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Protection Works against Erosion: The Wadis of Abu-Aisha, Libya

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Being one of the arid countries, Libya has got lots of wadis located throughout the country. This study relates to the wadis of Abu-Aisha agriculture project, which is located in the north-west of the country. Three main wadis run through this project, namely, Wadi Ar-Rabt, wadi Al-Ubaytir and wadi Al-Khirwa. During excessive periods of rainfalls, these wadis cause problems to farms due to floods. In order to protect Abu-Aisha agriculture project, protection of banks of wadis from floods and erosion are required. The main focus of this study is to prepare a detailed protection work plan to protect the project. To carry out this duty, meteorological data have been collected and runoff estimation in each wadihave been calculated. Further, the sections of wadis, which need protection, have been identified. A design approach is presented by which all the physical and hydraulic characteristics of the wadis have been evaluated. This design approach includes design factors, types of flows and design steps. The outcome of the study recommends the use of Rock Riprap. It is the most suited because of the availability of materials in the field nearby, ease of construction and maintenance.

Keywords: *Wadi, floods, erosion, protection work, Rock Riprap*

Sensitivity Analysis for the Predicted Failure Paramaeters of Wadi Libda (Liptos) Dam

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Wadi Libda dam (Libya) was taken as a case study. Two major mathematical models have been employed as a tool to study the dam's break, namely BREACH for predicting failure parameters and FLDWAV (flood wave routing) to simulate the flow routing of the dam break problem. The predominant mechanism of the breaching of the studied dam was selected duo to piping phenomenal. Mathematical parameters such as breach characteristics and the time of failure were obtained as output values from BREACH model, and were used as inputs data for the FLDWAV. Topographic contour map (1/10000) was used to determine the cross-section channel of the Wadi. Fixed roughness coefficient values were assumed in the simulation. Sensitivity analysis was conducted for predicted failure parameters with simulation of flow routing after the break of the dam. Several computer runs are performed; each represents one scenario of failure, and is formed from unique combination of simulation parameters. Five main groups are recognized according to the findings in concern. Sensitivity analysis for breach parameter showed that the time of failure, final breach bottom width and shape factor have the most effects on the different parameter respectively, also the peak discharge and water surface elevation are the most parameters that affected by the time of failure. Routing results are sensitive to the values of Manning roughness coefficients. Finally, the time of traveling wave from the dam's location to the end of downstream was found to be (1.25hr) which would be not enough for warning.

Keywords: Libda dam, Sensitivity Analysis, Dam failure's behavior, piping failure.

Investigations on Some Properties of Two-Stage (Pre-Placed Aggregate) Concrete

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Two-stage concrete (TSC) is a simple concept; it is made using the same basic constituents as traditional concrete: cement, coarse aggregate, sand and water as well as mineral and chemical admixtures. The main benefits of the method are widely appreciated as low heats of hydration, high compressive strengths and density, economic savings, practically no mass shrinkage, low coefficient of thermal expansion, excellent bond to existing structures. As the name would suggest it is produced through a two-stage process. Firstly washed coarse aggregate is placed into the formwork in-situ. Later a specifically designed grout is introduced into the form from the lowest point under gravity pressure to fill the voids, cementing the aggregate into a monolith. This paper presents the effect of the grout proportions on the compressive and tensile strength of the TSC. The relation between the tensile strength and compressive strength of TSC was obtained. It was found that for constant water-to-cement (w/c) ratio, the effectiveness of different cement-to sand (c/s) ratios (in the tested range) on the mechanical properties (compressive and tensile strength) of TSC was not significantly different.

Coding Techniques

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Shannon and Hamming in 1949 have given a powerful techniques for achieving reliable data transmission using coding techniques. In this paper, we analyze the performance of two coding techniques, which are the Convolutional code and the Turbo code. The Convolutional code with Viterbi decoder soft and hard decisions, the turbo code with random interleaver, and the channel is the AWGN, are all considered for the simulation in this work. For the same message length and the same channel distortion the coding techniques considered in this work are compared. This paper demonstrate that Turbo code exhibit a better performance in comparison to the Convolutional code especially at low signal to noise ratio. The Convolutional coding using Viterbi decoder soft decision provides coding gain of 2 dB in comparison to Viterbi decoder hard decision. Also the codec system exhibit a far better performance in comparison to non codec system that uses modulated QPSK only.

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A New Experimental Technique for Measuring Both the Average and Instantaneous Torque of Savonius Wind Turbines

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The idea of designing the vertical axis windmill by Svonius was based on the principle of Flattener's rotor ship. The majority of performance results for these types of rotor have been obtained experimentally, and most of these experimental results are only related to the average performance (average torque and power).for example Izumi Ushiyama and Hiroshi Nagai [2] have experimentally determined the effects of the main design parameters on the aerodynamic performance of the rotors. Mozamel H. Khan [3] carried out a similar study and obtained similar results. From the previous studies it can be noticed that none of the previous researches have studied experimentally the instantaneous performance of the Savonius rotor. The analytical method described in [1] is applied to calculate the instantaneous torque of the Savonius rotor at any orientation and rotational speed. In this paper a new experimental technique has been developed to provide information about the average torque and variation of torque within a cycle. The agreement between these experimental results and the theoretical results show that they predict both the time averaged and the instantaneous performance. In this paper three models of Savonius rotor are used, the first and the second model are semi-circle (b/c= 0.0, b/c =0.25) and the third is Bach model Agreement with theoretical results for two different Savonius blade shapes tested has been excellent.

Keywords: Savonius; Rotor; Windmill; Vertical axis turbine; blades

http://www.irec-conference.com/files/Table_of_content.pdf

ELD79-LGD2006 Transformation Techniques Implementation and Accuracy Comparison in Tripoli Area, Libya

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Libya established during the last decade a new Geodetic Datum called Libyan Geodetic Datum 2006 (LGD 2006) using GPS whereas the ground traversing method was used to establish the last Libyan datum which was called the Europe Libyan Datum 79 (ELD79). The current research paper introduces ELD79 to LGD2006 coordinate transformation technique and the accuracy comparison of transformation between multiple regression equations and the three – parameters model (Bursa-Wolf). The results obtained show that the overall accuracy of stepwise multi regression equations is better than that can be determined us in Bursa-Wolf transformation model.

Keywords: Geodetic datum, horizontal control points, traditional similarity transformation model, unconventional transfor.

http://waset.org/publications/9997640/eld79-lgd2006-transformation-techniques-implementation-and-accuracy-comparison-in-tripoli-area-libya

Study of the Impacts of Some Domestic Pollutants on the Freshwater Fish Community in the Klang River, Malaysia

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This study was carried out to determine the effects of sewage pollution on the fish assemblages found in the Klang River. Samples were collected between July 2012 and April 2013 with a total of 102 specimens belonging to 5 freshwater fish species, *Puntius hexazona, Betta livida, Neohomaloptera johorensis, Parosphromenus harveyi* and the dominant species, *Rasbora sumatrana*, with the highest dominance value (Di%=36.66). Multiregression revealed a statistically insignificant relationship among the physical, chemical and biochemical parameters of water and sediment and *Puntius hexazona, Betta livida, Neohomaloptera johorensis* and *Parosphromenus harveyi.* Based on multiple regression tests, a significant relationship with $R^2 = 92.2\%$ and F= 7.876 (p= 0.000) was found between six water and sediment quality constituents and the numbers of *Rasbora sumatrana* this species at the stations studied at Site 8. On the other hand, water temperature (β= -0.114; t= -2.811 (p= 0.016)); sediment organic matter (β= -0.011; t= -2.406 (p= 0.033)) and water phosphorus (PO_4) (β= 0.323; t= 3.444 (p= 0.005)) were found to be the most important water and sediment parameters effecting *Rasbora sumatrana*.

Keywords: Domestic discharge, fish community, chordate, Malaysia.

Estimation of Wind Energy in Libya

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Estimation of wind characteristics is considered as the first essential step to evaluate a wind energy project based on information about all aspects of the implementation and operation of the project. It's therefore necessary to have detailed knowledge of the wind to select the suitable wind turbine for a certain zone and also to estimate its performance accurately. Various parameters need to be known of the wind, including the mean wind speed, directional data, and variations about the mean in the short term (gusts), daily, seasonal and annual variations, and variations with height. These parameters are highly site specific and can only be determined with sufficient accuracy by measurements at a particular site over a sufficiently long period. This paper studies the wind energy and wind assessment in some selected sites such as Derna, Musrata, Zuara and Sebha. This paper first provides background information about wind power and its resource, including a review of available data, which are obtained from the representative meteorological stations. For each location, long term time series of 3-hourly measured wind data were used; the wind data has been recalculated to represent the actual wind speed at hub height. The mean wind speed, the Weibull distribution, annual energy and annual capacity factor are calculated for each site. The annual energy and annual capacity factor calculation are based on specification of wind turbine known as Ventis v-12 which has a power curve as shown in Figure 10. This study indicates that wind energy is available in some sites in Libya, and Derna has the maximum power, annual energy and capacity factor.

