In the Asia Pacific region, a sizeable portion of hydrocarbon production comes from poorly consolidated sandstone reservoirs, requiring some form of sand management for economic production. The consequences of sand production can be substantial. It can curtail production, impact well integrity, and adversely affect production economics. The impact is especially pronounced in the current low commodity price environment.

This workshop will build on previous year’s discussion by adopting a holistic approach to strategy development and implementation with the view of maximising business value in new developments as well as in retrofit applications.

Who Should Attend
This workshop will benefit professionals involved in the development, implementation or monitoring of field wide sand control strategies and technology. It will also appeal to reservoir engineers, geomechanics engineers, drilling and completions engineers, production engineers and asset managers who are directly involved in the development and operation of a given asset, service provider engineers, technology developers and researchers in academia.

In the Asia Pacific region, a sizeable portion of hydrocarbon production comes from poorly consolidated sandstone reservoirs, requiring some form of sand management for economic production. The consequences of sand production can be substantial. It can curtail production, impact well integrity, and adversely affect production economics. The impact is especially pronounced in the current low commodity price environment.

This workshop will build on previous year’s discussion by adopting a holistic approach to strategy development and implementation with the view of maximising business value in new developments as well as in retrofit applications.

Session Highlights
Interactive sessions will cover critical and diverse topics such as:
- Sand production mechanisms and predictions
- Sand control techniques – Open hole and cased hole
- Drilling and completion fluids for sand management
- Retrofit and remedial sand control
- Solids monitoring and handling
- Evaluating sand management installation and performance
- New technologies
Why You Should Attend

The workshop aims to gather practitioners and managers for a holistic discussion on sand management including, sand production physics and latest techniques, and best practices in implementation and monitoring while maintaining a keen eye on value. Additional discussions on remedial and retrofit technologies, both downhole and at the surface which have been deployed successfully within the region and globally, will be included.

This workshop is an open sharing forum with discussion of experiences, solutions, best practices and lessons learnt to meet the industry’s immediate and longer term needs.

Preliminary Workshop Schedule

**MONDAY, 31 JULY 2017**

0800 – 0850 hrs 
0850 – 0900 hrs 
0900 – 1000 hrs 
1000 – 1030 hrs 
1030 – 1230 hrs 
1230 – 1330 hrs 
1330 – 1500 hrs

**Arrival of Delegates and Registration** 
**Safety Announcement by Hotel** 
**Session 1: Welcome, Introduction and Keynote Address** 
**Co-Chairpersons: M Zaidan Khalid, PETRONAS; Shahril Ridzauddin Mohd. Mokhtar, PETRONAS** 
**Group Photo / Coffee and Tea Break**

**Session 2: Panel Session on Sand Management in Asia Pacific** 
**Session Managers: M Zaidan Khalid, PETRONAS; Shahril Ridzauddin Mahd. Mokhtar, PETRONAS; Sharifuddin Salahudin, Sutera Energy Solutions** 
Sand management has been a major challenge to operators for many years. While various sand control technologies have been implemented via completions and remedial work, a holistic approach has yet to be properly structured and replicated across the industry. The panelists in this session will discuss the current and evolving sand management process, industry gaps and lessons learnt in order to achieve better business value.

**Networking Luncheon**

**Session 3: Sand Production Mechanisms and Predictions** 
**Session Managers: Ahmadreza Younessi, Baker Hughes; Chee Phuat Tan, Schlumberger Oilfield Support Sdn. Bhd.** 
This session will focus on one of the prerequisites for holistic sand management strategy implementation – onset and life-of-well cumulative volume and rate of sand production. Factors considered in the predictions include rock properties (mechanical and petrophysical), stress distributions (around the borehole and perforations), deformation, scale effect, perforation geometry, rock

**1500 – 1515 hrs** 
**Coffee and Tea Break**

**Session 4: Sand Control Techniques - Open Hole** 
**Session Managers: Rio Wijaya, PT Halliburton Indonesia; Chatchawarn Junesompitsiri, Superior Energy Services** 
This is a sharing session for successes and also failures of open hole sand control applications, lessons learnt and best practices. Session topics will include standalone screen completions, open hole gravel packs (horizontal and non-horizontal), alpha beta gravel pack technique, screen with alternate path gravel pack techniques, etc. The session will also cover new applicable sand control technologies for open hole completions, open hole gravel pack designs and simulations vs. actual field data, and economic analysis on the selected sand control techniques for open hole completions.

