: Natural gas well drilling
Controlled terms: Closed loop control systems - Computer simulation - Controllability - Problem solving - Well pressure
Uncontrolled terms: Hole trajectories
Classification Code: 512.1.2 Petroleum Deposits : Development Operations - 512.2.2 Natural Gas Deposits: Development Operations - 723.4 Artificial Intelligence - 723.5 Computer Applications - 731.1 Control Systems
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village
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9. Distributed optical fiber bragg grating sensor for simultaneous measurement of pressure and temperature in the oil and gas downhole

Qiao, Xueguang (1); Fiddy, Michael (1)

Author affiliation: (1) Department of Information Science, Xi'an Petroleum University, 2nd Dianzi Road, Xi'an 710065, China

Abstract: A new method of distributed fiber Bragg grating sensors with a linear CCD array demultiplexing technique for the simultaneous measurement of pressure and temperature is described. The optical source is a dual-wavelength light-emitting diode (LED). The sensing probe incorporates five pairs of double-wavelength fiber Bragg gratings along a single fiber for measuring axial pressure and temperature simultaneously in oil and gas pipelines. A linear CCD array based spectrometer is used for tracing the wavelength shift of the Bragg grating sensors. The tests were carried out in oil and gas pipelines, pressure resolution is 0.1 Psi, and temperature resolution is 0.1 °C. The measurement range of pressure and temperature is 0-100MPa and -20-180 °C respectively. (9 refs)

Main heading: Diffraction gratings
Controlled terms: Charge coupled devices - Demultiplexing - Fiber Bragg gratings - Gas pipelines - Light emitting diodes - Optical sensors - Pressure effects - Thermal effects
Uncontrolled terms: Gas downhole
Classification Code: 522 Gas Fuels - 619.1 Pipe, Piping and Pipelines - 714.2 Semiconductor Devices and Integrated Circuits - 716 Telecommunication; Radar, Radio and Television - 741.3 Optical Devices and Systems
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village

10. Present situation and envisagement of the surface engineering in Changqing-gas field

Wang, Denghai (1); Wang, Yudong (2)
Author affiliation: (1) CSTE Co. Ltd., Xinglongyuan Qarter, Xi'an, Shaanxi 710021, China (2) Xi'an Petroleum Institute, Xi'an, China

Abstract: Being taken as domestic gas and partially as industrial gas (e. g. power generation, synthetic methanol), etc., the marketable natural gas produced from Changqing Gas Field is mainly transported to the following cities as Beijing, Tianjin, Shijiazhuang and Yinchuan, etc. Changqing Gas Field is mainly composed of Jingbian, Yulin, Wushen Banner and Suline gas fields, in which a scale of $3400 \times 106m3/d$ has been built up in Jingbian gas field. Affer the principal basic circumstances, such as gas property, individual-well proration and natural condition, in Changqing Gas Field are simply stated, the present situation and envisagement of the surface engineering, including high pressure gas gathering, desulfurization, decarbonization, sour gas treatment, cryogenic separation and the other necessary small-size power-generating and methanol centralized recovery techniques, as well as a primary idea of recovering CO_2 in the future, etc., in Changqing Gas Field are emphatically introduced in the paper.

Main heading: Natural gas fields
Controlled terms: Decarbonization - Desulfurization - Low temperature effects - Methanol - Surface phenomena
Uncontrolled terms: Surface engineering
Classification Code: 512.2.1 Natural Gas Fields - 802.2 Chemical Reactions - 804.1 Organic Compounds - 931 Classical Physics; Quantum Theory; Relativity
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village

11. Joint inversion of induction/lateral/normal logs, case studies at Shenli field site, China

Liu, Zhenhua (1); Lin, Hao (2)
Author affiliation: (1) Xi'An Petroleum Institute, Xian 710065, China (2) Geology Science Research Institute of Shenli Oilfield, Dongying 257015, China