Keywords: wind assessment; annual energy; wind power; wind energy; Weibull distribution

http://www.aerodept.edu.ly/Staff/Ali-Alrabty-E.htm

https://inis.iaea.org/search/search.aspx?orig_q=RN:44084863

Use of Steel Fibers in Strengthening Concrete Subjected to High Temperatures

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The performance of concrete subjected to high temperatures is of a great concern considering the severe conditions that this concrete is subject to. These conditions may lead to the relatively rapid deterioration of concrete in high temperature applications such as the case of iron and steel plants or cement factories in case of inappropriate selection of materials or poor concrete practice. In view of the above, this study is aimed to investigate the effect of using steel fibers in concrete to enhance its properties and make it able to withstand high temperatures (300°C and higher) around the furnaces in the plant No. 1 of the Libyan Iron and Steel Company, LISCO, located in Misurata, Libya. Both conventional concrete and refractory concrete where not successful at this temperature level, and this led to frequent interruptions of the production because of the need to frequent concrete repair. The experimental program included investigating the behavior of nine different fiber concrete mixes made with three steel fibers volume fractions (0.5%, 1.0% and 1.5%) and with three W/C values (0.38, 0.44 and 0.50). The results of compressive strength, flexural strength, ultrasonic pulse velocity and drying shrinkage were compared to control plain concrete made with the same W/C's. Comparisons of test results were made also between samples kept at room temperature (around 24°C) and those subjected to high temperature at the steel plant. The study revealed that steel fiber reinforced concrete (SFRC) lost only 6 % of its initial compressive strength after about 8 months of service at high temperature, compared to a loss of 18 % in the control plain concrete, where the loss in flexural strength was 21 % and 37 % respectively. Furthermore, SFRC experienced drying shrinkage of only 60 % of that of the control concrete after 210 days in the high temperature environment.

Keywords: Compressive Strength, Drying Shrinkage, Flexural Strength, High Temperatures, Steel Fiber Reinforced Concrete.

http://www.ce.ncsu.edu/srizkal/publications/conference_proceedings

Case Study for an Improvement of Cellular Network Using Swarm Intelligence

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The planning in cellular networks has critical impact on the quality of service objectives. One of the crucial planning issues is the planning of Location Area (LA). The goal of LA planning is to partition the network into a given number of location areas such that paging and registration costs are minimized. This paper addresses the LA planning problem using Particle Swarm Optimization (PSO) based approach for an existing cellular network. The approach is applied to an existing network layout with real data and realistic constrains. Potential improvement is achieved in terms of paging and location registration costs.

Keywords: Particle Swarm Optimization, GSM Network, Location Management in Cellular Networks, Location area planning, Swarm Intelligence.

http://nngt.org/digital-library/upload/conference1/p8.pdf

Local Buckling of Web-Core and Foam-Core Sandwich Panels

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Sandwich construction is widely accepted as a method of construction especially in the aircraft industry. It is a type of stressed skin construction formed by bonding two thin faces to a thick core, the faces resist all of the applied edge loads and provide all or nearly all of the required rigidities, the core spaces the faces to increase cross section moment of inertia about common neutral axis and transmit shear between them provides a perfect bond between core and faces is made. Material for face sheets can be of metal or reinforced plastics laminates, core material can be metallic cores of thin sheets forming corrugation or honeycomb, or nonmetallic core of Balsa wood, plastic foams, or honeycomb made of reinforced plastics. For in plane axial loading web core and web-foam core Sandwich panels can fail by local buckling of plates forming the cross section with buckling wave length of the order of length of spacing between webs. In this study local buckling of web core and web-foam core Sandwich panels is carried out for given materials of facing and core, and given panel overall dimension for different combinations of cross section geometries. The Finite Strip Method is used for the analysis, and FORTRAN based computer program is developed and used.

Keywords: Local Buckling, Finite Strip, Sandwich panels, Web and foam core.

http://the-internationaluniversity.org/search?q=Neutral%20axis

New Coordinate System for Countries with Big Territories

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The modern technologies and developments in computer and Global Positioning System (GPS) as well as Geographic Information System (GIS) and total station TS, become very important in present time for mapping and coordinate computation all over the world. This paper presents a new proposal for coordinates system by a harmonic equations "United projections", which have five projections (Mercator, Lambert, Russell, Lagrange, and compound of projection) in one zone coordinate system width 14 degrees, also it has 1 degrees for overlap between zones, as well as two standards parallels for zone from 10 S to 45 S. Also this paper presents two cases; first case is to compare distances between a new coordinate system and UTM, second case creating local coordinate system for the city of Sydney to measure the distances directly from rectangular coordinates using projection of Mercator, Lambert and UTM; All results compared by geodesy indirect problems.

Keywords: harmonic equations, coordinate system, projections, algorithms and parallels.

http://waset.org/publications/9998037/new-coordinate-system-for-countries-with-big-territories

Spoken Arabic Digits Recognition Using Discrete Wavelet Transform

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In this paper, we propose a scheme for recognizing isolated spoken Arabic digits, based on the Discrete Wavelet Transform (DWT) features. The Discrete Wavelet Transform is a transformation that can be used to analyze the temporal and spectral properties of non-stationary signals like audio, based on the time-frequency multi-resolution property of wavelet transform. In this paper, the extracted wavelet coefficients from audio speech used in the recognition of spoken Arabic Digits. The performance of the Discrete Wavelet Transform as recognition features for recognizing spoken Arabic digits is considered for different scales of wavelet signal and different Wavelet families. In general, the recognition of spoken Arabic digits with Daubechies wavelet family is more efficient than all other tested wavelet families. In our experiments we note that the recognition performance of spoken Arabic digits using wavelet family is not very effective.

Keywords: Wavelet, Discrete Wavelet, Spoken Digits, Speech Recognition.

An Analytical Model for Estimating Execution Cost of 1D Array Expressions

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Compiler writers have developed various techniques, such as constant folding, subexpresison elimination, loop transformation and vectorization, to help compilers in code optimization for performance improvement. Yet, they have been far less successful in developing techniques or cost models that compilers can rely on to simplify parallel programming and tune the performance of parallel applications automatically. This paper is the first of two-phase study to develop an analytical model that can be used to estimate the cost for sequential and parallel execution of array expressions on multicore architectures. While this paper discuss the possibility of developing a cost model to estimate the sequential execution of array expressions on a single CPU, the second part of the investigation shall focus on developing a model to estimate parallel execution of arrays on multicore platforms. The model presented in this paper is expected to be used by programming language compilers as complement component with the other model to estimate and subsequently decide whether to parallelize individual array expressions or not. The preliminary results which are presented here show that this model can give a satisfactory evaluation and high-precision estimation for the cost of executing a regular array expression on a single core processor.

Keywords: compiler techniques; array expressions; cost model; optimizing; parallelizing

http://www.ec.uot.edu.ly/wp-content/uploads/2015/05/An-Analytical-Model-for-Estimating-Execution-Cost-of-1D-Array-Expressions-CSIT2014.pdf

A New Correlation to Estimate the Radius of Investigation

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Transient testing for reservoir volume investigation is crucial for determining pressure transient on exploration wells. In general, for exploration wells, reservoir volume investigation is one of the major objectives of performing a drill stem or production test. The radius of investigation is largely applied in well testing designing and reservoir volume investigation. It also has additional implications in locating new wells, estimating reserves, and identifying the position of geological faults. Radius of Investigation has been given several definitions; although these definitions may differ from one another, they all relate the radius of investigation to the pressure disturbance propagation. As time progresses, the pressure gradient advances further and further into the formation. This concept is not theoretically precise, but it is considered adequate for practical applications. In theory, once the pressure disturbance is initiated at a producing well, it will occur in a rapid manner, with a minimal pressure change at all points in the reservoir. However, at a fixed distance from the well, this effect of pressure disturbance will be relatively small as to be quantitative. The measured distance to this recorded point is called the radius of investigation. Different rock and fluid parameters were entered into the CMG (Computer Modelling Group software) vertical well model to monitor the pressure response and the distance for the radius of investigation. The input parameters were then carefully selected using stepwise regression analysis based on their level of impact on the radius of investigation in order to develop the empirical correlation to estimate the radius of investigation. The correlation is a function of oil flow rate, time, permeability, porosity, bed thickness and total compressibility factor. The model provides high accuracy with high R2 and very low mean absolute relative error.