**1515 – 1645 hr**

**Session 5: Sand Control Techniques - Cased Hole** 
**Session Managers: Luis Peixoto, DuneFront; Orient Balbir  Samuel, Energy Services** 
This session will focus on recent developments that challenge conventional practices in cased hole sand management. Some of these are the concept of sand well zone isolation, sand transport through casing and tubing, fluid loss across annulus, sand production and deposition, sand control and remediation, and economics of sand management. The session will encompass key elements such as formation strength properties reduction associated with water-cut, etc. Session topics may include geomechanics, operational related sand production mechanisms, laboratory simulations of sand production, and both analytical and numerical predictive methodologies with emphasis on estimation of cumulative sand volume and rate of sand production.

**1645 – 1815 hrs**

**Session 6: New Technology** 
**Session Managers: Chris Malbrel, Baker Hughes; Philip Wassouf, DuneFront** 

**Session 7: Drilling and Completion Fluids for Sand Management** 
**Session Managers: Caroline Choquet, Lloyd’s Register; Michelle Hartman, Schlumberger** 

**Session 8: Retrofit and Remedial Sand Control** 
**Session Managers: Farris Tibbies, Independent Consultant** 

**Session 9: Solids Monitoring and Handling** 
**Session Managers: Chatchawarn Junesompitsiri, Superior Energy Services**

**Session 10: Evaluating Sand Management Installation**

**Session 11: New Technology**

**Session 12: Workshop Summary and Closing Remarks**
### Preliminary Workshop Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
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<tbody>
<tr>
<td>1100 – 1115 hrs</td>
<td><strong>Coffee and Tea Break</strong></td>
</tr>
<tr>
<td>1115 – 1245 hrs</td>
<td><strong>Session 8: Retrofit and Remedial Sand Control</strong></td>
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<td><strong>Session Managers:</strong> Azhar Ali, PETRONAS Carigali Sdn. Bhd.; Tutus Kristanto, PT Halliburton Indonesia</td>
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<td></td>
<td>In many cases, economics can be improved by delaying the installation of sand control. This session will discuss the key decision points in both delaying sand control installation and implementing remedial sand control. It will also cover the advantages and limitations of the various remedial methods (both mechanical and chemical). Priority will be given to real world cases where remedial sand control has been applied and what was learnt.</td>
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<tr>
<td>1245 – 1345 hrs</td>
<td><strong>Networking Luncheon</strong></td>
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<tr>
<td>1345 – 1515 hrs</td>
<td><strong>Session 9: Solids Monitoring and Handling</strong></td>
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<td></td>
<td><strong>Session Managers:</strong> Abbas Khaksar, Baker Hughes; Rick Lemanczyk, Lloyd’s Register</td>
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<td>This session will focus on sand monitoring and handling which is the heart of any holistic sand management strategy, and the challenges of specifying, installing, calibrating and maintaining a suitable sensor array and checkpoints as necessary prerequisite for monitoring. Sand monitoring and surface handling, whether a preferred and conscious strategy or in the case of sand control failure for any reason, require an estimate of expected sand volume as well as sand transport/deposition/accumulation modelling while ensuring the erosional integrity of downhole/wellhead/flowline components. Safe and environmentally sustainable sand disposal becomes the final link in the sand management chain. A truly holistic sand management should ideally address and integrate each of these technologies where appropriate.</td>
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<tr>
<td>1515 – 1530 hrs</td>
<td><strong>Coffee and Tea Break</strong></td>
</tr>
<tr>
<td>1530 – 1645 hrs</td>
<td><strong>Session 10: Evaluating Sand Management Installation and Performance</strong></td>
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<tr>
<td></td>
<td><strong>Session Managers:</strong> Philip Wassouf, DuneFront; Cheol Hwan Roh, PETRONAS</td>
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<td>The continuous improvement of sand management operations is rooted in a solid understanding of both installation and performance, which can only be gained through detailed data analysis and evaluation. While the industry tends to focus its evaluation efforts on failure scenarios, learning from successes is a less costly option that is often overlooked. This session will encompass methodologies, lessons learnt and best practices from the evaluation of both successes and failures during completion installation and longer term production.</td>
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<tr>
<td>1645 – 1800 hrs</td>
<td><strong>Session 11: New Technology</strong></td>
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<tr>
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<td><strong>Session Managers:</strong> Chris Malbrel, Baker Hughes; Farris Bakar, PETRONAS Carigali Sdn. Bhd.</td>
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<td></td>
<td>As operators look for ways to cut cost, they review existing assumptions, invest in radical ideas capable of delivering short-term returns and that may prove game-changing. This session will focus on recent developments that challenge conventional practices in the field of sand management, sand control and remediation techniques.</td>
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<tr>
<td>1800 hrs</td>
<td><strong>Session 12: Workshop Summary and Closing Remarks</strong></td>
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<tr>
<td></td>
<td>Co-chairpersons: M Zaidan Khalid, PETRONAS; Shahriil Rizdauddin Mohd Mohkhtar, PETRONAS</td>
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</tbody>
</table>

