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To All Members, Date: 10 October 2005

CANDIDATES APPROVED TO SIT FOR PROFESSIONAL INTERVIEW

The following candidates have been approved to sit for the Professional Interview for Year 2005.

In accordance with Bylaws 3.7, the undermentioned names are published as having applied for membership of the Institution, subject to passing the year 2005 Professional Interview.

If any Corporate Member of the Institution has any reason as to why any of the candidates is not a fit and proper person for election, he should communicate in writing to the Honorary Secretary. Such communication should be lodged *a month* from the date of publication.

Ir. MC Hee
Honorary Secretary
The Institution of Engineers, Malaysia

TRANSFER APPLICANTS

Membership No	Name	Qualifications
	Civil Engineering	
23209	Cheah Siew Wai	BE (Hons) (UTM) (Civil, 2002)
13680	Cheang Yew Kee	BE (Hons) (NUS) (Civil, 90) MSc (Nanyang) (Const. Mgmt, 98)
18782	Chong Chee Yan	BE (Hons) (UTM) (Civil, 2001) MSc (UPM) (Struct & Const, 2004)
19678	Chong Yik Hwa	BE (Hons) (UTM) (Civil, 99)
22485	Chuah Shang Ching	BE (Hons) (UKM) (Civil & Struct, 99)
19556	Khoo Chee Min	BE (Hons) (UTM) (Civil, 2002)
20514	Kong Kok Boon	BE (Hons) (Hertfordshire) (Civil, 98)
22339	Lee Seong Tatt	BE (Hons) (UTM) (Civil, 2000) MEng. Sc. (Malaya) (2004)
15168	Noor Azmil bin Sakur	Adv Dip (ITM) (Civil, 94)
17007	Robin Tigai	BE (Hons) (UTM) (Civil, 90)
20300	Tan Su Kwong	BE (Hons) (Monash) (Civil, 99) MEng. Sc. (Monash) (2003)
25260	Teh Siew Yin	BSc (Oklahoma) (Civil, 95) MSc (Oklahoma) (Civil, 98)
19658	Wong Lee Cheu	BE (Hons) (Hertfordshire) (Civil, 98)
21485	Woo Yin Kit	BE (Hons) (UTM) (Civil, 2000)
17621	Yoong Lai Yee	BE (Hons) (UM) (Civil, 94)
	Electrical Engineering	
20843	Khoo Kah Ling	BE (Hons) (Malaya) (Elect,99)
15756	Mostapha bin Lai	BE (Hons) (Wales) (Elect & E'tronic, 88)
17624	Nazmee bin Hashim	BE (Hons) (Aberdeen) (Elect & E'tronic, 2001)
	Electronic Engineering	
22586	Lai Choon Shyang	BE (Hons) (Purdue) (Elect,99)
	Mechanical Engineering	
22304	Foo Kai Jaan	BE (Hons) (UKM) (Mech,2001)
21113	Foong Kok Hong	BE (Hons) (UM) (Mech,97)
7782	Padmanathan a/l A. Subramaniam	BE (Hons) (Malaya) (Mech, 84)
9532	Tan Toh Hua	BE (Hons) (UM) (Mech,82)
	Naval Architecture Engineering	
19586	Adruin Shazean bin Mohd Mustaffa	BE (Hons) (Naval Arch & Ocean Eng,98)

NEW APPLICANTS

Name	Qualifications
Civil Engineering	
Azmi bin Hassan	BEng (Tech) (Wales) (Civil, 80) MSc (Oklahoma State) (Civil,87) PhD (Oklahoma State) (Civil, 96)
Baharanuddin bin Che Zain	BSc (Hons) (Wales) (Civil,80)
Haliza binti Md Zin	BSc (Hons) (Glasgow) (Civil,77)
James Wong	BSc (Hons) (Wales) (Civil,85)
Ma'arof bin Baharom	BE (UTM) (Civil,77)
Zailan bin Abdul Latif	BE (Hons) (Strathclyde) (Civil,97)
Electrical Engineering	
Ahmad Zulfa bin Abas	BE (Hons) (Brighton) (Elect & E'tronic, 93) MSc (UMIST & Manchester) (Elect Power Eng., 95)
Azhar bin Mohamad Appandi	BSc (Evansville) (Elect, 92)
Liaw Sung Guan	BE (Hons) (MMU) (Elect, 2002)
Electronic Engineering	
Abdul Malik bin Ab. Rahim	BE (Hons) (UiTM) (Elect, 99)
Mechanical Engineering	
Tsen Lip Khah, Michael	BE (Hons) (Queen's) (Mech, 94)
Zema Zamanee bin Mat Saad	BSc (Hons) (Tri-State) (Mech, 95)
Structural Engineering	
Chong Chooi Kong @ Chong Kee	BSc (Taiwan College & Oceanic Tech) (Eng, 78) MSc (Wales) (Civil & Struct., 80)

ERRATA (pg.1 Engineering Blue Pages, JURUTERA OCT 2005)

TRANSFER APPLICANTS

	Civil Engineering	
20585	Wan Yow Choy	BE (Hons) (Malaya) (Civil, 99)