امكانية استخلاص الشوائب من خام حديد وادي الشاطئ بالتعويم الرغوي

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يتمحور هذا البحث حول دراسة إمكانية استخدام الفصل بالتعويم الرغوي في تركيز حديد وادي الشاطئ حيث تم تصميم خلية تعويم خاصة بالدراسة والقيام بزيارات ميدانية إلى اماكن ذات علاقة باستخدام الخام وجمع البيانات المتعلقة بحديد وادي الشاطئ والإطلاع على الدراسات السابقة، ديسيو (Desio) سنة (1943م)، مولر (Muller) سنة (1954م)، قود آرزى (Goudarzi) سنة (1958م)، و مركز البحوث الصناعية سنة (1975م) التي أفادت بإمكانية استغلال خامات حديد وادى الشاطئ في إنتاج الحديد الغفل بتقنية الأفران اللافحة إلا أن تكاليف نقله من مصادره جنوب البلاد إلي مواقع استغلاله على الساحل الليبى وارتفاع نسب شوائبه وخاصة نسبة الفوسفور أعاق استغلاله بمجمع الحديد والصلب مصراته. وتتركز خامات الحديد في نطاقين اساسيين يعرف الاسفل منهما باسم " التكوين الاسفل الحامل لخام الحديد " ويعرف النطاق العلوي الذي يفصله عن التكوين الاسفل طبقات طينية باسم " التكوين العلوي الحامل لخام الحديد " ويوجد خام الماجنيتيت (Fe3O4-Magnetite) بدرجة عالية بمنطقة جنوب تاروت إلى جانب الاكاسيد الحديدية والخامات الأخرى. تعتبر الخطوة الأولى في استخلاص الحديد هي عملية تركيز الخام أي زيادة نسبة الحديد في الخام وتقليل نسبة الشوائب المختلطة به، وتستخدم الطريقة المغناطيسية غالبا لفصل خام الماجنيتيت (Magnetite) عن الشوائب ومعظمها من الأتربة والرمال وذلك بعد تكسير الخام إلى قطع صغيرة وطحنه إلى درجة النعومة، ثم تجرى عملية تحويل كل مركبات الحديد غير الاكسيدية إلى أكسيد الحديديك ((Magnetite)) حيث يتم التخلص من الرطوبة وثاني أكسيد الكربون وبعض شوائب الكبريت والفوسفور ويصبح الخام أكثر مسامية فتسهل بذلك عملية اختزاله. من هذه الدراسة تم التوصل الى أن باستخدام طريقة التعويم الرغوي ثم الاختزال تم إزالة الشوائب الغير مرغوب فيها، وزيادة محتوى الحديد بتحول مجموعة الهيدروكسيدات المتمثلة في الجيوثيت (Goethite) بنسبة (30%) و هيدريت الزايولايت (Iron Aluminum Silicate Hydrate Zeolite) بنسبة (25%)الى مجموعة الأكاسيد المتمثلة في كلا من المجناتيت (Magnetite) بنسبة (35%) والهيماتيت (Hematite) بنسبة (25%) الى جانب ظهور شاموسيت(Chamosite) بنسبة (27.5%) وننترونايت (Nontronite) بنسبة (22.5%). و هذا يعتبر مؤشر هام على إمكانية استغلال خامات حديد وادى الشاطئ في إنتاج الحديد والصلب بتوفر هذه التقنية والإمكانيات لزيادة نسبة الاكاسيد الحديدية بدرجة عالية.

Characterization of Carbides Composite Surface Layers Produced by (PTA)

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Composite surface layer of nickel base with titanium carbide in powder form was deposited on to surface of low alloy steel 18G2A type according to polish standard by using plasma transferred arc technique. Results showed that, plasma transferred arc hard facing process was successfully conducted by using PMNICr50P alloy plus titanium carbide powders. Maximum hardness of 754 HV and minimum dilution of 4.6 % were achieved by using an arc current of 80 A. However, when the current was further increased to 120 A & the dilution increases with current increase while the hardness decreases. Microstructure of the nickel base with titanium carbide feature uniform distribution of reinforcement particles with irregular grain shape and relatively small particles size, and irregular boundary line between the substrate and over layer with presence of black area along the boundary line. A few micro – porosities are located in the matrix.

Impacts of Salinity on CO_2 Turnover in Some Gefara Soils of Libya

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Salinization is a major threat to the productivity of agricultural land. The Gefara Plain located in the northwest of Libya; comprises about 80% of the total agricultural activity. The high water requirements for the populations and agriculture are depleting the groundwater aquifer, resulting in intrusion of seawater in the first few kilometres along the coast. Due to increasing salinity in the groundwater used for irrigation, the soils of the Gefara Plain are becoming increasingly saline. This research paper investigated the sensitivity of these soils to increased salinity using CO_2 evolution as an integrating measure of soil function. Soil was collected from four sites located in the Gefara Plain, Almaya, Janzur, Gargaresh and Tajura. Soil collected from Tajura had the highest background salinity, and Janzur had the highest organic matter content. All of the soils had relatively low organic matter content, ranging between 0.49 - 1.25 %. The cumulative rate of $^{14}CO_2$ of added ^{14}C-labelled Lolium shoots (*Lolium perenne* L.) to soils was decreased under effects of water containing different concentrations of NaCl at 20, 50, 70, 90, 150 and 200 mM compared to the control at any time of incubation in four sites.

Keywords: Soil salinity, Gefara Plain, Organic matter (OM), ^{14}C-labelled Lolium shoots.

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Concrete with Recycled Aggregate Produced by Two stage (Preplaced Aggregate) Method

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This study investigated the compressive and tensile strength of concrete made with recycled concrete aggregate gathered from demolition sites. 30% of both coarse and fine normal aggregate was replaced by recycled aggregate. The concrete was produced by the normal or the two-stage production method, in which coarse aggregate is first placed in a mold, and then grout injected via a pipe to fill the voids between the coarse aggregate. At water-cement ratios of 0.55 a compressive strength of about 20 N/mm2 (2.9 ksi) was obtained for both normal and recycled aggregate concrete, produced by both the normal and the two-stage production method. However, the two-stage production method resulted in a slightly lower tensile strength than the regular production method. These results suggest that recycled aggregate can be used for concrete structures.

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ملخصات المنشورات العلمية
مركز البحوث والاستشارات والتدريب

Using of TCSC and SSSC to Control the Power Flow and Oscillation Dampi

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The development of the modern power system has led to an increasing complexity in the study of power systems, and also presents new challenges to power system stability, this study investigates the improvement of power flow control and oscillation damping, by using TCSC and SSSC which is an effective FACTS device. Power system oscillation has been recognized as one of the major concerns in power system operation. Simulations are carried out in Matlab/Simulink environment to evaluate the effectiveness of Fixed Capacitor (FC), Thyristor Controlled Series Capacitor (TCSC), and Static Synchronous Series Compensator (SSSC) on three-machine power systems. The performance of TCSC is compared with FC and other FACTS devices such as Static Synchronous Series Compensator (SSSC).The simulation results show that in damping power system oscillations, the SSSC is more effective than TCSC and FC. In addition, the implementation of TCSC and SSSC to control the flow of power in apart of Libyan 220Kv ring around Tripoli center and specifically to reduce the loading of highly loaded transmission line in this network is presented.

www.sdiwc.net/digital-library/web-admin/upload-pdf/00000968.pdf

Matlab/Simulink Simulation of Solar Energy Storage System

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This paper investigates the energy storage technologies that can potentially enhance the use of solar energy. Water electrolysis systems are seen as the principal means of producing a large amount of hydrogen in the future. Starting from the analysis of the models of the system components, a complete simulation model was realized in the Matlab-Simulink environment. Results of the numerical simulations are provided. The operation of electrolysis and photovoltaic array combination is verified at various insulation levels. It is pointed out that solar cell arrays and electrolysers are producing the expected results with solar energy inputs that are continuously varying.

Keywords: electrolyzer, Simulink, solar energy, storage system.

http://waset.org/publications/9997543/matlab-simulink-simulation-of-solar-energy-storage-system

خامات الأطيان (كاوؤلين) فى جنوب غرب ليبيا وإمكانية استخدامها فى إنتاج الطوب الحراري المنخفض الالومينا.

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شهدت الدول العربية فى السنوات الأخيرة طفرة صناعية كبيرة، جعلتها تستهلك سنوياً كميات كبيرة من مختلف الحراريات لسد حاجتها من هذه المواد، ولإدامة صناعاتها الاسمنتية والحديد والصلب، وفى تكرير النفط وصناعة الزجاج وغيرها، وجل هذه الحراريات يتم استيرادها من الخارج وبكلف عالية ، وتعتبر الحراريات من النوع الالومينى اكثر الحراريات استخداماً فى هذه الصناعات، وخاماته الرئيسة هى الكاوؤلين (حراريات واطئة الالومينا) والبوكسايت (حراريات عالية الالومينا)، وليبيا من بين هذه الدول المستوردة لهذه المواد، مع العلم بأن هناك ثلاثة دول عربية فقط تنتج نوع او اكثر من الحراريات وهى المغرب ، تونس ، ومصر، واهم منتجاتها من النوع الواطئ الالومينى، وبطاقات انتاجية متواضعة، الى جانب استيرادها لبعض المواد من الخارج. تحظى ليبيا بتواجد كميات وفيرة من الأطيان (الكاوؤلين) فى مواقع جغرافية متفرقة من البلاد، صالحة لصناعة الطوب الحرارى من النوع الواطئ الالومينا، والورقة تسليط الضوء على هذه الخامات، وعلى ماتستورده البلاد من الحراريات ومواصفاتها وكمياتها، ومقارنتها مع بعض الدول العربية، مع العلم بان هناك دول تعتبر رائدة فى صناعة الحراريات وهى لا تمتلك خاماتها الاولية بل تستوردها فتصنعها، ثم تصدرها الى الدول النامية ومنها الدول العربية.