### Poster Solicitation & Information

All participants are encouraged to prepare a poster for the Workshop. Presentations on both research and field experience are welcomed. Posters, including unconfirmed/partial results, are to be presented at an assigned time and are open for discussion. Posters will be on display for the entire Workshop period.

When preparing your poster:
- Avoid commercialism. No mention of trademarks/product name
- Poster size should be approximately 0.8m x 1.2m (W x H) or size A0 in portrait layout
- Identify topic by title, affiliation, address, and phone number
- Include a brief abstract that summarises the technology to be addressed
- Make the display as self-explanatory as possible
- Place the information in sequence: beginning with the main idea or problem, method used, results, etc. (Draw a plan keeping the size and number of illustrations in mind)
- Keep illustrations simple by using charts, graphs, drawings, and pictures to create interest and visually explain a point
- Use contrasting colours
- Use large print for narrative materials. (We suggest a minimum of 24 points or 3” high letters for the title)

Note that the Workshop Programme Committee will review all poster abstracts/materials prior to display, and reserves the right to refuse permission to display any poster considered to be commercial in nature.

If you are interested to participate, please email your proposed topic with a short abstract (between 200-300 words) to SPE Senior Event Manager at jchong@spe.org by 16 June 2017.
Course Description

The course addresses the holistic sand management strategy implementation from geomechanics perspectives, through evaluation and implementation of appropriate solutions for minimisation of well costs and maximisation of reservoir productivity. It will look at the inter-relationships between geomechanics and operations, application of geomechanics in relation to sand production and completions, and show how geomechanics can be best applied to provide maximum value in sand management and life-of-well and field operations. The course comprehensively covers geomechanics and operational related sand production mechanisms, laboratory simulations of sand production to provide measurement data for model calibration and validation, state-of-the-art analytical and 4-D numerical sanding predictive methodologies for life-of-well and field including scale effect, rock strength properties reduction associated with water-cut and estimation of cumulative sand volume and rate of sand production, and optimal mitigation and management of sand production taking into consideration the feasibility of deferment or elimination of sand control installation. The course is illustrated with field examples.

Why You Should Attend?