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IEM DIARY OF EVENTS

For further enquiries on the events below, please contact IEM Secretariat at 03-7968 4001/2 or visit IEM Homepage at http://www.iem.org.my

IEM CONFERENCES FOR 2006
Graduate and Student Section (G&S Section)
12 - 13 NOV 2005
Time: 2.30 p.m. - 5.00 p.m.
2-Days Course on Public Speaking: Speechcraft Program 2005

17 - 19 NOV 2005
Time: 8.30 a.m. - 5.00 p.m.
2+1-Day IEM Course on "Geotechnical Engineering 2005 II"

30 NOV 2005
Time: 5.30 p.m. - 7.30 p.m.
Talk on "Interactive Tools to Upgrade the Design and Operation of HT and LV Distribution Networks"

1 - 3 DEC 2005
Time: 8.30 p.m. - 5.30 p.m.
Three One-Day Short Courses in
- Design of Low Voltage Electrical System
- Planning and Operation of High Tension Distribution Network
- Simulation and Assessment of LV Electrical Installation

16 - 18 DEC 2005
IEM Contingent for Engineering Games 2005
Venue: IIUM, Kuala Lumpur

31 DEC 2005
IEM Essay Writing Competition

Civil and Structural Engineering Technical Division
21 NOV 2005
Time: 5.30 p.m. - 7.00 p.m.
Talk on "Continuing Professional Development (CPD) Awareness Programme"

26 NOV 2005
Time: 8.30 a.m. - 1.00 p.m.
Half Day Course on "Site Supervision"

Electrical Engineering Technical Division
24 NOV 2005
Time: 9.30 a.m. - 2.30 p.m.
Venue: KL Sentral Station
Visits to KTMB Centralies Train Control System and Site Tour to KTMB Seremban Komuter Station

Mechanical Engineering Technical Division
25 NOV 2005
Time: 12.00 noon - 5.30 p.m.
"Do Housekeeping the Serious Way"- Half-Day Technical Course on Asset Risk and Faciliy Management for Engineers and Facility Managers

2 DEC 2005
Time: 2.00 p.m. - 9.00 p.m.
Venue: Finnegan Irish Restaurant, Kuala Lumpur
"Data Friday" - Half-Day Technical Course on Practical Application and System Design of Mission Critical Operation - Infrastructure

Geotechnical Engineering Technical Division
1 DEC 2005
Time: 8.30 a.m. - 5.30 p.m.
Venue: Sheraton Subang Hotel & Towers, Subang Jaya
IEM-REAM Workshop on Specifications for Geotechnical Works

Sub-Committee on Engineering Contracts
29 NOV 2005
Time: 9.00 a.m. - 1.00 p.m.
Half-Day Lecture on "Negligence of Engineers in Contracts"
Venue: Sheraton Subang Hotel & Towers, Subang Jaya

Highway and Transportation Engineering Technical Division
13 - 15 NOV 2005
Technical Visit to Singapore

10 DEC 2005
Time: 9.00 a.m. - 1.00 p.m.
Visit to Transport Management Centre

Tunnelling and Underground Space Technical Division
26 NOV 2005
Time: 9.00 a.m. - 1.00 p.m.
A Technical Visit to Pantai Sewerage Tunnel

Project Management Technical Division
12 NOV 2005
Time: 8.00 a.m. - 1.30 p.m.
Visit to "Megasteel Sdn Bhd" – Malaysia's First Flat HR 2.5 mt Steel Producing Unit

15 - 16 NOV 2005 (Session 1)
Venue: Armada Hotel, Petaling Jaya
17 NOV 2005 (Session 2)
A 3-Day course on "Essentials of Project Management – Theory and Practice including Microsoft Project Tool"

ITSIG
16 NOV 2005
Time: 5.30 p.m. - 7.30 p.m.
Talk on Entrepreneurship and the New Economy in ICT for Engineers

IEM CONFERENCES FOR 2006
6 - 8 MARCH 2006
International Conference on Trenchless Technology
Sheraton Subang Hotel

20 - 25 MARCH 2006
Engineering Week

15 APRIL 2006
AGM & 47th Annual Dinner and Awards Night
IEM and Palace of the Golden Horses

7 MAY 2006
Open House
JKR Hall, Dewan Tan Sri Mahfoz Kahlid

8 - 12 MAY 2006
IEM/BEM Exam

9 - 11 MAY 2006
Conference on Concrete Engineering and Technology (CONCET)
Sheraton Subang Hotel

22 - 26 MAY 2006
11th Asian Congress on Fluid Mechanics
Berjaya Times Square Hotel and Convention Centre

27 - 30 AUGUST 2006
11th APCChE Congress
Kuala Lumpur Convention Centre (KLCC)

5 - 7 SEPTEMBER 2006
Brownfield Conference
Berjaya Times Square Hotel and Convention Centre

24 - 25 OCTOBER 2006
Conference on Current Trends in Food Engineering

6 - 10 DECEMBER 2006
24th Conference of ASEAN Federation of Engineering Organisation (CAFEO)
DoneChan Palace Hotel, Vientiane Capital, Laos