مدى تأثير أبعاد آبار الاستكشاف على احتياط خام الحديد

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أعدت دراسة من قبل مجموعة فرنسية بتكليف من مركز البحوث الصناعية لغرض تقييم خام حديد وادي الشاطئ المتواجد بمنطقة تاروت الجنوبية وحددت الدراسة بعدد من آبار الاستكشاف وكانت هذه الآبار على هيئة شبكة أبعادها (200م×200م) وفي هذه الدراسة تم فرض شبكة بأبعاد (400م×400م) لنفس المنطقة ، وذلك يأتي كخطوة أساسية لبداية مشروع استخراج الخام بأقل تكاليف ممكنة واختيار الشبكة الأفضل لتحقيق الإنتاج المطلوب. وفي دراسة سابقة لتحديد احتياط خام الحديد لنفس المنطقة ونفس عدد الآبار وكانت بطريقتي المربعات والمثلثات للشبكتين (200م×200م) و(400م×400م) وتم الوصول للنتائج والمقارنة بينهما والوصول للطريقة والشبكة الأفضل. وفي هذا البحث يتم استخدام آبار الاستكشاف للشبكتين (200م×200م) و(400م×400م) لتحديد احتياط خام الحديد بوادي الشاطئ بطريقة المقاطع الجيولوجية (من الشمال إلى الجنوب ومن الشرق إلى الغرب) للشبكتين ،وذلك يأتي كمقارنة بين نتائج البحث السابق ونتائج هذا البحث وأيضا لتأكيد دقة كمية الاحتياط للشبكتين وبين الطريقتين (من الشمال إلى الجنوب ومن الشرق إلى الغرب) واختيار الشبكة الأفضل اقتصاديا.

Double Coating Method for Concrete Mix Design

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Behaviour of both fresh and hardened concrete is significantly related to their composition, so it should be possible, at least principle, to choose better ingredients with suitable proportion to gain the required satisfaction. Therefore, a good mix design for concrete mixtures is considered as a milestone for any concrete construction to satisfy its efficiency throughout its life period. Generally, mix design methods give some indication and first steps and designer need to validate and adjust them via experimental mixes in the local laboratories in order to check the variables related to properties of local materials and surrounding environment conditions. This paper illustrates the steps used for mix design using the double coating method, which is currently used in some research centres in the republic of Poland and was recently applied in the laboratories of the Civil Engineering Department in the University of Tripoli in Libya. Results obtained by this method using the local materials and environmental conditions are presented and discussed.

www.iiste.org/Journals/index.php/CER/article/viewFile/11332/11656

Libyan Quartz as Candidate for Solar Grade Silicon Production

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Elemental silicon is produced mainly by the Carbo-thermic reduction of silica sand. This technique produces rather impure silicon, which is termed as metallurgical grade silicon. Upgraded metallurgical grade silicon, produced from high purity silica, is usually used to produce semiconductor and solar grade silicon utilized in the manufacturing of microelectronic components of integrated circuits, transistors and solar cells. In this paper, sand from one of the Libyan Desert formations called Ash-Shibat, will be characterized to explore the possibility of its use in the production of high purity silicon. Such sands are thought to be candidate for the production of solar grade silicon. Chemical analysis, x-ray diffraction, and scanning electron microscopy are the main techniques used to characterize the sand and to assess the type and amount of impurities present. The results indicate that impurities such as B, Na, Ca, K, Mg, Al, Ti and Fe are present in the as-received sand in trace amounts. These impurities were found to be contained mainly on the sand particles' exterior surfaces, and in the binding material between them. The interior of the sand particles are found to be composed mainly of Si and O in the form of quartz silica. It is concluded from this study that further purification and processing of Ash-Shibat sand produce high purity silica that can be used for producing solar grade silicon.

Keywords: Silica; silicon; solar grade silicon; impurities; kaolinite.

Adaptive Neuro-Fuzzy Inference System (ANFIS) for Position Control of 2-DOF Robot Arm

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A robotic arm is a robotic manipulator, usually programmable, with similar functions to a human arm. The links of such a manipulator are connected by joints allowing either rotational motion or translational displacement. The links of the manipulator can be considered to form a kinematic chain. This paper introduces Adaptive Nuero Fuzzy Inference System (ANFIS) for position control of robot arm. A five layer neural network is used to adjust input and output parameters of membership function in a fuzzy logic controller. The hybrid learning algorithm is used for training this network. In this algorithm, the least square estimation method is applied for the tuning of linear output membership function parameters and the error back propagation method is used to tune the nonlinear input membership function parameters. The simulation results show that (ANFIS) is better and more robust than the Fuzzy Logic Controller (FLC), and Neural Network (NN) for robot trajectory control.

Keywords: Robot arm, Hybrid Learning, Adaptive Nuero Fuzzy Inference System (ANFIS), kinematics, modeling and simulation.

Implementation and Simulation of Digital Control Compensators from Continuous Compensators Using MATLAB Software

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This paper describes the opportunity of implementing design procedures of Lead -lag compensators in continuous then use the designed implementation in discrete backward, forward and bilinear transform. The Compensators were simulated with different sampling times using MATLAB package. The technique is used called Emulation Design, where the controller design is done in the continuous-time domain followed by controller discretization to produce a discrete-time controller for digital implementation and apply the sampling time . The paper shows that designing in continuous can be with the compensators first to calculate the parameters then replace them with discrete Coefficients and then simulate with appropriate sampling time with MATLAB package.

Keywords: Digital Control, Discrete, Lead, Lag, Lead-Lag**,** Compensators, Forward, Backward, Bilinear, Ztransform, Zero Order Hold MATLAB**,** Simulation.

www.researchgate.net/profile/Muftah_Almoher/publications

A Novel Distributed Parameter Model of a Blumlein-line Laser Circuit Including the Effect of Time Varying Spark-Gap Inductance and Resistance

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A Novel distributed parameter model of the Blumlein-line N2 laser circuit including the effect of both the time varying spark-gap inductance and resistance that depend on the spark-gap closure phase period is developed and discussed well. The dependence of the spark-gap and laser-gap voltages, currents and power waveforms on the time varying spark-gap inductance and resistance is performed and discussed. The simulation results show that the spark-gap and laser gap voltages, currents and laser gap power waveforms are strongly depend on the closure phase period of the spark gap. The analysis presented here is quite general and could be extended to study other laser systems.

Keywords: Blumlein generator, modeling, Nitrogen laser, pulse forming network.

http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=7046133&url=http%3A%2F%2Fieeexplore.ieee.org%2Fiel7%2F7045626%2F7045636%2F07046133.pdf%3Farnumber%3D7046133

Power System Security

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When discussing Power System Security Three subjects are usually mentioned; system monitoring, contingency analysis, and security-constrained for optimal power flow. In this paper, Power System Security is discussed in brief. A classical AC power system analysis program by Hadi Saadat was modified in order to use it as a contingency analysis program for a six bus network, the program tests the behavior of the network when a fault accurse on any line, it tests the load bus voltage-limit violations and line loadability violation of the other interconnecting lines between buses when one of the interconnecting line is removed. The modified program output gives the optimum- choice of the line loadability. Reliability study is the most important goal of this paper.

Keywords: Index Power system Security, loadability, Load flow, contingency analysis.

Arbitrary Lagrangian-Eulerian Form of Flowfield Dependent Variation (ALE-FDV) Method for 3D Problems

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In this study, Flowfield Dependent Variation (FDV) method is coupled with Arbitrary Lagrangian Eulerian (ALE) method in order to solve three dimensional fluid-structure interaction problems. FDV method is a mixed explicit-implicit numerical scheme where its implicitness is determined by several parameters that are dependent on the physical properties of the local flow. The scheme, which is called as ALE-FDV method, is discretized using finite volume method in order to give flexibility in dealing with complicated geometries. The formulation itself yields a sparse matrix, which can be solved using any iterative algorithm. Several numerical tests have been conducted and the results are in good agreement with exact and available numerical solutions in the literature.

https://www.researchgate.net/publication/265966268_Arbitrary_Lagrangian-Eulerian_Form_of_Flowfield_Dependent_Variation_ALE-FDV_Method_for_3D_Problems

High Abstraction Impacts on the of GroundwaterResources on the Southern Area of Libya

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Groundwater is a vital resource of fresh water in Libya and necessary for all aspects of life in the country. In the world, it has been estimated that over one billion people do not have access to clean water supply. In addition, even water is available; some countries don't have appropriate tools or enough financial support to distribute the water and make it available to its people where could be used. In Libya, the groundwater is main water resource which is located in four different basins in the southern Libyan territories. These basins are namely as Kufra basin, Sirt basin, Hamada basin and Morzuk basin. This paper will show the effect of high abstraction of undercharge groundwater on the future groundwater situation in the well-field area of Morzuk. The basin is located in the southern part of Libya (600km south of the capital Tripoli). It is subjected to high pumping rate compared to the other three basins. In fact, more than a thousand of privet pivot irrigation systems withdraw water without any control to irrigate the crops during most of the time in the year. This high pumping rate will affect the water table level and lead to unexpected problem in the region. Such problems will cause a shortage of the water supply in the area. Scenarios will be carried out to make simulations and optimization for the specified basin using Groundwater Vistas software (GV), which runs of the MODFLOW and MODOFIC packages respectively. Based on these scenarios, preliminary results show that the increase of water demand in the country will be as high as 26% for crop irrigation per year. The results of the scenarios indicate a drawdown which will approximately be 13.5 m by the year of 2030. This high drawdown of groundwater may create earth surface settlement which negatively influences human life in the studied region.