■ Holistic sand management strategy implementation from geomechanics perspectives.
■ Appreciation of inter-relationships between geomechanics and operations with respect to sand production.
■ Application of geomechanics in relation to sand production and completions in order to provide maximum value in sand management and life-of-well and field operations.
■ State-of-the-art analytical and numerical sanding predictive methodologies to develop cost effective solutions for life-of-well and field.
■ Optimal mitigation and management of sand production including feasibility of deferment or elimination of sand control installation.

Who Should Attend?

Practitioners who are involved in the development, implementation or monitoring of field wide sand control and strategies:
■ Production technologists / engineers
■ Reservoir engineers
■ Completion engineers
■ Asset managers
■ Geomechanics engineers

Course Instructor

Chee Tan is a Geomechanics Advisor / Subject Matter Expert and provides technical expertise and input for Schlumberger’s reservoir geomechanics projects and workflows, develops reservoir geomechanics consulting businesses and actively engages in client projects. With 30 years of industry experience, he is an internationally recognised expert in petroleum geomechanics, in particular reservoir geomechanics, wellbore-centric geomechanics and drilling fluid-shale interactions. He has extensive experience covering exploration to development and decommissioning geomechanics in Asia, Australia and Middle East, and worked on projects in Africa, the Americas, Russia and Europe. He holds 3 patents and 1 trade secret, and authored/co-authored more than 500 technical publications. He is a Technical Reviewer for Journal of Petroleum Science and Engineering, and SPE Drilling & Completion, and has also served as Special Faculty Member of the School of Petroleum & Geological Engineering, The University of Oklahoma and as Member of Graduate School Master of Science Thesis Examining Committee, School of Civil Engineering, University of Minnesota. His education includes Bachelor of Engineering (Civil) and PhD in Geomechanics, both from Monash University in Melbourne, Australia.

Course Content

■ Sand Production Mechanisms
  Geomechanics and operational-related sand production mechanisms and variation of sandstone properties
■ Laboratory Simulation of Sand Production
  Criticality of acquiring laboratory measurement data for model calibration and validation including cumulative sand volume and rate of sanding prediction
■ Sand Production Prediction
  State-of-the-art sanding predictive methodologies and solutions, inter-relationships between geomechanics and operations, and application of the solutions to sand production mitigation and completions
■ Mitigation and Management of Sand Production
  Optimal mitigation and management of sand production, and feasibility of deferment or elimination of sand control installation
Sand Control Design and Optimisation

2 - 3 August 2017 | Kuala Lumpur, Malaysia

Training Course B

Course Description
A significant portion of Asia Pacific’s hydrocarbon production comes from poorly consolidated sandstone reservoirs which requires some form of sand control implementation for economic production. The expertise and engineering surrounding Sand Control completion designs and optimisation however has not kept pace with the region’s needs. This intermediate level course on Sand Control design and optimisation addresses that gap. The course introduces the participants to the causes of sand production, its impact on hydrocarbon production and the selection of an optimised design to develop the reservoir. The course details the evaluation of the reservoir’s properties including geomechanical, particle size distribution and development objectives to aid in the selection and design of a robust sand control methodology for implementation.

The Sand Control methods covered include deferred sand control, perforating for sand control, sand exclusion techniques; screen only completion, cased hole and openhole gravel packing and fracpacks for new reservoirs as well as remedial and retrofit applications for existing wells. Each techniques’ application window, expected production potential and design criteria is discussed in detail and practical designs are developed as exercises.

Upon completion of this course, participants will be able to identify the need for sand control, select the appropriate method for sand production mitigation, perform the basic designs for the selected method, develop the execution programme and have an understanding of well performance post installation.