Abstract: The behavior of local convergence and nonunique solutions in electric-logging inversion problems make logging interpretation difficult. These negative effects are improved by joint inversion of induction- and galvanic-logging measurements. A two-dimensional joint inversion algorithm is suggested for the simultaneous estimation of formation resistivity, invasion depth and invasion-zone resistivity from field data containing a combination of induction array,

lateral and normal devices. Compared with single-log inversion of lateral and normal logs, the joint inversion not only improves the unfavorable local convergence of single inversion, but also constrains the range of possible solutions. Even if the initial guess values vary within a wide region, the joint inversion is fast to converge close to true values; it weakens the dependence of inversion results on initial guesses. In addition, these nonunique solutions are constrained in a limited domain by the present joint inversion technique, thus, the inconsistent interpretations that are usually caused by traditional single-log approach can be avoided. Case studies also illustrate that the present joint inversion of induction/lateral/normal logs provides a reasonable and efficient algorithm that allows for improving the accuracy of the results, enhancing the reliability of formation parameter estimation, and in most cases reducing the uncertainty of hydrocarbon saturation. © 2002 Elsevier Science B.V. All rights reserved. (13 refs)
Main heading: Crude petroleum
Controlled terms: Algorithms - Electric logging - Oil fields - Parameter estimation
Uncontrolled terms: Joint inversions
Classification Code: 512.1 Petroleum Deposits
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village
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12. Effect of aging on shape memory effect in Fe-14Mn-5Si-8Cr-4Ni-0.2C alloy

Li, Ning (1); Wen, Yu-Hua (1); Xu, Yong-Gang (1); Tu, Ming-Jing (1); Li, Ping-Quan (2); Liu, Ying-Lai (2)
Author affiliation: (1) Dept. of Mat. Shaping, Sichuan Univ., Chengdu 610065, China (2) Xi'an Petroleum Pipe Res. Inst., Xi'an 710065, China
Abstract: The effects of aging on the shape memory effect and the microstructure in Fe-14Mn-5Si-8Cr-4Ni-0.2C alloy were studied. The results show that aging after deformation has a much more remarkable improvement in shape memory effect than through aging free deformation. The shape recovery ratio in the alloy can be increased by 190% through aging after deformation, while it can be only increased by 83% through aging free deformation. As compared with aging free -deformation, SEM and TEM analysis show that aging after deformation reduces the amount of the second phase particles and suppresses its growth-up when the aging time is the same. It makes the second phase particles precipitate mainly in grain boundary. (9 refs)
Main heading: Iron alloys
Controlled terms: Aging of materials - Deformation - Microstructure - Shape memory effect
Uncontrolled terms: Line scan analysis - Shape recovery ratio
Classification Code: 421 Strength of Building Materials; Mechanical Properties - 531.2 Metallography - 545.2 Iron Alloys - 931.2 Physical Properties of Gases, Liquids and Solids
Treatment: Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village
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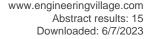## 13. A method of searching audio file query by example

Li, Ying (1); Hou, Yibin (1); Song, Xinke (2)
Author affiliation: (1) Comp. and Info. Technol. Institute, Xi'an Jiaotong University, Xi'an 710049, China (2) Dept. of Computer Science, Xi'an Petroleum University, Xi'an 710065, China
Abstract: This paper proposed a method of searching audio files using query-by-example. Upon production the best base, we expatiated the method which transform the best base sub-space into the numerical value denote format of the best base sub-space. Using the numerical value denote format, we proposed crunode structure of the AVL-like search tree. Depended on the node structure, we proposed the search method of the audio data in the best base, using the best base search to AVL-like tree, to implement the credibility search in audio data. It was compared for the two methods of the proposed search arithmetic and the search method that based on wavelet transform by the tense, and the validity of the method was tested. (13 refs)
Main heading: Intelligent control

