

Table of Contents

الأرقام الهندية للصفحات خصصت للبحوث باللغة العربية المنشورة في الجزء الأيمن للمجلد . Hindi numerals are used for Arabic Papers, which start at the right hand end of the book.

د الأول VOLUME 1	الهجل
Architecture & Construction يُشبِيد	العمارة وا
Facility and Construction Management	إدارة المرافق
Masterformat-Based System for Evaluating the Performance of Construction Project Using Backward Chaining Ashraf M. Elazouni	5
Cost Analysis and Thickness Optimization of Thermal Insulation Materials Used i Residential Buildings in Saudi Arabia Eball H. Ahmad	n 21
Preliminary Evaluation of Selecting and Specifying Finishing Materials for Concret Buildings in the Eastern Region **Ibraheem Al-Mofeez and Aref Al-Roumi**	e 33
Major Components of "Typical Villa" in Saudi Arabia for Price/Cost Index Development Ali Shash and Esam Al-Mulla	47
لحام خبرة لتشخيص الشروخ في المباني الخرسانية باللغة العربية سعيد بن حسن المصري، عبدالله بن محمد الصقير، عبدالرحمن بن حسن ال الشيخ	
ارة عقود ـ التشغيل والصيانة – المتطلبات و التحديات : در اسة حالة أحمد بن حسن العرجاني	•
علية تصنيف المقاولين في عكس المستوى الفعلي لمقاولي التشييد في تنفيذ المشاريع الحكومية منصور بن محمد أبو أثنين ، عبدالله بن محمد الصقير	
بالك القيمة العقارية للمباني السكنية في أحياء مدينة الرياض: الأسباب و الحلول خالد السكيت	-
راسة لخفض التكاليف لتنفيذ مدرسة نموذج (١٢) تابعة للرئاسة العامة لتعليم البنات محمود محمد عبد الباسط، كمال حسني رشيد القبلي	

TT in Architecture
The Impact of Cyberspace and Globalization on the Future of Architecture: Visionary Insight
Adel A. Abdou
Exploring the Factors That Affect the Efficient Utilization of IT in Consulting Offices
Thamer A. Al-Rugaib
Syntactic Modelling and Analysis: A GIS Adaptation and Enhancement for Effective Pedestrian and Vehicular Systems
Danjuma I. Nkwenti and Abdulgader O. Amir
Professional Practice تهند
Certification of Practicing Civil Engineers in Saudi Arabia: An Opinion Survey A.K. Azad, I.M.K. Asi, N.A. Al-Shayea, M.S. Al-Suwaiyan, H.J. Al-Gahtani, and A.A. Khathlan
The Engineering Profession and the Professional Engineer
Yehia A. Khulief
ممارسة مهنة العمارة في عصر العولمة : دراسة لإمكانية اندماج المكاتب المعمارية في المملكة مشاري عبد الله النعيم ، علي محمد السواط
أساليب الحصول على المشاريع في المكاتب المعمارية في بعض مناطق المملكة وتأثير ها على جودة العمل المعماري
مشاري عبد الله النعيم ، علي محمد السواط
تطبيق الهندسة القيمية على المشروعات المدنية في البيئة السعودية (التجربة والدرس المستفاد) حمود بن عواض السالمي وعلي بن محمد الخويطر
مدى استفادة المهندس السعودي من الإنترنت عار ف محمد سمان
وبيئة المباني Safety and Building Environment
Evaluation of Indoor Air Quality Status in Selected Commercial Buildings in Saudi Arabia: Role of the HVAC Systems
Raza A. Khan and Ismail M. Budaiwi
The Impact of Filter Placement in Air-Conditioning Systems on the Behavior of Indoor Contaminant Concentration Ismail M. Budaiwi

Practices of Safety Design of Saudi Residential Buildings	
M. Al-Homoud, A. Abdou, and M. Khan	158
فعيل البعد الصحي والبيئي في تصميم المشاريع العمرانية	ڌ
هاشم عبد الله الصالح	171
Engineering Education	لنملېر ال
Curriculum Development تاهج	طويرالما
Architectural Design Studio Projects and the Charades of Curriculum Anis A. Siddiqi	173
The Advocacy of Establishing a GCC Engineering Accreditation Board Nabil Kallas and Isam Zabalawi	187
Performance Measures for Academic Departments Umar Al-Turki and Salih Duffuaa	199
Higher Engineering Education: Which Type Is Really Needed? Engineering Science or Engineering Technology Muhammad Taher Abuelma'atti	
فاق ومجالات تطوير وتقعيل دور المهندسين بالمملكة العربية السعودية في ظل التطورات الحالية والمستقبلية في حالات التقنية المتعددة	Ĩ
عبدالله بن محمد بن مجدوع الشهري	١٤١
Education and Industry	لتعليم وا
Market Impact of Building Engineering Programs: Assessment of Alumni and Employer Surveys	007
M.Y. Numan and I.A. Al-Mofeez Teaching HSE in Engineering Colleges: A Step Ahead Towards Improving Productivity	227
Ali A.K. Mohammed Ali, Rahim K. Jassim, and Adnan Ghazi Abuarafah	239
Nondestructive Testing Education Program: A Practical Strategy for Youth Employment in Saudi Arabia Ahmed Yamani	249
Technical and Engineering Education Saleh A.M. Alqahtany and Abdulhakim Oklah	25