Why You Should Attend?
Course attendees will gain a deep understanding of:
- Causes of sand production and its impact on production
- Evaluation methods of reservoir properties and development objectives to arrive at a robust sand control methodology
- The various sand control techniques employed in the industry including their application window, design criteria and expected production potential
- Evaluating formation particle size distribution and its impact on selecting the sand control method as well as screen and gravel pack sand
- The completions systems employed in sand control completions
- Modelling gravel pack design, optimisation and post job review through practical exercises

Who Should Attend?
This course is targeted at sand control practitioners from both operators and service providers with some sand control experience who are looking to gain a deeper understanding of sand control completions selection, design, modelling, execution and operations. They include:
- Field engineers/specialists/technicians
- Drilling engineers
- Completions engineers
- Production Technologists & Production Engineers
- Research engineers

Course Instructor
Sharifudin Salahudin is a subject matter expert in Sand Control Completions and Production Enhancement through the numerous projects he has worked on globally and SPE/Industry papers published on the subjects. He has over 36 years of industry experience served in numerous geographic locations globally including Brunei, Malaysia, Egypt, and USA working for an extensive customer base including Shell, ExxonMobil, BP, Chevron, Total, PETRONAS Carigali, Woodside, ONGC, Cairn India, Reliance Industries, PTTEP and others. He has taught Sand Control and Stimulation internally at Halliburton and to customers and Universiti Teknologi PETRONAS Master’s programmes. He has also taught and led unconventional shale capability development programmes for PETRONAS in Asia Pacific. Sharifudin previously worked for Halliburton in their Production Enhancement and Consulting PSLs.

Course Content
- Sand Control Introduction
  Review the causes of sand production, its impact on hydrocarbon production and the selection of an optimized design to develop the reservoir.

- Sand Control Methods
  Introduce the various sand control techniques used across the industry along with their respective pros & cons and their application window.
  Formation damage is discussed in this segment as well as passive sand control methods.

- Active Sand Control Methods
  Active sand control methods are discussed in this segment including formation sand sieve analysis and the selection of screens and gravel for the various active sand control methods. Screen only completion and gravel packing methods are discussed in details including their design, completions systems and their execution.

- Practical Exercises
  Practical exercises for determining PSD, standalone screen design and gravel and screen selection for HRWPs are attempted to provide hands-on training in sand control design.

- Fracpacks for Sand Control
  Fracpacking combine the benefit of fracturing and sand control. This segment discusses the reservoir engineering, design and execution of Fracpacks.

- Open Hole Gravel Packing
  Openhole gravel packing design both alpha-beta and SHUNTs is presented in this session and includes job designs and related topics on openhole drilling criteria and filtercake removal.

- Remedial/Retrofit Sand Control
  Remedial sand control touches on gravel pack repair methods. Retrofit sand control covers TTGPs and resin consolidation applications.

- Practical Exercises
  Practical exercises for designing HZOH GPs and SHUNTs GP are attempted to provide hands-on training in openhole sand control designs.
31 July – 1 August 2017 | Kuala Lumpur, Malaysia

GENERAL INFORMATION

Documentation:
• Proceedings will not be published; therefore, formal papers and handouts are not expected from speakers.
• Work in progress, new ideas, and interesting projects are sought.
• Note-taking by attendees is encouraged. However, to ensure free and open discussions, no formal records will be kept.

Workshop Deliverables:
• The committee will prepare a full report containing highlights of the Workshop and the report will be circulated to all attendees.
• PowerPoint presentations will be posted online and provided to attendees after the Workshop. Provision of the materials by Discussion Leaders will signify their permission for SPE to do so.

Commercialism:
In keeping with the Workshop objectives and the SPE mission, excessive commercialism in posters or presentations is not permitted. Company logos must be limited to the title slide and used only to indicate the affiliation of the presenter.

Attendance Certificate:
All attendees will receive a Workshop attendance certificate. This certificate will be provided in exchange for a completed Attendee Survey Form.

Continuing Education Units:
This Workshop qualifies for SPE Continuing Education Units (CEU) at the rate of 0.1 CEU per hour of the Workshop.