IEM CONFERENCES FOR 2007
8 - 11 MAY 2007
16th Southeast Asian Geotechnical Conference (SEAGC 2007)
Venue : Sheraton Subang Hotel & Towers, Subang Jaya
E-Mail : 16seagc@iem.org.my
Website : http://www.16seagc.com
(Call for Papers)

1 - 5 AUGUST 2007
3rd World Engineering Congress (WEC)

CONFERENCE & SEMINAR

MALAYSIA

30 November - 1 December 2005
INTERNATIONAL CONFERENCE ON DEFENCE TECHNOLOGY
Venue : Marriot Putrajaya
Organiser : ATMA
Tel : 03-9057 5345
Ext : 2434/2211/2205/2224
E-mail : icdt2005@atma.gov.my /dian@atma.gov.my
Website : http://www.atma.gov.my /ICDT2005/index.html
(Invitation to Register)

3 - 5 July 2006
RiVET 2006: FIRST REGIONAL CONFERENCE ON VEHICLE ENGINEERING AND TECHNOLOGY - "TOWARDS A COMPETITIVE VEHICLE DEVELOPMENT FOR REGIONAL MARKET"
Venue : Kuala Lumpur
Organiser : UTM
Tel : +60 7 521 8159 / 8170 / 8164
Fax : +60 7 521 1355
E-mail : rivet2006@spaceutm.net.my
Website : www.spaceutm.edu.my/seminar
(Invitation to Register)

20 - 24 November 2005
5TH IERE (INTERNATIONAL ELECTRIC RESEARCH EXCHANGE) SOUTHESTERN ASIAN FORUM
Venue : Snahgri-La Hotel, Kuala Lumpur
Organiser : IERE, TNB
Website : http://www-iere.dcc.co.jp/About_IERE/main.html
(Invitation to Register)

USA

4 - 6 October 2006
4TH ANNUAL DFI STUDENT PAPER COMPETITION
Organiser : Deep Foundations Institute
Tel : 973 423 4030
Fax: 973 423 4031
E-mail : dfihq@dfi.org
Website : http://www.dfi.org
(Call for Papers - before 6 January 2006)

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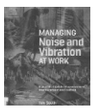
SAFETY : PRINCIPLES AND PRACTICE IN THE LABORATORY
FAKHRU'L-RAZI AHMADUN / CHUAH TEONG GUAN / MOHD HALIM SHAH ISMAIL / UNIVERSITI PUTRA MALAYSIA PRESS
614. 8 / 004637

Ignorance, carelessness or improper practice in the laboratory or the improper handling of hazardous or toxic materials may lead to work accidents and work-related ill-health. Laboratory users and administrators cannot afford to overlook these possible consequences due to the misconduct of laboratory practices and should decide how best to manage the health and safety aspects in the laboratory. This book has been written for safety representatives of colleges and universities, for lecturers, teachers and students, and for researchers working in laboratories. It is also for everyone responsible for laboratory safety, laboratory accidents and their consequences. The emphasis is on hazards to health and safety, with the focus on the general hazards in the laboratory, how they arise and how to prevent. How to eliminate and control them. Special hazards will also be discussed such as radiation hazards and human factors. This book also provides information on governmental and non-governmental agencies and authorities, emergency contact numbers of relevant authorities, a list of Malaysia's occupational safety and health related legislation and some useful occupational safety and health websites. Readers will find that the information contained in this book will serve as the foundation for laboratory users safety policy. A set of Laboratory Safety Forms for a typical laboratory is also available in the appendix for reference. Laboratory users can use and dapt these forms for their own laboratory requirements.

MANAGING NOISE AND VIBRATION AT WORK :
A PRCTICAL GUIDE TO ASSESSMENT MEASUREMENT AND CONTROL
TIM SOUTH / ELSERVIER
628.51 / 004638



This book introduces noise and both hand-arm and whole body vibration by explaining what they are and how they can affect the body, drawing out the similarities and differences between the hazards. It provides clear explanations of the requirements of the EU Directives and explains hoe to fulfill them. Practical information on measurement, making noise and vibration assessment, and approaches to controlling risk, help the readers to understand the issues of noise and vibration exposure in the workplace. The text is supported by information and diagrams of measuring equipment, advice on how to plan a survey, worked examples of necessary calculations, and charts and diagrams that can be used in place of the calculations. Suitable hearing and vibration protection is detailed. Case studies help to set the subject in context and highlight common errors and pitfalls.

PRINCIPLES OF FERMENTATION TECHNOLOGY – 2ND EDITION
PF STANBURY / A WHITAKER / S J HALL / BUTTERWORTH HEINEMANN
664.024 / 004636

This second edition has been thoroughly update to include recent advances and developments in the filed of fermentation technology, focusing on industrial applications. The book now covers new aspects such as recombinant DNA techniques in the improvement media, sterilisation procedures, inocula, and fermenter design. Chapters on effluent treatment and fermentation economics are also incorporated. The text is supported by numerous clear, informative programs. This book is of great interest to final year and postgraduate students of applied biology, biotechnology, microbiology, biochemical and chemical engineering.