Bridging the Gap between Engineering Research at Universities and Industry Needs, Barriers & Solutions Omar H. Mardam-Bey	265
·	200
Closing the Performance Gap between Technical Education and Industry Ali Salah Hennache and Mohammad Othman Al-Nais	275
المعلومات والتعليم IT and Education	
Project-Based Course for Practicing Construction Project Management	
Ismail M. Basha, Ahmed A. Gab-Allah, and Ashraf M. Elazouni	289
Towards Problem-Based Engineering Education S.M.A. Suliman	303
Web Based Engineering Education	
Sheikh, Sharif Iqbal and Junaid Siddiqui	315
An IT Aid for Computer-Equipped Classrooms Essam A. Koshak and Fouad MA. Dehlawi	325
The Internet as an Educational Tool for Effectively Understanding the Engineering Profession	
Kasim Randeree	337
The Expert Systems Approach: An Engineering Application-Oriented Perspective Naief Turki Ibn-Homaid	345
Trends in Engineering Education سات هي التعليم الهندسي	الاتجاه
Marks and Marking Practices: Towards an Improved System Muhammad Taher Abuelma'atti	365
Student Learning Going Through A Metamorphosis Rajendra N. Sharma	379
Value Engineering as an Effective Tool for Improving the Performance of Students at the College of Engineering - King Saud University	
Khalid A.H. Taher	391
The Profile of Engineering Students	
Luiz Fernando Capretz	401

Improving Engineering Education at Kuwait University through Continuous Assessment Part 1: Establishing the Process	
Mohammad D. Al-Ansary, Andreas P. Christoforou, Ahmet S. Yigit, Aziz Tayfun, Adel A. Aly, Haitham Lababidi, Faridah Ali, Ibrahim S. Nashawi, and Mohammad Zribi	409
Faculty Evaluation: The Frequency of Current Practice and Proposed Alternatives **B. Younes*** **B. Younes** **B. Younes*** **B. Younes*** **B. Younes*** **B. Younes** **B. Youn	421
Student Evaluation of Faculty: A Mirror for Self Analysis Anis A. Siddiqi	433
Fostering Excellence in Engineering Education: The Experience of the University of Sharjah	
Nabil Kallas, Abdallah Shanableh, and Adnan Basma	447

VOLUME 2	، الثاني
Chemical Engineering	الكېمېائېة
Desalination	لياه
Silica Reduction in Reverse Osmosis Desalting Plants Ibrahim S. Al-Mutaz and Ibrahim Ali Al-Anezi	
Reactor Selection for Dual-Purpose Desalination Plants in Saudi Arabia A.F. Abdul-Fattah, M.S. AlJohani, and A.I. Almarshad	
Energy Consumption and Economic Evaluation of Water Desalination Phenomenon L. Lavannardi, and M. Moshfashian	
J. Javanmardi and M. Moshfeghian Waste Heat Recovery in Multi Effect Desalination System with Thermal C	
A.S. Hegazy	•
SWCC MSF Desalination Plants - Current Status and Future Prospects	
Osman A. Hamed, G.M. Mustafa, Khalid Bamardouf, Hamed Al-Was Khalid Al-Shoail	
Review of Development of the New NF-Seawater Desalination Process Plant to Commercial Production Plant Stages Ata M. Hassan	
Autopsy of Membranes	
Ahmed S. Al-Amoudi and Mohammed Farooque	
Operation of Al-Birk SWRO Plant with Toyobo Membrane Instead of I Membrane	Oupont B-10
Ata M. Hassan, A.T.M. Jamaluddin, A.R. Badawi, Nabeel Nada, M.M. Lutfi M Bakheet, M.O. Saeed, Abdullah Al-Rubaian, Ali Al-Reweli, a D.A. Lawrence	ınd
ج المأخذ على نوعية مياه التغذية بمحطات التحلية بالجبيل محمد عثمان سعيد ، عصام الثبيتي ، محمد الدائلي ، على ال حمزة	•
ياه المالحة بو اسطة اللواقط المركزة للأشعة الشمسية الأسطوانية-المكافئة البشير الشواشي ، سليمان القابسي	•
Fluid Mechanics	كا الموائع
Prediction of Layer-Inversion Behavior of Binary-Solid Liquid Fluid Comparison of Models	dized Beds:
Mohammad Asif	