Keywords: Groundwater, high abstraction of groundwater ground water vistas, Morzuk basin, earth surface settlement, Oases.

Water Desalination and Water transport

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Many of the Arab countries are suffering of water shortage. Libya is one those countries. The main source of water in Libya is the ground water. About 97% of its water is coming from the ground water wells. The Libyan population is about six millions. Most of them live in the coastal area. The agricultural land are mostly also in this area. The ground water in the coastal area cannot cope with the needed amounts of water. As a matter of fact the over pumping of ground water created an environmental problem. Considerable drawdown was observed in the coastal area causing water sea intrusion. The Libyan government started in the medial eighties, a large project called the Man Made River Project (MMRP) intended to transfer water from the south to the coastal area by pipes. The length of the main pipes is 4071 km. The design water quantity is 6.5 mcm per day. The water is collected from 1149 wells. It was planned to use 28% of the conveyed water for domestic use, 70% for agricultural and 2% for industrial purposes. This project overcomes the water shortage problem in the coastal area in last two decades. The project was based on the comparison study between the costs of transferring water from the south and the cost of water desalination at that time. No cost for the water itself was considered. The only costs considered are the cost of infrastructures and the running cost of the system. The studies showed that the pumped water is coming from nonrenewable aquifers. Depleting the nonrenewable water in the south part of the country will have crucial effect on any future development at that area. The advancement in the water desalination technics and the decrease in its cost, enhance the rethinking in the visibility of transporting the ground water instead of desalination the sea water. The impact of transporting the nonrenewable water on the area should be carefully looking at. The use of this water for agricultural purposes should be limited for craps with minimum water consumption. Cost comparison between transporting the water versus desalination should be carried out in parallel with the inverse impact on the environment in the south area of the country.

Keywords: Desalination, Conveying, Ground water, MMRP.

Surrogated optimisation of frequency-amplitude kinematics for plunging NACA 0012 wing

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Surrogate optimizations are achieved for frequency and amplitude kinematics of plunging NACA 0012 wing. The aim is to maximize the lift and thrust for better propulsion performance. Computational simulations are the source of optimization databases. The plunging frequencies of 0.1 to 3Hz and amplitudes of 0.005 to 0.03m are considered. A Gaussian radial basis function neural network method is used to reduce prediction errors of surrogates. The parameters of the neural network are optimized with a genetic algorithm. Small discrepancies are found between the surrogate and CFD models. The optimum thrust and lift are found at the frequency of 2.710Hz and amplitude of 0.025m and 6.96% propulsion efficiency is obtained. No considerable augmentation in the efficiency can be found for better performance to forward MAV operations. Enhanced thrust has been encountered by excessively augmented lift. The study emphasizes that the plunging wing is not useful to MAV applications.

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Efficiency of membrane distillation to produce fresh water

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Seawater desalination has been accepted as one of the most effective solutions to the growing problem of a diminishing clean drinking water supply. Currently two desalination technologies dominate the market – the thermally driven multi-stage flash distillation (MSF) and the membrane based reverse osmosis (RO). However, in recent years membrane distillation (MD) has emerged as a potential alternative to the established means of desalination. This research project intended to determine the viability of MD as an alternative process to MSF and RO for seawater desalination. Specifically the project involves conducting thermodynamic analysis of the process based on the second law of thermodynamics to determine the efficiency of the MD. Data was obtained from experiments carried out on a laboratory rig. To determine exergy values required for the exergy analysis, two separate models were built in *Engineering Equation Solver* – the 'Minimum Separation Work Model' and the 'Stream Exergy Model'. The efficiency of MD process was found to be 17.3 % and the energy consumption was determined to be 4.5 kWh to produce one cubic meter of fresh water. The results indicate MD has potential as a technique for seawater desalination compared to RO and MSF. However it was shown that this was only the case if an alternate energy source such as green or waste energy was available to provide the thermal energy input to the process. If the process was required to power itself, it was shown to be highly inefficient and in no way thermodynamically viable as a commercial desalination process.

Routing Protocols for Wireless Mesh Networks: Performance Study

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Routing in WMNs is challenging because of the unpredictable variations in the
wireless environments. However, there is two ways to enhance the performance of
routing protocol in WMNs. One way is to improve the metric used in the selection
path; the second way is to modify the routing algorithms by considering new
characteristics of WMN. This paper reviews on various types of routing protocols that
are used in wireless mesh networks. This paper simulated three routing metrics in
OMNeT++ Simulation tool, with Optimized Link State Routing and Ad hoc On
Demand Vector (AODV) routing protocols. The two routing protocols have been
implementing in mesh wireless test bed consisting of up to 200 mesh nodes. The result
of the simulation presents performance evaluations with regard to the network size
and network load.

Keywords: Reactive Routing Protocol, Routing Metrics, Routing Protocols, WMNs.

http://www.lnse.org/papers/8-D0019.pdf

Topology Optimization using Integrated Multi-Point Approximation with application

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Multi-point approximation (MA) and GA together with two-level multipoint approximation concepts was used. The topology variables of the trusses are optimized, through GA in the external layer of the first level approximation, while the cross-sectional areas of bars are optimized in the internal layer, which is solved by the dual method in the second level approximation. But singularity of MA may take place. The Integrated Multi-point Approximation (IMA) developed by using two approximate functions in two different specified domains, to avoid the singularity, the developed function can be used for both topology and sizing. Its accuracy of the new function studied results were satisfying, for topology optimization and sizing; in this study application examples are demonstrated, to show the validity and the efficiency of the proposal, for topology optimization as well as sizing.

Keywords: Structural Optimization, Multi-point approximation, GA, Topology Optimization

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Measuring the degree of sensitization (DOS) using an electrochemical technique

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Sensitization can be simply defined as the susceptibility of an alloy, specifically austenitic stainless steel, to corrosion at grain boundaries. A detailed study on types 304 stainless steel has been carried out to correlate the degree of sensitization measured by electrochemical potentiokinetic reactivation test (EPR) with the suseptibility to intergranular corrosion. In this study four different heat treatments were given to alloys , i.e ,solution annealed (SA) at 1020^0C for one hour , then quenched in water ; also then heat-treated in air at 620^0C for 15, 30, and 60 minutes. The electrolyte for the EPR tests was 1.0 N H_2SO_4 solution containing 0.01M KSCN. Potentiodynamic curves from passive to active regions in deaerated solution at room temperature were obtained at a scan rate of 1.67 mV/sec. (6V/hr), after the passivation at 200mv VS. (SCE) for two minutes. Then the polarization was conducted. The criterion used to distinguish between sensitized and non-sensitized specimens is the activation charge Pa, the peak current density, Ph, in the active state, and Flade potential Ef at which the active curve breaks upward. The results indicated that the longer the sensitization time the higher the activation charge (Pa), and the higher the peak current density in the active state (Ph) .The results indicated that, the EPR is more sensitive than the chemical method for measuring the degree of sensitization.

http://link.springer.com/chapter/10.1007%2F978-3-319-16919-4_26#page-1

Enhancement of Reinforced Offshore Absorption Columns

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Separation units are used in several petrochemical industries because of their importance in the material treatment process that has been desired to get the needed product due to the desired quality and quantities. There are many types of separation units, one of these types is Absorption column, the initial concept of its work is built on the absorption process (physically or chemically), and it can be divided into Tray Column and Packed Column absorber. The aim of this study is to enhance the efficiency of packed columns' work by increasing the treatment of the material quantities that are needed to be separated or purified taking in consideration the same quality and the product's desired specifications. This study is focusing on benefiting of the composite material and using them in Packing manufacture, this Packing is used in absorption columns to get the best mechanical properties with minimum possible weight and with a high tensile strength, where the Polypropylene with the carbon fiber were selected as a composite material that is strong and light at the same time. It was found among several studies that the packing factor of the composite material decreases by 20% to any non-composite material's packing factor which means that the packed column can contain higher quantity with the same diameter. The Mathematical Model of Viscoelastic Behavior that was calculated to determine the creep modulus using Maxwell and Kelvin model. It was used to estimate the creep behaviour of the packing. When the composite material had been used it was found the diameter of packed column Decreased by 5% less than the non-composite material. The use of reinforced packed column enhances the capacity of the columns. It leads to the ability of using such columns in offshore projects consisting of sweetening Jobs subject to tilt. Higher flow rate of sour gas can be processed using reinforced packed compare to the conventional packing.