INTRODUCTION TO HEALTH AND SAFETY IN CONSTRUCTION
PHIL HUGHES / ED FERRETT / ELSERVIER
624.0684 / 004640

The construction industry is working hard to improve its health and safety record. It is now essential for employers and employee to be aware of the health and safety issues that concern them and demand for qualifications in this area is increasing.

- fully covers the syllabus for the NEBOSH National Certificate in Construction Safety and Health
- Deals with the majority of construction activities as well as the key health and safety areas identified by the HSE
- Includes a summary of the main legislation, ideal as a reference for students as well for all managers in the construction industry

WIRING FOR WIRELESS SITES
IRA WIESENFED / THOMAS DELMA LEARNING
621.382 / 004634

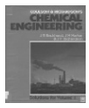
Wiring for Wireless Sites is one of only a handful of concise, yet highly technical information resources exclusively devoted to teaching the ins and outs of installing equipment in a wireless site. A "go to " resource for site planning engineers and technicians, as well as professionals already in the radio and wireless installation and maintenance business, this book eliminates hours of research time by linking generic electrical/electronic circuit theory to manufacturer-specific descriptions of cables before moving on to actual installation. Comprehensive coverage spans the spectrum, from equipment layout and wiring through grounding and lighting protection. Helpful learning aids and are also included in every chapter to guide readers to new levels of expertise.

MECHATRONICS SOURCEBOOK
NEWTON C BRAGA / THOMSON DELMAR LEARNING
621 / 004633

Mechantrornics specialists play an important role today. Like a "jack of all trades", these technical professional know how to install a new machine, make necessary connections to electronic circuits, and design required control software. Success in this field, the result of a union of electronics and mechanics, requires an under standing of robotics, pneumatics, hydraulics, and artificial intelligence. A "must" for anyone who designs, studies, or works with mechatronics projects, the book begins with a review of basic chemistry and physics principles, as well as key mechanics formulas. Later chapters invite readers to explore pneutronics and hydronics application, electric motors and relays, servo systems, power electronics and power supplies, and more. Relevant information on microcontrollers and microprocessors, PC interfacing, memory applications, programmable controls, and digital logic is also included, providing immediate and hassle-free access to all of the information required for success as a highly-skilled, professional mechatronics specialist.

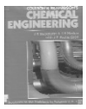
Note: IEM Library is open from
9.00 a.m. to 6.00 p.m. (Mon - Fri)
9.00 a.m. to 4.00 p.m. (Every Saturday)

COULSON AND RICHARDSON'S CHEMICAL ENGINEERING :
SOLUTIONS FOR VOLUME 1
J R BACKHURST / J H HARKER / J F RICHARDSON / BUTTERWORTH HEINEMANN
660.20 / 004644



This volume in the Coulson and Richardson series in Chemical Engineering contains full worked solutions to the problems in volume 1 Whilst the main volume contains illustrative worked examples throughout text, Chemical Engineering : Solutions for Volume 1 contains the answers to the more challenging questions posed in the main text. These questions are of both a standard and non-standard nature, and so will prove to be of interest to both academic staff teaching course in the area and to the keen student. Chemical engineers in industry who are looking for a standard solution to a real-life problem will also find the book of considerable interest.

COULSON AND RICHARDSON'S CHEMICAL ENGINEERING :
SOLUTION TO THE PROBLEMS IN VOLUME 2 AND 3
JR BACKHURST / J H HARKER WITH JF RICHARDSON / BUTTERWORTH HEINEMANN
660.20 / 004641



This volume provides the reader with the full worked solutions to the problems set in Chemical Engineering Volume 2 and Volume 3 Whilst the main volumes contain illustrative worked examples throughout the text, this book gives sample solutions to a wide range of problems of the types which will be encountered by practicing engineers. In many cases, problems do not have unique solutions and the ultimate choice may involve a number of compromises – a situation which is common throughout the whole practice of engineering.

THERMOCHEMICAL PROCESSES : PRINCIPLES AND MODELS
CB ALCOCK / BUTTERWORTH HEINEMANN
660.2 / 004652

For the first time this book provides a quantitative description and examples of the application of physicalchemical concepts to the processing and degradation of metallic and other inorganic materials, from the atomic scale to the analysis of industrial processes. This book deals with processes dominated in turn by the gas phase (such as chemical vapour deposition), the solid phase (such as powder metallurgy electroceramics and high-temperature corrosion) and the liquid phase (such as extraction metallurgy and glass-making)

COULSON AND RICHARDSON'S CHEMICAL ENGINEERING SERIES :
CHEMICAL ENGINEERING DESIGN – VOLUME 6, R K SINNOTT / ELSERVIER
6660.2 / 004635

Chemical Engineering Design is one of the best-known and widely adopted texts available for student of chemical engineering. It deals with the application of chemical engineering principles to the design of chemical processes and equipment. Revised throughout, the fourth edition has been updated to cover the latest methods and techniques in the industry including process design, coasting, safety and loss prevention techniques, equipment design methods, pressure vessel design and numerous practical examples and student exercises. Comprehensive in coverage, exhaustive in detail, the book is widely used by professionals as a day-to-day reference and provides students with all the fundamentals of chemical engineering design.