Travel/Visa:
Attendees are advised to book their airline tickets early. All travellers must be in possession of passports valid for at least six (6) months with proof of onward passage. Contact your local travel agent for information on visa requirements.

Dress Code:
Business casual clothing is recommended. The Workshop atmosphere is informal.

Registration Fee:
• Registration fee ONLY includes all workshop sessions, coffee breaks and luncheons for the registrant. Accommodation is NOT included.
• SPE will provide details of recommended hotels upon receipt of your registration.

Registration Policy:
• Registration fee MUST be paid in advance for attending the Workshop.
• Full fixed fee is charged regardless of the length of time the registrant attends the Workshop, and cannot be prorated or reduced for anyone.

SPONSORSHIP SUPPORT INFORMATION

Sponsorship support of the event helps offset the cost of producing workshops and allows SPE to keep the attendance price within reach of operation-level individuals, those who benefit most from these technical workshops.

Supporters benefit both directly and indirectly by having their names associated with a specific workshop. While SPE prohibits any type of commercialism within the workshop room itself, the Society recognises that supporting companies offer valuable information to attendees outside the technical sessions.

Sponsorship Categories
Sponsorship categories are offered on a first-come basis. Please contact SPE to enquire and verify the availability of categories. Existing supporters have the opportunity to renew the same level of support for annual workshops.

Sponsorship Benefits
In addition to onsite recognition, SPE will recognise sponsors on the SPE website and in all printed materials for the workshop. Based on the category selected, supporting companies also receive logo visibility on promotional workshop items.

For More Information
For a detailed list of available sponsorship opportunities, including benefits and pricing, contact Jenny Chong at jchong@spe.org.
**REGISTRATION FORM**

**Registration Fees**

<table>
<thead>
<tr>
<th>Registration Fees</th>
<th>Super Early Bird Registration BY 31 May 2017</th>
<th>Early Bird Registration BY 30 June 2017</th>
<th>Registration AFTER 30 June 2017</th>
</tr>
</thead>
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<tr>
<td></td>
<td>SPE Member</td>
<td>Non-member</td>
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<tr>
<td>Workshop &amp; Training Course B</td>
<td>$2,500.00</td>
<td>$2,860.00</td>
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<tr>
<td>Workshop Only</td>
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<td>Training Course B Only</td>
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<td>$1,300.00</td>
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<tr>
<td>Training Course A Only</td>
<td>$500.00</td>
<td>$700.00</td>
<td>$600.00</td>
</tr>
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</table>

**GROUP REGISTRATIONS AVAILABLE** – Please contact us at spekl@spe.org.

Note: Fee includes workshop sessions, workbook, certificate, daily luncheons and coffee breaks. Registration fees do not include accommodation.

**Payment by Telegraphic Transfer**

- Telegraphic Transfer (Bank details will be provided on the tax invoice).

**Payment by Credit Card**

- Credit Card Payment will be in U.S. Dollars only.
  - American Express
  - MasterCard
  - Visa
  - Diners Club

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<tr>
<th>Card Number</th>
<th>Expiration Date (mm/yy)</th>
<th>Security Code (3 digits on back of card / 4 digits on the front of Amex)</th>
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**Cancellation Policy:**

a) A processing fee of USD150.00 will be charged for cancellation received thirty (30) days prior to the first day of the workshop.
b) 25% refund will be made for cancellation received between twenty nine (29) - fifteen (15) days prior to the first day of the workshop.
c) No refund on cancellation received fourteen (14) days prior to the first day of the workshop.
d) No refund will be issued if a registrant fails to show up on-site.

**This form may be used as a company invoice.**

Mail completed registration form with remittance and any supporting material to:

**Society of Petroleum Engineers**

Level 35, The Gardens South Tower, Mid Valley City
Lingkaran Syed Putra, 59200 Kuala Lumpur, Malaysia.
Tel: 60.3.2182.3000     Fax: 60.3.2182.3030
E-mail: spekl@spe.org