Controlled terms: Acoustic signal processing - Digital arithmetic - Mathematical transformations - Numerical methods - Query languages
Uncontrolled terms: Audio file query - Search arithmetic
Classification Code: 723.4.1 Expert Systems - 731.1 Control Systems - 921.3 Mathematical Transformations - 921.6 Numerical Methods
Treatment: Theoretical (THR) - Experimental (EXP)
Database: Compendex
Data Provider: Engineering Village
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14. The study of eddy current losses in coaxially insulated windings of power transformer

Wang, Shishan (1, 2); Ji, ShengCheng (1); Li, Yanming (1)

Author affiliation: (1) College of Electrical Engineering, Xi'an Jiaotong University, Xi'an; Shaanxi; 710049, China (2) Department of Automation and Power System Engineering, Xi'an Petroleum Institute, Xi'an; Shaanxi; 710065, China

Abstract: On the condition of neglecting demagnetization of eddy current, eddy current losses inside transformer windings consisting of round stranded conductors were studied with the leakage magnetic field method. In order to obtain higher precision, the formulae of calculating eddy current losses about transformer windings were modified with the A-ϕ_A method while considering the demagnetization. Comparing the eddy current losses of calculating values with measurement data on a model coil, the validity of the calculating method of eddy current losses were verified while the strands are not insulated mutually. Finally, eddy current losses inside windings of a tri-phase transformer were simulated and calculated, whose windings consisted of stranded conductors. As a result, it is illustrated that insulating the conductors of transformer windings is very important, otherwise the eddy current losses of a large power transformer are so huge that applying this type of transformer is difficult. © 2002 IEEE. (8 refs)

Main heading: Finite element method
Controlled terms: Magnetic leakage - Power transformers - Transformer windings - Eddy currents - Winding - Demagnetization
Uncontrolled terms: Calculating methods - Eddy current-loss - Large power transformers - Leakage magnetic field - Phase transformers - Power cables - Proximity effects - Stranded conductors
Classification Code: 691.2 Materials Handling Methods - 701.1 Electricity: Basic Concepts and Phenomena - 701.2 Magnetism: Basic Concepts and Phenomena - 704.1 Electric Components - 706.2 Electric Power Lines and Equipment - 921.6 Numerical Methods

Database: Compendex
Data Provider: Engineering Village
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15. Evaluation of gas release rate through holes in pipelines

Yuhua, Dong (1); Huilin, Gao (2); Jing'en, Zhou (1); Yaorong, Feng (3)

Author affiliation: (1) Material Science and Engineering Institute, Xi'An Jiaotong University, 710049, Xi'an, China (2) Department of Mechanical Engineering, Xi'An Petroleum University, 710065, Xi'an, China (3) Tubular Goods Research Center, CNPC, 710065, Xi'an, China

Abstract: A mathematical model of an accidental gas release in a long transmission pipeline is presented in terms of computational fluid mechanics. It was found that the hole model is suitable for the release of gas through a small hole, while the pipe model is suitable for the gas release through a hole corresponding to the complete breaking of the pipe. In this paper, a new model was proposed for a hole that lies between both these situations. The results of the example show that when the initial inside pressure is higher than 1.5 MPA, the mass of gas released during the sonic flow is more than 90% of the total mass of gas released. The average release rate of the total release process could be substituted by the average release rate of the sonic flow, or by 30% of the initial release rate. This approximation would

become more accurate with the increase in the initial inside pressure. © 2002 Elsevier Science Ltd. All rights reserved. (6 refs)

Main heading: Process engineering
Controlled terms: Computational fluid dynamics - Gases - Loss prevention - Mathematical models - Pipelines
Uncontrolled terms: Gas release rate - Sonic flow
Classification Code: 931.2 Physical Properties of Gases, Liquids and Solids - 931.1 Mechanics - 921 Mathematics - 913.1 Production Engineering - 802 Chemical Apparatus and Plants; Unit Operations; Unit Processes - 723.5 Computer Applications - 619.1 Pipe, Piping and Pipelines
Treatment: Theoretical (THR)
Database: Compendex
Data Provider: Engineering Village
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