BEGINNING AUTOCAD 2004
BOB MCFARLANE/NEWNES
681.324 / 004650

Beginning AutoCad 2004 is a course based on learning and practicing the seeential of 2D drawing using AutoCAD. The focus on 2D drawing in one book, ensures the reader gets a thorough grounding in the subject, with a greater depth of coverage than tends to be available form general introductions to AutoCAD. As a result, this book provides a true, step-by-step, detailed exploration of the AutoCAD functions required at each stage of producing a 2D drawing – an approach often not found in the many software reference guides available.

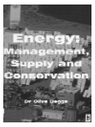
ROY CHUDLEY AND ROGER GREENO BUILDING CONSTRUCTION HANDBOOK: 5TH EDITION, R. CHUDLEY AND R. GREENO
690.22 / 004646

Building Construction Handbook summarises all elements of building construction practice, techniques components and procedures. Information is presented concisely, in a highly illustrated and accessible style. This is an essential text for all building construction students up to, and including, undergraduate level. It is an ideal resource for a wide range f courses including; BTEC National, NC / HND, and level 3/4 NVQs. The comprehensives coverage and numerous references to the latest Building Regulations, Water Supply Regulation, British and European Standards also makes this book in invaluable resource for construction professionals.

POROMECHANICS
OLIVIER COUSSY / WILEY
620.116 / 004631

- describes deformation and stress and the thermodynamics of fluid-infiltrated porous continua
- details the standard problems of saturated poroelasticity
- analyses unsaturated poroelastic media, the effects of capillary pressure and of the surface energy between components
- discuses non-linear and inelastic behaviors
- deals with penetration fronts and surfaces of discontinuity
- addresses the mechanical behavior of chemically active porous materials
- gives some insights on microporomechanics
- offer advanced analyses at the end of each chapter

ENERGY: MANAGEMENT, SUPPLY AND CONSERVATION
DR CLIVE BEGGS / BUTTERWORTH HEINEMANN
69.21 / 004848



This book is a comprehensive text dealing with the theory and practice of the supply of energy to consumers, energy management and auditing, and the design of sustainable energy facilities. It is a core text for courses on energy management, architectural engineering and building services engineering, as well as being a definitive handbook for professionals in the building, energy, utilities and facility management sectors. It will also be of considerable interest to those involved in environmental policy making.

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Talk on "Achieving Cost Savings From Energy Management"

Summary of talk presented by Dr Lal Jayamaha from PREMAS International Ltd on 18 March 2005

By: Ir. Lum Yoke Lee, (MIEM)

Dr Lal from Energy Centre of PREMAS Singapore is a leading expert in Energy Management, he is active in both Singapore and oversea projects and currently he is involved in energy management works for few famous buildings in Klang Valley. During his talk, he highlighted that generally there are few deadly diseases to poor energy efficiencies for buildings: best practices are not incorporated during the initial design stage, improper testing and commissioning work commenced at the end of construction, and unmanaged changes in business operation. "Energy Management" can fit itself to all these three circumstances, in the form of pre-construction analysis or post-construction optimisation effort, which will be the focus of this talk.

Dr Lal stressed that 1st step towards energy management is energy audit that comes in 2 forms, they are "preliminary audit" which is essential for energy manger because it identifies buildings and areas with potential savings and quantify the savings providing estimated cost implication. "Detailed energy" audit will be commenced soon after the cost-benefit analysis from the preliminary stage shows promising results, generally site survey plays an important role where important activities such as building data, electricity bill, benchmarking and walkthrough on the building premises will be carried out. Generally the audit proposal will highlight areas with potential savings and the quantum, particulars of the detailed energy audit costs and associated scope of works, in which building owner (customer) will based on to decide if the energy project is viable to proceed.

Upon the endorsement from building owner, energy manager will carry out the immediate steps to "diagnose" the buildings, information from data collection and logging will be processed for further analysis where proposals for improvement will be generated complete with "actual" projected savings and cost implication. Typical readings taken are set points, air flow and temperatures from both the air and water side of "the air conditioning system which conventionally consume 40% of the total energy. For example if the readings shows a high condenser return temperature, generally it indicates some unhealthy system or equipment operation on the cooling tower side, and most of the case is due to poor air circulation. On the other hand, information such as high difference in condenser approach indicates that there is a potential of scaling and fouling in the tubes. Some other common studies are attempts to match pump flow rates against the designed head, optimisation of the chillers' synchronisation based on the actual building load etc. Together with the detailed findings, energy manager will summarise and provide a comprehensive report to the client that summarises the audit findings, identified energy savings measures and savings of each, along with cost-benefit analysis and recommendation of action plans.