Enhancement of Tilted Absorption Columns

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This research aims to compare reinforced packing absorption columns to conventional absorption columns using tray types. The efficiency of absorption columns under motion will be investigated and Counter current mode will be evaluated for tilt columns from packing efficiency point of view. By using different paking factors to reduce effects of the motions on the absorption columns, it was found that packing factors 20 f-1 and 22.5 f-1 have given the smallest diameters of the absorption column, it will be good option to correct the effect of the tilt angles of the absorption column on the column efficiency.

https://www.waset.org/abstracts/13533

Computer Software For stress analysis of an air craft wing Structure

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In this paper, a computer program based on the MATLAB software was developed. The developed program can be used to compute all the structural properties such as center of gravity, shear center and the stresses ant any point along the span of the wing of a given aircraft, which was not available in the MATLAB software. The generalized formulation allows performing the analysis of the wing structure for both single and double wing cells with multiple stringers. The wing box consists of upper and lower skins, stringers and front and rear spars. Case studies from the open literature were considered in this paper for the validation of the developed program for both single and double wing cells. A single wing cell made from aluminum materials is constructed and several experimental testing were carried for the validation of results. The semi-span of the wing, chord and skin thickness are 2400, 400 and 0.914 mm (20 SWG) respectively. The wing box consists of upper and lower skins, seven ribs, four stringers and front and rear spars. The program results are in the form of locations of center of gravity, shear center, stiffnesses, shear flows and stresses distributions at any section along the wing span. The theoretical results from the open literature and the experimental work were compared with the developed program and the error in percentage was very acceptable.

Keywords: Education, Program, Wing stresses, center of gravity, Stiffnesses, MATLAB.

Road Traffic Accidents and Fatality Rates in Libya

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In the last quarter of the twentieth century, most of the Libyan cities and villages have been connected by road network. These roads were the major drive force for economical and social development all over the country. Unfortunately, despite of this positive role, these roads are the main cause of death and loss of about 2% of Libyan national annual income. This is because most of these roads, if not all, are lacking the basic elements of safety needs, besides; maintenance programs were not implemented. In addition, and probably the most important factors, the driver's behaviors and driving skills and habit are not at standard up to the level required for safety driving. These mentioned conditions affect the passenger's safety, and led to catastrophic accidents. The main objective of this paper is to demonstrate the latest Libyan accidents statistics and the losses of life as well as compares the Libyan fatality rate with that of some Asian, African and European countries. Data for this purpose were collected from Libyan traffic police department and the international traffic safety data analysis group. The results of these comparisons show that the Libyan fatality rate is the highest among the compared countries. Several countermeasures / recommendations on how to improve traffic safety on Libyan roads are also discussed in this paper.

Keywords: Traffic Safety, Accidents, Fatality Rates.

http://www.libyanhealthservices.com/database-libya-in-pubmed.html

Palynological Analysis of Cutting Samples From Well: A1-176/04, Murzuq Basin

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Playonological study have been utilized in order to define age and depositional environments of the penetrated sections of the well **A1-176/04**, which belongs to Chevron Libya Limited, located in the South Eastern Margin of Murzuq Basin. The study based on selected of one hundred and Four cutting samples, and despite of difficulties caused by heavy caving and reworked palynomorphs, palynological recoveries in general was good in the upper half of the studied section. Microscope investigations revealed moderately rich to poor assemblages consisting mainly of miospores, few marine Acritarches and chitinozoans, recovered from the studied samples enabled to erect six distinctive palynological assemblages. These assemblages range from early Silurian to Early Carboniferous in age. The ages assigned to these assemblages have been determined by comparing the palynomorphs assemblages with similar assemblages recorded from Paleozoic sequences in other nearby wells in Murzuq Basin, Ghadamis Basin, North East Libya region, South east Libya (kufra Basine) and also from other parts of old Gondwana region. Paleoenvironmental interpretation is based on interpreted lithological and palynological criteria.

Keywords: Libya, Murzuq Basin, Palynology.

Hybrid Force/Position Control of Robotic Drilling System Design and Implementation

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This paper presents the design steps and implementation results of a hybrid force/position control of the arm. The HFP control is based on a Proportional-Derivative Controller combined with feed-forward position control and multi-stage Infinite Impulse Response (IIR) filter in the joint space position control loop. In the outer loop, a resolved-velocity force control scheme is used. The performance of system is tested experimentally on CRS robot arm with Kflop based controller. The results obtained in terms of motion error and force control show that the proposed system can be efficiently used for critical robot drilling applications such as robot assisted orthopedic surgical procedures.

Keywords: robot, hybrid, force, drilling, control, orthopaedic.

Significant Factors Affecting the Selection of the Appropriate Subcontractors in GECOL – Libya

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The construction industry is one of the main sectors of the Libyan economy. The contracting companies carry out important construction projects in cooperation with subcontractors. The majority of works in construction projects are implemented by subcontractors through the main contractors. The choice of the appropriate subcontractors is a key decision that has to be made by main contractor early in the project lifecycle. This decision has a great impact on project success. However, the decision is not easy as there are many factors that affect the selection. Through literature review, a comprehensive list of selection factors was determined. By general contractors for selection of suitable subcontractors, such factors include: "adherence of the subcontractor to the contract terms, adherence to time schedule, commitment to prices, good reputation, and specialty in certain type of work, commitment to quality and the existence of required equipment and machinery". This paper is investigated where these factors are applied by contractors in Libya, and also to rank. These factors according to their importance based on the opinions of a sample of Contractors. A questionnaire survey was conducted and distributed to main contractors working with The General Electricity Company of Libya (GECOL) construction industry to get their perception as to the importance of these factors. The data were analyzed using SPSS software and these factors are ranked according to their average mean (M). The result illustrates that the selection factors: Specialty in certain type of work, Adherence of the subcontractor to the time schedule, Regular and effective communication with main contractor, and Commitment to quality standards are the most top important significant factors affecting the selection of the appropriate subcontractors in Libya.

Keywords: Construction, main contractor and subcontractor relations, Selection Factor, GECOL.

Wellbore Instability; Case History

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Wellbore instability is the undesirable condition of an open hole interval that does not maintain its gauge, size, shape and/or its structural integrity, the causes of wellbore instability are often classified into either mechanical (for example, failure of the rock around the hole due to high stresses, low rock strength, or inappropriate drilling practices) or chemical effects which arise from damaging interaction between the rock, generally shale, and the drilling fluid. This paper discusses the causes, types, effects, and possible prevention of borehole instability by fully understanding of the subsurface environment, gathering data obtained from a pre-drilled (Case study) wells, and utilization these data to aid in achieving stability. In this study, solutions for the most common drilling problems will be presented for a vertical well (AA1) in one of the Libyan fields, by identifying the difficulties that they opposed, how they managed to resolve it, and types of precautions they should have taken to avoid such difficulties. This process is done by collecting open hole data, formation tops and daily drilling reports data, analyze them in order to build a Mechanical Earth Model (MEM), which will help to seek for solutions, and predict any obstacles that might face the drilling engineers in the future, avoid them to achieve stability.

Study of Multiphase Flow in Inclined Wells - Field Case Study

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Multiphase flow may occur through vertical, horizontal and inclined or directional pipes. Flow behavior becomes much more complex than for a single phase flow when two or more phases flow simultaneously in pipes. In this study, a correlation for solution gas-oil-ratio, bubble point pressure factor is derived for Bouri oil field and called "Bouri (RS-PB) Correlation". The correlation is derived from 58 experimentally measured PVT data points. This paper evaluates the use of different solution gas-oil ratio correlations on the performance of multiphase flow methods in directional wells considering actual data from Bouri Oil Field. Correlations considered are Vasquez and Beggs correlation and new Bouri (RS-PB) correlation. Three inclined multiphase flow correlations; Modified Beggs and Brill, Orkiszewski and Mukherjee were tested using data from five directionally drilled flowing wells in Bouri Oil Field. The relative performance of each correlation was estimated using statistical parameters such as the Average Percent Error and Absolute Average Percent Error and Standard Deviation. The Orkiszewski correlation combined with Bouri (RS-PB) correlation yielded the lowest average percent error and standard deviation that were 0.45 and 3.89, respectively. For the conditions considered in this study, Orkiszewski correlation combined with Bouri (RSPB) correlation was found to be the most accurate and effective method for predicting the pressure-drops in directional wells.