Studies on Liquid Redistributions in Packed Colum A.A. Ibrahim, M Abdulrakib, and B.Y. Jibril.	
Numerical Simulations of Flow Distribution in Un Saiffudin Sheikh and Habib D. Zughbi	· · · · · · · · · · · · · · · · · · ·
Mixing in Pipelines with Side-Tees Zahid Khokhar, Habib D. Zughbi, and Rajen	dra Sharma 17
Numerical Simulation of Mixing in a Jet Agitated Habib D. Zughbi and Mohammad Abdur Rak	=
Fuels and Renewable Energy	لوقود والطاقة المتجددة
Feasibility Study for Using Renewable Energy S Remote Settlement in Saudi Arabia	Systems for the Electrification of a
A.M. Al-Shehri, M. Elhadidy, I.M. El-Amin a	nd , S.A. Said 199
Technology of Direct Methanol Fuel Cell Progress S.M. Javaid Zaidi	•
	استخدام الطاقة الشمسية لحفظ التمور في المناطو
إبر اهيم بن عبد الرحمن العريفي	
إبر اهيم بن عبد الرحمن العريفي Petroleum Processing and Refining	۳٬ عالجة وتكرير النفط
•	عالجة وتكرير النفط
Petroleum Processing and Refining Coprocessing of Plastics with Petroleum Residues	عالجة وتكرير النفط ddiqui, and S. H. Hamid Redhwi 23:
Petroleum Processing and Refining Coprocessing of Plastics with Petroleum Residues Mohammad Farhat Ali, Mohammad Nahid Sid Development of Heavy Oil Hydrocracking Catalys	aldiqui, and S. H. Hamid Redhwi 23: sts d 24: as through a Novel FCC Process umayel, A. Aitani, M. Saeed,
Petroleum Processing and Refining Coprocessing of Plastics with Petroleum Residues Mohammad Farhat Ali, Mohammad Nahid Sid Development of Heavy Oil Hydrocracking Catalys Halim H. Redhwi, Syed A. Ali, Shakeel Ahmed Integrating Refining and Petrochemicals Feedstock A. Ma'adhah, T. Ino, H. Redhwi, M. Abul-Ha	aldiqui, and S. H. Hamid Redhwi 23: sts d 24: sts through a Novel FCC Process amayel, A. Aitani, M. Saeed, 25: and Suspended Solids Separation by
Petroleum Processing and Refining Coprocessing of Plastics with Petroleum Residues Mohammad Farhat Ali, Mohammad Nahid Sid Development of Heavy Oil Hydrocracking Catalys Halim H. Redhwi, Syed A. Ali, Shakeel Ahmed Integrating Refining and Petrochemicals Feedstock A. Ma'adhah, T. Ino, H. Redhwi, M. Abul-Had A. Maghrabi Modeling the Steady State Flux of Oil/Water at Cross-Flow Ultrafiltration	aldiqui, and S. H. Hamid Redhwi

On-Line Measurements of Oxidation of Carbon Using Visible Spectroscopy	
M.A. Khan, M.A. Gondal, A.A. Al-Jalal, M.S. Hussain, I.A. Bakhtiari, and	
A. Abdullah Ali	301
Steam Reforming Computer Program	
Gene J. Yeh and Walid A. Al-Naeem	311
Challenges for Hydrocracking DMO/VGO Feedstock Jamal A. Anabtawi	319
Polymer Engineering تالمبلمرات	هندسا
Modeling and Simulation of Weldlines in Injection Molding Process Khaled Mezghani	335
An Investigation of the Phase Behavior of an Aqueous System that Contains a Polyampholyte and Poly(Ethylene Glycol)	
S.M. Waziri, B.F. Abu-Sharkh, S.A. Ali, and I.M. Abu-Reesh	349
Effect of Recycling of Thermoplastics: Evaluation of the Properties of Mixture of Virgin and Recycled High-Density Polyethylene Neaz Ahmed and Javaid H. Khan	359
	339
Influence of Branch Content of Ethylene/1-Hexene Metallocene-Based LLDPE on Its Miscibility with LDPE: A Molecular Dynamics Study	
Tayyab Hameed, Basel F. Abu-Sharkh, and Ibnelwaleed A. Hussein	369
Performance Modification of Saudi-Asphalt Binders Using SABIC Polymers	
Hamad I. Al-Abdul Wahhab, Ibrahim M. Asi, Isam Abaker, and M. Ghouse Baig.	379
Molecular Dynamics Simulation of the Influence of Branch Content on the Miscibility of HDPE in Metallocene Octene-LLDPES	
Adam M. Giri, Basel F. Abu-Sharkh, and Ibnelwaleed A. Hussein	395
Separation of Waste Polyethylenes by Density Fractionation J. Alrefai	405
Radiation Measurement and Protection الإشعاع والوقاية منه	قياس
Levels at the Al-Khafji and Mneefa Coastal Areas in Saudi Arabia	
Al-Kheliewi A.S., Farouk M.A., Al-Zahrany A.A., and Shabana S.I.	419
Concentration of Man-Made Radionuclides in Marine Sediments at the Al-Khafji and Mneefa Coastal Areas in Saudi Arabia	
Al-Kheliewi A.S., Shabana S.I., Farouk M.A., Al-Zahrany A.A., and Al-Masoud F.I.	429