Once the green light is given, the energy manager will move on to implementation stage, in which activities will be carried out as in typical projects such as project scheduling, calling of tenders (unless it is a turnkey implementation), administration of contracts, supervision and site management and conclude with testing and commissioning. Unlike conventional projects where energy performance is less paid attention too, often energy performance (savings) plays an important part in projects alike where generally energy managers are paid in performance-based scheme. The energy manger will provide constantly reports and readings for a designated period of time (6 months – 1 year) depending on the nature of the contract. During this period of time, adequate corrective action and fine-tuning of the system will be commenced hopefully able to provide the customer extra last "inch" of savings.

Some of the achievement that PREMAS had achieved in many buildings of SEA countries ranged from 10%-15% savings in electricity costs and most of them are at hundreds of thousand S$. Recently they have just concluded with the savings of RM280,000 from RM 3.5 million annual electricity bill for a 49 storey building in Kuala Lumpur. Dr Lal concluded the day saying with better awareness among building owners and engineers, together with strong statutory enforcement and incentives, energy management initiatives will no longer "academic" and these effort will transform into very promising dollar and cents for building owners and the country. ■

ERRATA

JURUTERA AUGUST 2005 ISSUE

In the Professional Interview Essay portion on Page 9 and 10 of the Engineering Blue Pages, we incorrectly credited **Sdr. Ng Yong Kong**'s essay to "***Sdr. Ng Kong Yong***". The Editorial Board apologises to the author for the error.

ANNOUNCEMENT

Effective from **1 January 2006**, non-IEM Members attending the evening talks in IEM would be charged RM 20.00 for their attendance. IEM Members are also required to bring along their IEM Membership card failing which they will also be charged RM 20.00. Failing to attend the function upon confirmation letter already issued would be invoiced accordingly

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Report on Technical Presentation, "Sustainable Oil and Gas Production Operation Through Effective Application of Oilfield Chemicals", 28 July 2005

By: Ir. Razmahwata bin Mohamad Razali (MIEM)

Oilfield chemistry refers to the application of chemicals in the exploration and production of oil and gas. To gain an appreciation of the subject, the Oil, Gas and Mining Technical Division invited En. Mazli Zakuan, an Executive Director of Maces Sdn. Bhd (www.maces.com.my) to give a presentation on the topic.

The presentation started out by giving some facts as to the scale of the industry in question. Based on current projections, Malaysia's hydrocarbon reserves stand at 19 years for oil, and 33 years for gas. Last year's hydrocarbon production stood at 617 million barrels oil equivalent. There are currently 53 active Production Sharing Contracts (PSC), and 47 explorations wells have been drilled. There are 53 oil and 22 gas field in production. Last year's exploration and production (E&P) expenditure at RM12 billion, some of this is spent on chemicals.

To illustrate where chemical additives may be used, En. Mazli presented an overview of how drilling operations were run, with some diagrams as to how wells are constructed, the hardware involved and potential well configurations (slant-well and horizontal). As an introduction to the layman, the audience was given an overview as to how the process at an offshore platform was configured, showing the main processes involved: separation of the fluids, compression of the gas, treatment of the water stream, and storage /transportation of the crude.

The presentation then moved to describe the different demands placed on oilfield chemicals, and the formulation of solutions. Drilling fluids had to address the properties of lubrication, signal transmission and cutting removal. Production operation requires chemicals to sustain production quality (production chemicals) and asset integrity (integrity chemicals). The next slide presented, highlighted the various options that may be applied to each stage of the production process or operation. As an example, water separated from the hydrocarbons may require chemicals to manage:

- Scale formation (scale inhibitor);
- Corrosion due to water and contaminants (corrosion inhibitor);
- Coagulation of oil droplets that were not removed during bulk separation, thus allowing downstream water treatment processes to remove traces of oil in the water (water clarifier); and
- Growth of micro-organisms, for example sulfur reducing bacteria (SRB) (biocide).

Consequent slides explained the mechanism of how the various concoctions worked. Emulsions are stable mixtures of oil droplets suspended in a continuous water phase, the stability provided by a 'skin' surrounding the droplets formed as a natural phenomenon from turbulence of the oil/water stream. Emulsion breakers or water clarifiers destabilised the oil droplets' skin, allowing for the droplets to agglomerate, and form larger droplets through the process of film draining (liquid from one droplet flows into another). The coalesced droplets become larger. The change in physical properties allows separation using conventional (and economical) equipment.

Corrosion inhibitors form a molecular film on the surface of metal, acting as a barrier against the process fluids. Scale inhibitors prevent the deposition of scale on metal walls by interfering with the nucleation process, preventing crystal (scale) growth.

Some crude oils form a solid below a certain (pour point) temperature, as wax crystals will deposit out of the oil. Some oils have a pour point temperature above ambient, potentially causing a problem during treatment, or if the crude stops flowing in a pipeline. Pour point depressants reduce the pour point by co-crystallising and modifying the wax crystals.

Biocides act by either forming a coating to prevent exchange of nutrient across cell membrane, protein poisoning, or by inhibition of specific enzyme or metabolic pathway.

The next slide showed the main oilfield chemistry players. En. Mazli highlighted that among the international market were two Malaysian players: MACES (oilfield and water treatment chemicals) and KMC (drilling fluids).