Keywords: Multiphase flow; Inclined or directional pipes; Solution Gas-Oil Ratio correlation; Statistical parameters.

Self-Compacting Grout and Concrete: Properties and Applications

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Using non-traditional concrete in engineering applications such as the construction of nuclear reactor shields, dams, massive under water bridge piers and repairs of building foundations…etc., have been considered as an efficient solution to overcome challenges of limitations of the use of normal conventional concrete. Such new types of concretes which have been developed and produced are completely dissimilar from the conventional concrete in the method of mixing, handling, pouring, consolidation, behaviours, cost …….etc. Based on the technology of ready-mixed self-compacting concrete (SCC), two types of concrete been introduced and named as: two-stage concrete (TSC) and rock-filled concrete (RFC), where a self-compacted grout (SCG) injected or poured to fill the void space of preplaced or self-compacted aggregate (SCA) or rocks. By other words, TSC (Pre-placed Aggregate) unlike normal concrete (NC), it is made by first placing the coarse aggregate in the formwork and then injecting a grout consisted of sand, cement and water to fill the voids between the aggregate particles. The main benefits of the method are widely appreciated as Low heats of hydration, high compressive strengths and density, economic savings, practically no mass shrinkage, low coefficient of thermal expansion, excellent bond to existing structures. Similarly, the construction technology of RFC mainly consists of two processes: filling the working space with large scale rock mass and pouring the SCC into the pre-packed rock body. Less cement in the composite, which results in less heat of hydration, makes the temperature control of RFC much easier, and this new construction method leads to fast construction speed, high concrete quality and improves the economics and environmental performance of massive concrete structures. This paper illustrates the importance, advantages and special requirements of introducing TSC and RFC to be used in the concrete industry.

http://www.gbv.de/dms/tib-ub-hannover/63366278x.pdf

Measurement and Analysis of Building Penetration Loss for Mobile Networks in Tripoli Area

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The investigation of Buildings Penetration Loss (BPL) of radio signal is getting more and more important. It plays an important role in calculating the indoor coverage for wireless communication networks. In this paper the theory behind BPL and its mechanisms have been reviewed. The operating frequency, coverage area type, climate condition, time of measurement, and other factors affecting the values of BPL have been discussed. The practical part of this work was conducting 4000 measurements of BPL in different areas in the Libyan capital; Tripoli to get empirical model for this loss. The measurements were taken for 2 different types of wireless communication networks; mobile telephone network (for Almadar company), which operates at 900 MHz and WiMAX network (LTT company) which operates at 2500 MHz. The results for each network were summarized and presented in several graphs. The graphs are showing how the BPL affected by: time of measurement, morphology (type of area), and climatic environment.

Keywords: Building Penetration Loss, Wireless Network, Mobile network, Link budget, Indoor Network Performance.

www.waset.org/pdf/books/?id=14531&pageNumber=184

The Effect of Slip Roads (Entrances And Exits) on the Traffic Flow Of Second Ring Road Tripoli Libya

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Traffic congestion is defined as the increase of traffic volume on a certain section of the road to its assumed design capacity as a criteria, to measure the congestion. It pertains to the most common of those standards associated with the six level of services such as (A, B, C, D, E and F) as defined by American Highway Capacity Manual for roads (HCM).Each level reflects the status of the traffic by using quantities such as speed, traffic density and the percentage of traffic volume to the capacity of the road (v/c ratio). This paper is designed to investigate the traffic situation in the Second Ring Road (SRR) in the City of Tripoli, Libya as a case study. It concentrates on variables associated with the traffic flow and congestion at the slip roads (entrances and exits) of the Second Ring Road at the first site located near Tuberculosis Hospital. It also provides a description of some measures that may be taken to minimize the traffic congestion problem by using some modern techniques to suit the circumstances of the City in which about 85% of the City population rely on private car as main mode of transportation. The traffic management and control of slip roads on highways is the basis for the flow of vehicles and their easily movement on the road. It also helps to improve the level of service on the road .The main findings of case study reveals that, by controlling and managing the entrances and exits of the Second Ring Road by using the appropriate tools significantly improve the rate of traffic flow and the level of service ,considered one of the most important factors affecting.

Keywords: Highway, Capacity, slip, entrances, Exits, v/c, Flow, Management, Level of service, and Congestion.

Self-adaptive Hybrid Genetic Algorithm Using an Ant-based Algorithm

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The pheromone trail metaphor is a simple and effective way to accumulate the experience of the past solutions in solving discrete optimization problems. Ant-based optimization algorithms have successfully employed to solve hard optimization problems. The problem of achieving an optimal utilization of a hybrid genetic algorithm's search time is actually a problem of finding its optimal set of control parameters. In this paper, a novel form of hybridization between an ant-based algorithm and a genetic-local hybrid algorithm is proposed. An ant colony optimization algorithm is used to monitor the behavior of a genetic-local hybrid algorithm and dynamically adjust its control parameters to optimize exploitation-exploration balance according to the fitness landscape.

Keywords: Genetic Algorithms, Hybrid Genetic Algorithms, Self-adaptation, Ant Colony Optimization, Memetic Algorithms.

https://scholar.google.com.ly/citations?user=exP5rSEAAAAJ&hl=en

Concreting Method That Produce Sustainable Concrete

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For the last decades concrete materials and technology have been widely developing in many ways in order to achieve an economic and high quality product. But from the other hand concrete offered a wide range of capabilities to achieve a very good balance between the human needs and earth capacity which known as the sustainability. Two stage concrete (TSC) known sometimes as preplaced aggregate concrete (PAC) was found relatively as a new concrete type which has ability to satisfy the requirements of performance and sustainability. Its main concept depends on pre-packing the coarse aggregates in the formwork, then injecting cement mortar grout into the voids in between the aggregates. TSC differs from conventional concrete in having higher percentage of coarse aggregates which are placed in direct contact with each other resulting in fewer voids that are to be filled with the mortar/grout. This low percentage of voids should have a positive impact on the concrete properties both on short and long terms. Behaviour of TSC in compression has been well documented, but there are little published data on its behaviour in tension and modulus of elasticity…..etc. This paper presents the results of experimental testing of two types of coarse aggregate and three different mix proportions of grout. It was found that the modulus of elasticity of two-stage concrete is equivalent or higher than that of conventional concrete at the same compressive strength. Relationships between stress-strain and modulus of elasticity – compressive strength were statistically derived and elaborated.

Keywords: Two-Stage Concrete, Modulus of Elasticity, Compressive Strength.

http://documents.mx/documents/concrete-pour.html

Chitosan-Based Porous Carbon Materials with Superior Performance for CO$_2$ Adsorption

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Currently, extensive research is focused on developing and designing novel porous materials for clean energy and environmental applications such as reducing the emission of carbon dioxide (CO$_2$). In this presentation, utilization of biopolymer, chitosan, in adsorption of CO$_2$ has been investigated. Various chitosan-based porous nanocomposites have been fabricated using sodium montmorillonite. Calcination of the obtained aerogels up to 400 ^{o}C was performed to increase the surface area and to enhance the structure of the sorbents. Combination of nanofiller in the chitosan-based sorbents enhances the porosity and increases the CO$_2$ adsorption capacity. The results indicate that chitosan-based carbon porous materials show superior CO$_2$ adsorption capacity. The maximum adsorption capacity was achieved is 3.16 mmol g^{-1} at ambient conditions. The effect of operating temperature on the performance of the sorbents for CO$_2$ adsorption is demonstrated. Adsorption-desorption cycles reveal that the obtained aerogels are easily regenerated. In brief, the nanofillers provide a solution for the limitations of CTS-based sorbents for CO$_2$ capture.

Keywords: Chitosan; sodium montmorillonite; porous materials; aerogels; CO$_2$ adsorption.