در اسة تقويمية لوضع الحماية من الإشعاع في المملكة العربية السعوديةعبد الرحمن بن محمد العرفج
Recycling and Regeneration يرواعادهٔ الإنتاج
Preparation and Characterization of Activated Carbon from Dates' Stone Yahia A. S. Alhamed
Used Oil Recycling and Treatment in the United Arab Emirates Economical and Environmental Assessments Ahmad Hamad, Essam Al Zubaidy, Ahmed Aidan, Talha Hadaki, and Nasri El-Kareh
Regeneration of Spent Bleaching Clay Used in Edible Oil Refining in Saudi Arabia <i>Y.A. Alhamed and A.A. Al-Zahrani</i>
Recovery of Potassium Salts from Kiln Dust of Local Cement Plants M. A. Daous
Study of Equilibrium Adsorption of Orthophosphate on Alumina Adsorbents A.I. Fatehi
Removal of Phthalates from Contaminated Water Using Direct Photolysis and $UV/H_2O_2\ Processes$
B. Tawabini, M. Al-Suwaiyan, R. Allayla, M. Al-Malack, A. Abulikbash, and A. Al-Arfaj
Transport and Thermal Properties مائص الانتقائية والحرارية
EOS's Calculations of Volumetric and Transport Properties of Sour Gases and Gas Condensates *Adel M. Elsharkawy** **Tensor** **Tensor**
Measurement of Heat and Mass Transfer Coefficients in a Bubble Column A. Al-Zahrani and M. Daous
Remote Measurement of Flow Rates of Polluted Water with Doppler Velocimetry M.A. Gondal, J. Mastromarino, and Uwe K.A. Klein

المجلد

VOLUME 3	الهجند النائب
Civil Engineering	الهندسة المدنبة
Analysis and Design of Structures	تحليل وتصميم المنشآت
Axial Crushing of Square Steel Tubes Aljawi, A.A.N.	3
A Simplified Analysis of Edge Settlement of a Large Aboveground I Tank M.N. Hamdan	
W.N. Humaan	19
Design and Construction Problems of Steel Formed Deck Floors in Steel Abdulaziz M. Al-Hamad	•
Structural Design Practice for Residential Buildings in Riyadh: An Overv	view
Abdulaziz I. Al-Negheimish, Ahmad B. Shuraim, and Abdullah S. A.	
Space Trusses as Impact Energy Absorbers: An Experimental Study Abdulmalik Ali Aljinaidi Alghamdi	63
CBAEL: Software for Static/Dynamic Analysis, Design and Optimization Structures	n of
Abdelhamid Charif	79
مميم الانشائي المقاوم للز لازل باستخدام تقنيات الذكاء الاصطناعي عبـاس برايـس	- '
Concrete Technology	تقنيةالخرسانة
Dougous and Status tion of Donais Materials	
Performance Evaluation of Repair Materials M.M. Al-Zahrani, M. Maslehuddin, S.U. Al-Dulaijan, A. Sharif, S.I.	Н. <i>Alidi</i> 95
	1. 11
Sulfate Attack on Plain and Blended Cements in Sea Water	
Omar Saeed Baghabra Al-Amoudi	111
Effect of Aggregate Quality on the Properties of Concrete	
S.U. Al-Dulaijan, M. Maslehuddin, M.M. Al-Zahrani, A.M. Sharif, and M.H. Al-Mehthel	
Retempering of Ready-Mixed Concrete in Riyadh, Saudi Arabia	
Abdulrahman M. Alhozaimy and Abdulaziz I. Al-Negheimish	137

Repair and Retrofitting of Deteriorated Reinforced Concrete Structures – Three Case Studies A.H. Al-Gadhib, M.H. Baluch, and M.K. Rahman 147
Prediction of Strength of High Performance Concrete Using Neural Networks Mohammad Iqbal Khan and Saleh Hamed Alsayed
Characteristics of the Arabian Gulf Environment and Its Impact on Concrete Durability – An Overview A.S. Al-Gahtani and M. Maslehuddin 169
Assessment of Strength Testing by Ready-Mixed Concrete Plants in Riyadh, Saudi Arabia
Abdulaziz I. Al-Negheimish and Abdulrahman M. Alhozaimy 185
Built-In Corrosion Prevention Systems for New Reinforced Concrete Seawater Pits Zia Chaudhary 203
Biological Degradation of Date-Palm Fronds Used in Construction **Radwan S. Al-Juruf** 217
Simulation of Soil Dynamic Compaction A. Rouaiguia and R. Al-Zahrani 223
Field Research Station for Concrete Durability M.M. Al-Zahrani, A. Sharif, O.A. Eid, H. Saricimen, S.U. Al-Dulaijan, M. Maslehuddin 233
Durability of the Repair Materials and Repaired Structures
Saleh Hamed Alsayed and Mohammad Iqbal Khan 249
تأثير الحرارة على شروخ الكمرات الخرسانية المحقونة بالراتنجات ٢٣
تصنيف مصانع الخرسانة الجاهزة في مدينة الرياض: الأسس و المعايير ٣٥ عبدالعزيز إبر اهيم النغيمش، عبدالرحمن محمد الحزيمي، سعود جار الله السويداء، صالح بن عبد الله السليمان
خصائص و جودة البلوك الإسمنتي المصنع في مدينة الرياض ٥٩ عبدالرحمن الحزيمي ، عبدالسلام الشقير ، عبدالعزيز النغيمش ، صالح السليمان ، سعود السويداء
Fiber-Reinforced Concrete الخرسانة المقواة بالأثياف
Durability of GFRP Rebars in Stressed Concrete Beams at Different Environments Tarek Almusallam, Yousef Al-Salloum, Saleh Alsayed, and
Abdulrahman Alhozaimy 263