The next series of slides highlighted the economic benefits of correct application of oilfield chemicals. Application of a drag reducing agent (reduces the pressure loss across a pipeline, allowing a larger flow for a given pipeline pressure drop) enabled 30% more production from a wellhead platform, with the additional benefit of reducing the effects of liquid slugs at the central processing platform.

At another location, emulsion breakers allowed flowing of wells that were considered high producers, but could not be produced as the wells formed emulsions that upset the process. Upon correct chemical application, 2 wells were flowed, increasing field production by 20%.

Pour point depressants helped improve water-oil separation. The untreated full well stream could not be adequately separated as the process system was not designed to handle a 30°C pour point, resulting in a large percentage of water in the oil stream. A pour point reduction to 18°C allowed the existing separation system to work, hence meeting a maximum water in oil content of 0.5%.

Questions were invited after En. Mazli concluded his presentation. In response to a question enquiring as to how large the market for oilfield chemicals was, En. Mazli responded that it was worth RM 300 million. There were enquires as to availability of chemicals or processes allowing mercury removal from oil, gas and produced water. En. Mazli responded that there were effective chemical treatments to remove mercury from gas. However, studies and trials were underway to engineer solutions to remove mercury from oil and water. ■

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PROFESSIONAL INTERVIEW ESSAY

Section A - Electronics

By: Sdri. Lim Juleen, B.E. (Hons) (Northumbria), MIEM

Question: ***Discuss the use of Wireless LAN technology for applications like traffic light monitoring, its merits and constraints, and compare among different standards of broadband wireless technologies.***

Kuala Lumpur and many cities around the world are experiencing high traffic growth rate. An 'Intelligent Urban Traffic Management System' is needed to provide the best strategy to disperse the congestion traffic efficiently.

Universities, namely UKM (Universiti Kebangsaan Malaysia), UM (Universiti Malaya) and UNITEN (Universiti Tenaga Nasional) were involved in a research project entitled 'Development of an Intelligent Urban Traffic Management System'. The purpose of this project was to optimise and coordinate the traffic lights in the multi-intersection environment in order to smoothen the traffic flow. Bangi area was chosen to be the test site for this research project. UNITEN is in-charged of the video and data transfer in a network of traffic intersections and a control centre. Real time video needs to be transmitted to the control centre, and traffic control data needs to be transmitted among adjacent traffic intersections.

UNITEN's area of research is entitled 'The Wireless Data Communication Integration and Improvement for an Intelligent Urban Traffic Management System'. As a research member of UNITEN, I needed to study on the best solution for this Wireless Local Area Network (WLAN). WLAN was applied in this project due to mobility, easier and faster installation, and economical, as there would not be any wiring and rewiring, or road digging.

Wireless network hardware requires the use of technology that deals with Radio Frequency (RF) and data transmission. The most widely use standards are the 802.11 and the new 802.16 produced by the IEEE (Institute of Electrical and Electronic Engineering). This standard defines all aspect of the Radio Frequency Wireless Network. The WLAN standard are as follows:

Each of the above WLAN standards has its own merits and demerits according to the application. IEEE 80.211b and IEEE 80.211g are commonly used in many hotspots such as cafes, colleges and university campuses, and office areas for broadband Internet access. IEEE 802.11g is better than IEEE 802.11b because of its higher data rate but the hardware cost is higher. The density and coverage of these two standards are increasing, especially in the urban area. There is a risk of interference, crosstalk, and poor security if these standards are used for the traffic management system. Devices such as the base station and wireless adapters with the same operating frequency band can easily communicate with each other.

No.	IEEE Standard	Frequency Band, GHz	Maximum Data Rate, Mbps	Maximum Link Length
1	802.11a (Wi-Fi)	5.125~5.850	54	30 to 300 feet (9.144 to 91.44m)
2	802.11b (Wi-Fi)	2.4~2.4835	11	30 to 300 feet (9.144 to 91.44m)
3	802.11g (Wi-Fi)	2.4~2.4835	54	30 to 300 feet (9.144 to 91.44m)
4	802.16d (WiMAX)	Sub 11	75	4 to 6 miles (6.436 to 9.654km)
5	802.16e (WiMAX)	2 to 6	30	1 to 3 miles (1.609 to 4.827km)

Table 1: WLAN standards produced by IEEE. (Wi-Fi stands for Wireless Fidelity, and WiMAX stands for Worldwide Interoperability of Microwave Access)

For security and quality of the WLAN, there is a need to create an isolated network for the traffic management system. There is no need for this system to communicate with the Worldwide Web (internet).

Comparing IEEE 802.11a standard with IEEEE 802.11b and IEEE 802.11g, the merit is that the operating frequency of 5.8GHz is far from the commonly use 2.4GHz frequency band. Therefore, it has the advantage of better security, lesser interference, and lower possibility of crosstalk.