Waterloo Numbers and Their Relation to Pascal triangle and Polygons

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The Pascal triangle is a well-known and famous triangle which is dated long before Pascal has introduced it and got his name attached to it. Chinese, Persian, and Greeks had all dealt with the structuring of the numbers which are now known as the Pascal triangle. Many Properties have been noticed in the structure of the numbers in the Pascal triangle, Such as the Fibonacci numbers, the triangular numbers, the Hockey stick, the Sierpinski'fractals. In this paper, further exploration is made for the Pascal triangle. The horizontal elements making the triangle represent the coefficients of nth powered binomial expansion of the form $(x + y)^n$, or $(\sum_{i=1}^{2} x_i)^n$, and it has been noticed that the set of the diagonal elements as well as the vertical elements of the right angled Pascal triangle present the numbers of expansion terms of monomials, binomials, and polynomials of the form $(\sum_{i=1}^{I} x_i)^n$ in a consecutive order. The values of those coefficients are ones for monomials, the horizontal elements of Pascal triangle for binomials, and for the higher polynomials the values of the coefficients are determined by the Embedded Pascal Triangles (EPTs) expansion method. Those set of numbers determining the number of coefficients of the r-nomialsare named as the Waterloo numbers (W-numbers), whereas the values of those numbers are called the attached values to waterloo numbers. Furthermore, the paper presents a geometrical representation to those set of numbers in a similar manner as the geometrical representation of Polygonal numbers.

http://ed.ted.com/lessons/the-mathematical-secrets-of-pascal-s-triangle-wajdi-mohamed-ratemi

Fuzzy Control of Car Suspension Model With Uncertain Stiffnes Damping

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Fuzzy logic controllers offer a simple method to control highly complex and imprecise systems, and provides a process for dealing with the uncertainties of these complex systems using a human type reasoning method with the use of linguistic variables, which are evaluated by a set of IF-THEN type rules. In this paper, the fuzzy logic controller in the form of simple proportional derivative compensator is considered to sustain the good performance of the body displacement trajectory for the car suspension system under the influence of the structure uncertainties caused due to variations of the designed stiffness of the damper. The desired objective of this paper is to prove that fuzzy proportional derivative controller can achieve a better robust performance due to such type of uncertainty in comparing to classical proportional derivative control design. To demonstrate this work objective, the linear simulation results for the simplified quarter car suspension model are shown at the end of this paper.

Keywords: car suspnstion; fuzzy propertional derivative controller; vehicel vibration; vehicel control; mass spring damping model.

An Evidence-Based Approach for GPS Accuracy Classification

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This paper investigates the accuracy of a GPS device. The GPS accuracy is treated as a pattern recognition problem. Each location estimate is classified into a certain accuracy class. Various observation conditions provided by the GPS device are used as features relating a location estimate to an accuracy band. In this paper we introduce an evidence-based classifier (EBC) in which three independent classifiers are used: namely, feed forward neural network, K-nearest neighbor and the support vector machine. The decisions of these classifiers are combined by a reasoning-based-engine using dempster-shafer (DS) evidence theory for decision fusion. The DS engine will produce the final classification decision. As proof of concept, a comprehensive experimental work including two use-cases is conducted in this paper. Experimental results are discussed at the end of this paper.

https://www.researchgate.net/profile/Haitham_Amar/publications

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Towards achieving green buildings in developing countries based on a traditional approach with reference to hot-arid climate

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Despite the fact that green buildings become an important architectural trend in the 21st century, green buildings still constitute a tiny subset of existing buildings in the developing countries. Buildings are responsible for approximately 40% of the total world annual energy consumption. Most of this energy is for the provision of lighting and air conditioning. Developing countries are still facing unprecedented environmental and financial challenges in their pursuit of achieving rapid urban growth. The combined effect of the business model of "growing at any cost" adopted by these countries has resulted in deterioration of their environment, manifested in the forms of depleting ecosystems and increasing climate vulnerability. There is growing realization of the urgency to move away from the current situation towards green buildings. This research argues that green buildings have much to learn from the buildings of the past. The Research methodology of this paper adopts analytic approach to environmental solutions in the traditional architecture. The key emphasis on the design of the greens building lies in energy-saving and nature conservation. The findings of this research reveal that traditional architecture approach can be the main base of green buildings in the developing countries. Furthermore, a reconsideration of traditional architecture approach can provide crucial solutions to achieve green buildings in the developing countries.

Keywords: achieve green buildings, energy, climate, traditional architecture approach, developing countries.

Applications of UT Findings by Results to Confirm Defects Utilization of Relevant Metallurgical Investigations Techniques on Gas / Condensate pipeline working in Wet Sour Gas Environment

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The gas/condensate pipe line under investigation is a 12 inch diameter, 48 km ASTM, A106 steel pipeline, carrying hydrocarbons containing wet CO_2 and H_2S.The pipe line had exploded in a region 100m distance from its terminal; after 24 years of service. Hydrogen induced cracking (HIC) and sour gas corrosion were expected due to the presence of wet H_2S in the gas analysis. In other areas of pipe line ultrasonic testing was performed to determine whether the pipeline can be re-operated. The results have shown presence of internal planner defects, this was attributed to the existence of either laminations, type II inclusions or some service defects such as HIC and step wise cracking (SWC).Metallurgical investigations were conducted on fractured samples as per NACE standard (TM-0284-84). The obtained results had shown macroscopic cracks in the form of SWC, microstructure of steel had MnS inclusions. Crack sensitivity analyses were calculated and the microhardness testing was conducted. These results had confirmed that the line material was suffering from sour gas deteriorations. This paper correlates the field UT inspection findings with those methods investigated in the laboratory. Based on the results obtained a new HIC resistance material pipeline needs to be selected.

Keywords: Hydrogen Induced cracking, Step wise cracking, MnS inclusions, sour source.

Corrosion Resistance of kolsterised Austenitic 304 Stainless Steels

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Austenitic stainless suffers from low wear resistance in applications where rubbing against other surfaces is encountered. This drawback can be overcome by surface treatment such as coating by hard materials. Other treatments such as carburization at relatively low temperature become applicable recently to improve hardness and wear resistance. Carburization heat treatment would only be justified if the corrosion resistance is unaffected. In this work samples of 304 stainless steels treated by colossal supersaturation case carburizing (known as Kolsterising) carried out by Bodycote Company was examined for pitting corrosion resistance at room temperature and at 50 ºC. Comparison with results obtained for untreated samples in similar testing conditions show that there is no deterioration in the pitting resistance due to the Kolsterising heat treatment. X ray diffraction patterns obtained for Kolsterising sample showed that peaks correspond to the austenite phase has shifted to lower 2θ values compared with those of the untreated sample. The shift is an indication for expansion of austenite unit cells caused by saturation with diffusing carbon atoms. The XRD of Kolsterising samples also revealed additional peaks appeared in the patterns due to formation of carbides in the kolsterized layer. Examination of these additional peaks showed that these peaks are attributed to a type of carbide known as Hagg carbide Fe_2C_5. The absence of carbides that contain chromium means that no Cr depletion occurred in the layer and the corrosion properties are maintained. Surface hardness measurements showed large increase after Kolsterising heat treatment.

Key words: Pitting corrosion, kolsterising, austenitic stainless steel.

http://connection.ebscohost.com/c/articles/76282003/surface-wear-resistance-304-austenitic-stainless-steels-modified-by-colossal-carbon-supersaturation-tin-coating

Expermintal and Network Model Study on the Effect of Network Toploy on Two-Phase Imbition Relative Permeability

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Network models are commonly used to predict various petrophysical properties, such as relative permeabilities, and also used to predict flow behavior. However, laboratory experiments might be necessary to support findings obtained from network models. In this study, we use a quasi-static network model, which assumes that the displacement is dominated by capillary forces, to study the role of topology on imbibition relative permeability curves computed using network models derived from a suite of tomographic images of Fontainebleau sandstone. Uniform oil-water (θow) contact angles of 20° 30° and 40° are considered in the present study to show the complex interaction between contact angle and snapoff on relative permeabilities and residual saturations. Then laboratory experiments were conducted on core plugs, of similar petrophysical properties, to obtain imbibition relative permeability curves in order to validate the results obtained from the network model. A significant mismatch was observed between the relative permeabilities measured from the experiments on core plugs and those obtained from the network model. Network model results yield smaller wetting and non-wetting phases relative permeabilities and higher residual nonwetting phase saturations at strongly wetting conditions where snap-off dominates the displacement, i.e. smaller contact angles. At higher contact angles, the relative permeabilities for the wetting and non-wetting phases increase and the residual non-wetting phase saturations decrease. Network model results also indicate for strongly wetting conditions the effect of network topology is significantly smaller than for weakly wet conditions where snap-off is suppressed. For contact angles sufficiently large to completely suppress snap-off, the effect of topology on imbibition relative permeabilities is similar to that for drainage displacements. Experimental results, however, yield higher relative permeabilities than all those obtained from network models for the wetting and non-wetting phases and less residual non-wetting phase saturations. Therefore, assuming uniform contact angles throughout the network model might lead to inaccurate results.

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Effect of Saturation Exponent and Cementation Factor on Water Saturation in Carbonate Reservoir "Case Study"

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Assessment of rock and fluid properties such as porosity, shale content, and water saturation are very essential for exploration and development of hydrocarbon reservoirs. Archie's parameters (cementation factor "m", tortuosity factor "a" and saturation exponent "n") calculated from a graphical solution, which they are either use the wire line (Porosity "Ø" and deep electrical resistivity "Rd") or core data measurements (formation factor "F or FF" and resistivity index "RI"). However, these sensitive reservoir parameters (m and n) have an effect on saturation percentage, where an increase of m and n values reveal to water saturation content increase. In addition using core measurement instead of Pickett technique to evaluate carbonate reservoir water saturation will illustrate accurateness's of close results to reality.

Key words: Porosity, Deep electrical formation resistivity, Formation factor, Resistivity Index.

https://f.hypotheses.org/wp-content/blogs.dir/1403/files/2015/11/program-of-Africa-8.pdf

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