Long-Term Performance of the New Generation of GFRP Rebars Under Severe Environments	;
Saleh H. Alsayed, Abdulrahman M. Alhozaimy, Yousef A. Al-Salloum, and Tarek H. Almusallam	27
FRP Composites as an Alternative Material to Strengthen, Upgrade and Repair Infrastructure	r
Saleh Alsayed, Yousef Al-Salloum, and Tarek Almusallam	29
Durability Performance of Glass Fiber Reinforced Plastic Reinforcement in Harsh Environments	1
Mesfer M. Al-Zahrani, Salah U. Al-Dulaijan, Alfarabi Sharif, and Mohammad Maslehuddin	30
مض وصيانتها Pavement Material and Maintenance	واد الرص
Stripping on Saudi Arabian Roads — Prediction and Prevention	
H.I. Al-Abdul Wahhab, I.M. Asi, S.A. Ali, S. Al-Swailmi, and A. Al-Nour	32
Effect of Compaction Methods on the In-Situ Properties of Asphalt Concrete	
Ziauddin A. Khan, Hamad I. Al-Abdul Wahab, and Mirza G. Baig	33
Dammam Municipality Pavement Management System (DMPMS)	
Hamad I. Al-Abdul Wahhab, Rezqallah H. Malkawi, Ibrahim M. Asi, and Jaweed Yazdani	35
Review of Steel Slag Utilization in Saudi Arabia	
Ziauddin A. Khan, Rezqallah H. Malkawi, Khalaf A. Al-Ofi, and Nafisullah Khan	36
Quantification of Aggregate Degradation of Asphalt Mixes Compacted by Gyratory and Marshal Methods	7
Rezqallah H. Malkawi, Mirza Z. Baig, Tauqir A. Siddiqui, Khalf A. Al-Ofi, and Ziauddin A. Khan	38
The Effect of the CBR Mold Size and the Maximum Aggregate Size on the Load	i
Carrying Capacity of Base Course Materials	00
Saad A. Aiban and Osman El Hussien Mohammed	39
تنقل Traffic Engineering	ندسةال
A Review of Vehicle Collision Avoidance Systems	
A. Nmngani and M. Akyurt	41

The Effect of the Proposed Widening of Dhahran Arterial in Al-Khobar on the Traffic Flow
Khalaf A. Al-Ofi, Nedal T. Ratrout, Hasan M. Al-Ahmadi, and Mohammed A. Al-Sughayier 429
جمعية هندسة الطرق الخليجية ودور ها في مجال صناعة الطرق الخليجية ٧٠
Water and Environmental Engineering
Improving Water Management by the Industrial Sector in Saudi Arabia Fahad A. Al-Khaldi and Basel F. Abu-Sharkh 443
Regulating Underground Fuel Storage Tanks (USTS), Benefits and Challenges A. Maqsood Ahmad, O. Al-Attas, S. Mohiuddin, and M. Al-Suwaiyan
Membrane Bioreactors for the Treatment of Municipal Wastewater: A Critical Review K. Iqbal Basha and Muhammad H. Al-Malack 47
Expert Support System (ESS) for Data Acquisition in Environmental Risk Assessment of Contaminated Sites **Ammar Abbachi*** 483
Monitoring of Principal Industrial Pollutants Using Environmental Monitoring Station Javed A. Ansari 497
تقدير التسربات من شبكات توزيع المياه التي تعمل بنظام المناوبات حالة در اسية: شبكة مياه مكة المكرمة ٨١
إثباتُ وجودِ تيار بخاري منبعثِ من الأرض واستثمارُه بحصير عاكس لإنباتِ الصحراء
كفاءة محطات تتقية مياه الشرب في المنطقة الوسطى من المملكة في إزالة النترات . عبدالله الزرعة ، مجاهد خان ١٢١