In order to determine if the IEEE 802.11a was suitable for this traffic management project. A site survey was done at the Bangi Area. The GPS (Global Positioning System) data and civil land survey data were collected to analyse the terrain around the traffic intersections. The GPS data consisted of longitude, latitude, and altitude data. This was to ensure there was LOS (Line of Sight) between outdoor wireless devices. From these data, the distance between the traffic intersections were from 0.9km to 1.5km. Therefore, Wi-Fi standards could not meet the requirements of this particular project site. (Please refer to Table 1).

WiMAX is a new standard which has a higher maximum link length compared to the Wi-Fi standards. There are two types of WiMAX standards, which are the IEEE 802.16d and IEEE 802.16e. Both standards meet the project requirement of distance coverage. Data rate was also considered in selecting the standard. There was a need to transmit real time video of traffic of less than less than 1 Mbps. Traffic control data was significantly small that is about 50kbps. The throughput of the lower WiMAX specification (IEEE 802.16e) has been tested to be about 15Mbps. Therefore, both IEEE 802.16d and IEEE 802.16e are suitable to be used for this project.

A market survey was done to search for the availability of the hardware, and it was found that only hardware of IEEE 802.16e is available in Malaysia's market currently. Further analysis was done and the specification chosen for the traffic management system is WLAN 802.16e with operating frequency of 5.8GHz, data rate of 30Mbps maximum, and link length of 1 to 3 miles. In conclusion, with IEEE 802.16e standard, video and data transmission over the wireless channel is absolutely more than sufficient. ■

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PROFESSIONAL INTERVIEW ESSAY

Section B - Electronics

By: Sdri. Lim Juleen, B.E. (Hons) (Northumbria), MIEM

Question: ***Engineers are increasingly playing a significant role in the nation's fast pace development. Please suggest how engineers can make greater contributions with awareness in 'safety, health and environment' and how engineers can keep abreast with the development of technology without confining to one's specific roles or disciplines.***

Malaysia is a developing nation aiming to be a fully developed country by the year 2020. Engineers of all fields are increasingly playing a significant role in the country's fast pace development. Development in infrastructure, electronics and electrical appliances, mechanical machineries and chemical based products are mushrooming with the contribution of the engineer's effort. These developments strengthen the economy of the country and uplift the standard of living of the society.

Awareness in safety, health, and environment is indeed very important for a developing nation because of its tremendous merits. Engineers must be familiar with the 'Occupational Safety and Health Act' and ' Environment Act' in order to practise them in their profession. OSHA18000 is one of the standards of 'Occupational Safety and Health'. ISO14000 is the standard for environmental management. Sony also introduced 'Green Procurement' as a standard for industrial environment dealing with hazardous components such as mercury and plumbum in the products produced in the industry.

In any industry, practicing good safety, health, and environment is a key to success. It will contribute to a set of healthy and productive workers, who feels valued by their employer. There will be reduction in the possibility of accidents, health problems, complaints, and summons from the authority. Shut down and delay in production due to the neglect in safety, health, and environment such as occurrences of accident, fire and equipment break down could be avoided. Thus, this would reduce financial losses, improve the industries stability, and meet the customers' requirements.

Other merits also include ergonomic practice in the working environment, correct usage of PPE (Personal Protective Equipment), control of pollution, good hygiene and cleanliness, and proper procedure at work under risk. Correct storage of chemicals and materials is also essential especially if they are flammable and hazardous.

The engineers can form safety committee so that all employees in the company can be involved in various activities. Safety committee can be divided into several groups such as fire, traffic safety, electrical and machinery, cleanliness and environment. There is a need to have regular meetings to discuss about the policy, organising activities, planning and implementation, evaluation, and action for improvement.

Engineers can share their knowledge and skills in this area by providing training, talks, and discussion with people of the same industry and also to the public. It is important to convey the merits of safety, health and environment to society. It will help society to realise that it is not an option but a necessity in life.

Not every engineer is competent in being a good speaker or leader. In order to contribute to the awareness, engineers must make effort to improve themselves in communication skills, public relations and leadership quality to communicate with their target group. There are many courses available such as the toastmaster, public speaking and 'how to become an effective leader' to enhance one's soft skill.

As an engineer, knowledge does not just stop after finishing university. It has to grow with the same pace as the development of technology without confining to one's specific roles or disciplines. Engineers can obtain the up-to-date information by reading technical journals and papers, attending conferences and training, and also creating a good network with related people. IEM (The Institution of Engineers, Malaysia) facilitates these. Therefore, being an active part of IEM benefits all engineers.

Broadband Internet access is also an effective tool for engineers to obtain valuable information of the latest development of technology. Engineers should make use of this facility, as it is an affordable rich source of information.

Writing and presenting technical papers for conference and journals helps engineers to increase their knowledge. In order to write technical papers, there is a need to do detail literature review to find out what others have done in the particular area of study and research. For example, for coding theory in the communication field, there is a vast history since nearly half a century ago. In order to write about a new method of coding, engineers must know what have already been done in the past and what others are working on now.

In short, engineers hold a significant role in the nation's fast pace development. It is the duty of the engineer to equip oneself with the necessary knowledge and skills, such as the safety, health, and environment and also the latest development of the technology. Thus, engineers are capable of providing valuable contribution to development of the society and nation. ■