المجلد الرابع
رابر

VOLUME 4	الهجند الرابع
Computer Science & Engineering	مندسة وعلوم الحاسب الآلي
Internet and Multimedia	الإنترنت والوسائط المتعددة
Reconfigurable Multimedia Datapath for Low Cost Media Processors Aamir A. Farooqui and Vojin G. Oklobdzija	
RobSim - A Simulator for Robotic Motion A.S. Balamesh, T.D. Almatrafi, A.A.N. Aljawi, and M. Akyurt	15
An Interactive Software for Curve Fitting H.A. Bogis, A. Abou Ezz, M. Akyurt, and A.A.A. Alghamdi	27
Scheduling in Flexible Multi-Server Internet Services Fawaz S. Al-Anzi and Ali Allahverdi	41
Networking and Computer Applications	الشبكة وتطبيقات الحاسب
A Methodology for Network Topology Design Using Fuzzy Evaluati Salman A. Khan and Sadiq M. Sait	
New Digital Coding Algorithms under Morphosys Hassan Diab and Issam Damaj	73
Progressive Fingerprint Images Compression Using Edge Detection Tawad Kh. Al-Asmari	•
Multicast Tree Generation Using Tabu Search Muhammad Atif Tahir, Habib Youssef, A. Almulhem, and Sadio	7 M. Sait 95
On Optical Character Recognition of Arabic Text Abdelmalek Zidouri and Muhammad Sarfraz	109
Integrated Approach of Computing and Computer Applications at a Undergraduate Engineering Programs	
Muthanna Al-Dahhan	119
VLSI and Electronics	الدوائر المتكاملة والإلكتر ونياه
Evolutionary Heuristics for Multiobjective VLSI Netlist Bi-Partitioni	<u> </u>
Sadiq M. Sait, Aiman H. El-Maleh, and Raslan H. Al-Abaji	131

On Improving the Effectiveness of System-on-a-Chip Test Data Compression Based on Extended Frequency Directed Run-Length Codes *Aiman H. El-Maleh and Raslan H. Al-Abaji*	145
An Efficient Test Relaxation Technique for Combinational Logic Circuits Aiman El-Maleh and Ali Al-Suwaiyan	155
Review of High-Speed Digital CMOS Circuits Muhammad E.S. Elrabaa	167
Electrical Engineering الكسربائية	المندسة
Antennas and Signal Processing	الهوائيا
Control of Grating Lobes in Phased Arrays Using Genetic Algorithms Mahmoud M. Dawoud	187
Quantitative Analysis and Computational Complexity of Media Signal Processing Aamir A. Farooqui and Vojin G. Oklobdzija	197
Application of Orthogonal Curvilinear Meshes to the TLM Method H. Meliani and Y.A. Jebbar	209
Design of Linear Phase Circularly Symmetric Two-Dimensional FIR and IIR Digital Filters Using Schur Decomposition and Symmetries *Rabah W. Aldhaheri**	223
وى الكهربائية Power Systems	
An Improved Economic Dispatch Using Fast Decoupled Technique S.E.T. Mohamed and Osama M.A. Kalantan	241
Re-Evaluation of Creepage Distance Requirements for Outdoor Insulation in SEC-ERB	
Mushtaq A. Azad and Mohammad H. Al-Mubarak	257
Robust Variable Structure/Genetic Algorithms Controller for Improving Power Systems Dynamic Stability Zakariya M. Al-Hamouz and Hussain N. Al-Duwaish	267
	267
Investigation of the Effectiveness of Excitation and Facts-Based Controllers on Power System Stability Enhancement M.A. Abido and Y.L. Abdel-Magid	281
Substation Maintenance Practices in a Saudi Electric Utility	_0 1
Ali Ahmad Al-Al-Shaikh and Ibrahim M. El-Amin	297

Benefit of Interconnection of Kingdom of Saudi Arabia's Electric Utilities	
M. Arif Abdul-Majeed, A.M. Al-Shehri, G. Opoku, and I.O. Habiballah	309
A New Fuzzy Unit Commitment Problem: Application to Saudi Electricity Company	
A.H. Mantawy and Youssef L. Abdel-Magid	325
An Efficient Energy Recovery Prospect in SWRO Process	
A.T.M. Jamaluddin, Ata M. Hassan, Ali R. Al-Reweli, Abdullah Al-Rubaian, and Leif J Hauge	337
Communications Technologies for SCADA Systems	
Falah H. Zawahemah	351
Short Circuit Analysis of the Six-Phase Synchronous Machine	
Yusuf A. Al-Turki and Saud M. Al-Zahrani	361
Telecommunication בי	الاتصالا
Performance Analysis of MQAM Modulation Schemes with Diversity in Nakagami Fading Channels	
F. Al-Shalan, A. Adinoyi, and M.A. Kousa	377
Polarization Preserving Reflected Beam Splitter Mohamad A. Habli	383
Spatial Domain Modeling of Microcellular Systems Operating in Multipath Nakagami Environments	
Asrar U.H. Shiekh and Saad Muhammed. Al-Ahmadi	389
Speech Enhancement Using a Two-Stage Adaptive Noise Canceller	
Mohammed A. Al-Saleh and Kadry I. Montasser	405
المناعبة Industrial Engineering	المندسة
المناعية Industrial Engineering طالعناعي Industrial Planning	التخطي
A Mathematical Programming Model for Optimum Economic Planning of the Saudi Arabian Petrochemical Industry	
Hesham K. Alfares, Adnan M. Jarallah Al-Amer, Shaikh Saifuddin	425
Integrated Production, Inventory, and Transportation Planning in Two-Layer Supply Chain	
Kadir Ertogral, Mohammed Darwish, and Mohamed Ben-Daya	439
Evaluating Traffic Stream Models for Nafrah Using Simulation	
M.E. Seliaman, S.O. Duffuaa, and A.A. Andijani	453

Engineering Design and Natural Resources Management Abdul Raouf	
Production Systems Planning بنتاج	ليط نظم الا
Weibull Analysis of Time Between Failures of Pumps Used in an Oil Refinery Anwar Khalil Sheikh, Muhammad Younas, and Dahham Matar Al-Anazi	
Effect of Inspection Errors on the Performance of Inspection Plans in Quality C Systems	
Mehmood Khan and S.O. Duffuaa	
Quality Function Deployment in Maintenance Work Planning Process S.O. Duffuaa, A.H. Al-Ghamdi, and A. Al-Amer	
A Cyclic Selection Algorithm with Scheduling Applications Hesham K. Alfares and Shokri Z. Selim	
Planning and Design of Computer Integrated Manufacturing Systems Using an I System Iftikhar Hussain and Abdulrahman M. Al-Ahmari	
Analysis of the Performance of a Manufacturing Cell Operating Under Dif Failure Rates and Maintenance Policies Mehmet Savsar	fferent
Better Heuristics for M-Machine No-Wait Flowshop with Total Completion Criterion	Time
Ali Allahverdi and Tariq Aldowaisan	
A Fuzzy Goal Programming Approach to Disassembly Planning Elif Kongar, Surendra M. Gupta, and Yousef A.Y. Al-Turki	
Robotics and Control وبوت، والتحكم	ع الألية الر
Robust Design of a Power System STATCOM Controller Using Loop-Shaping Technique	
A.H.M.A. Rahim and M.F. Kandlawala	
Symbolic Modeling of Robotic Manipulators A.A.N. Aljawi, A.S. Balamesh, T.D. Almatrafi, and M. Akyurt	
Optimum Trajectory Function for Minimum Energy Requirements of a Spherical Robot	
S.A. Alshahrani, H. Diken, and A.A.N. Aljawi	

VOLUME 5	لد الخامس
Mechanical Engineering	ىد الخامس سة المېكانېكېة
Corrosion	ل
Development of HSLA Steel for Hydrogen Service in Oil and Gas Industries *Talip Y. Alp and Faisal I. Iskanderani**	
Stress Corrosion Cracking: Case Studies in Refinery Equipment Graham R. Lobley	
The Effect of Changing from MSF to RO Water on the Internal Corrosion of L Anees U. Malik, Ismail Andijani, and Fahd Al-Moaili	
AC Impedance Studies on the Corrosion Behavior of Carbon Steel in D Chloride Solution Ismaeel Andijani	
Effect of Sodium Benzoate Application on Atmospheric Corrosion of Mild Ste	
Potential Effect on the Leaching of Alloying Elements of the Laser Treat Untreated TI-6AL-4V Mazen M. Khaled	
Fluid Flow	اب الموائع
Effect of Flow Velocity and Particle Size on Erosion in a Pipe with Sudden Contraction	
H.M. Badr, M.A. Habib, R. Ben-Mansour, and S.A.M. Said	
On the Metrological Performances of Differential Flow Meters Mohamed Aichouni, Mohamed Othman Al Nais, and Boualem Laribi	
Experimental Investigation of the Flow Past a Low-Rise Building M. Mahmood and M.O. Budair	
Intracomponental Aerodynamic Interaction in Centrifugal Compressor	
Basharat Salim	

Product Defects in Aluminum Extrusion and Their Impact on Operational Cost A.F.M. Arif, A. K. Sheikh, S.Z. Qamar, M.K. Raza, K.M. Al-Fuhaid......

التصنيع

137

Manufacturing

Performance Evaluation of Forging Dies Muhammad Younas and Anwar K. Sheikh
Determination of Fracture Toughness of Tool Steels A.K. Sheikh, A.F.M. Arif, and S.Z. Qamar
Some Observations on Pressure Distribution and Die Failure Modes in Hot Extrusion S.Z. Qamar, A.F.M. Arif, A.K. Sheikh, and K.M. Al-Fuhaid
Modelling of Damage in Metal Forming Processes Smain Bezzina
Finite Element Modeling of Weld-Bonded Joints A.M. Al-Samhan and S.M.H. Darwish
Materials
Direct Adhesion Measurement of Individual Solid Particles to Gelatin Capsule Surfaces Taleb H. Ibrahim, Tonia R. Burk, Ronald D. Neuman, and Frank M. Etzler
Effect of Preheating on Hot Cracking Susceptibility of Welded Austinitic Stainless Steels
Abdulhamid S. Al-Akel, A. K. Abdelatif, and F. Abo Gharbia
Compression Testing of Superplastic Lead-Tin Eutectic Alloy at Room Temperature Mahmoud S. Soliman and Khaled A. Al-Seif
Corrosion Behavior of Powder Metallurgy Aluminum Alloy 6061/Al ₂ O ₃ Metal Matrix Composites Zuhair M. Gasem and Amro M. Al-Qutub
Microstructural Characteristics-Property Relationships in Cast Irons T. Alp, F. Yilmaz, and A.A. Wazzan
Reliability of Dissimilar Metal Welds Subjected to Sulfide Stress Cracking Gasem M. Fallatah, Anwar K. Sheikh, Zafarullah Khan, John K. Boah
Fatigue Damage in Woven Carbon Fabric/Epoxy Laminates at Non-Ambient Temperatures
Khan, Z., Khan, R., Al-Sulaiman, F., and Merah, N.
Development of API Grade Linepipe Steels at Saudi Iron & Steel Company, HADEED
Tariq Mehmood, S. Niaz Ahsan, Majid Al-Saif, and Khalid Cheema

Laser Induced Breakdown Spectroscopy of Geological Samples M.A. Gondal, Zulfiqar Ahmed, M.A. Khan, and A. Baig	
Mechanics and Control	ميكانيكا وتحكم
Off Axis Inclination Measurement of Drilling Shafts Essam E. Hassan, Naim Al-Mutowa, Samer Al-Umrani, Mohd Al-Haddad, Aiman Al-Lugmani	347
Vibration Analysis of Shrouded Bladed-Disc Assemblies A.S. Mohamad, A.A.N. Al-jawi, and K.A. Alnefaie	355
Finite Element Investigation of Initial Clearance Effect on Tube-To-Tubeshee Strength	
N. Merah, A. Al-Zayer, A. Shuaib, and A. Arif	371
Residual Vibration Response Spectrum for a Servomotor Driven Flexible Beam H. Diken and A.A.A. Alghamdi	
Two Dimensional Finite Element Analysis for Large Diameter Steel Flanges Muhsen Al-Sannaa and Abdulmalik Alghamdi	397
On the Investigation of Vibration Signals Using Joint Time Frequency Analysis B.O. Al-Bedoor and L. Ghouti	409
Combined Cycle Dynamics F.M. Mansour, A.M. Abdul Aziz, S.M. Abdel-Ghany, and H.M. El-shaer	423
Power Flow in Beams Treated with Active Constrained Layer Damping Abdulmalik Ali Aljinaidi Alghamdi and Amr Baz	445
Tip Deflection Estimation of a Rotating Cantilevered Beam A. El-Sinawi and M. N. Hamdan	461
A Survey of Mechanization Efforts on Date Palm Crown Operations M. Akyurt, E. Rehbini, H. Bogis, and A.A. Aljinaidi	475
Refrigeration Systems	نظمالتبريد
Discharging Experiments of a Cool Thermal Store Filled with Balls Containing Abdulrahman Salih Hariri	
Experimental Study of Hybrid Liquid Desiccant Based Vapor Compression C System	Cooling
A. Al-Farayedhi, P. Gandhidasan, M.A. Antar, and M.S. Abdul Gaffar	503

The Use of an Open Cycle Absorption System in Automobiles as an Alternative to CFCS N. Al-Aqeeli and P. Gandhidasan
Performance of Waste Heat Absorption Refrigeration System Osama A. El Masry
Theoretical Analysis of a Liquid Desiccant Air Dehumidifier Ammar A. Chebbah
Thermal Systems
Safe and Environment Friendly Wood Fuelled Cooking Stove In Hajj Camps A.Y. Bokhary, G.M. Zaki, and A.M. Al-Turki
Evaluation of Energy Losses in Pipes Y. Lahiouel and A. Haddad
The Buoyancy Effects on the Boundary Layers Induced by Continuous Surfaces Stretched With Rapidly Decreasing Velocities *Mohamed E. Ali**
Nonlinear Simulation of Thin Liquid Film Flow on Inclined Planes Ahmad Tariq Jameel and Motaz Ali Atieh
Experimental Study on Forced Convective Boiling of Ammonia Water Mixtures in a Vertical Smooth Tube T. Khir, N. Ghaffour, and A. Ben Brahim
Fuel Consumption of a Spark Ignition Engine Blended with MTBE Abdulghani A. Al-Farayedhi
Infrared Thermography as a Flow and Local Heat Transfer Visualization Tool Saad Al-Kahtani, Eball Ahmad, and Yousuf Al-Yahya
Flow Visualization of Multiphase Flow Systems Muthanna Al-Dahhan
Evaluation of Fouling Effect on the Thermoeconomic Optimisation of the Geometry of a Power Plant Regenerative Air Heater Rahim K. Jassim and Abdulraof S. Habibullah
Calibration and Traceability: A Metrology Requirement That Must Be Realized Throughout Saudi Arabia S. A. Al-Kahtani, M. M. Al-Muhaisni, and H. I. Khonkar