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Issue 22
October 2018

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Institute of Materials, Malaysia

STEAM

Science, Technology, Engineering, Entrepreneurship, Arts & Mathematics

HIGHLIGHTS

Materials Education in the Digital Age – Use of CES EduPack

Work-Integrated Learning in Engineering Education at Curtin University Malaysia

Engineering the Future

ISSN 2289-9030

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October 2018 Issue 22

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Editorial

Message from the Managing Editor of Materials Mind

Welcome to our beloved readers of Materials Mind. In this issue (Issue 22), we are pleased to announce that the theme is Education- '**STEEAM**' that stands for **Education in Science, Technology, Engineering, Entrepreneurship, Art and Mathematics**. In the 21st century, scientific and technological innovations now become very important as we face the benefits and challenges of both globalization and a knowledge-based economy. In our society, especially the young generation, we need to be developed and exposed to multi-disciplinary skills not only in Science and Technology but also in Art and Entrepreneurship. We have to be more prepared for the present/future working world and to levels much beyond previous achievements. This is because we have come to realise that our world and economies are changing, hence we need the knowledge and skills in these disciplines to thrive in an increasingly technological world. Thus, in this issue, we are glad to have contributors from education as well as industry background for sharing their knowledge and thoughts regarding this theme. Apart from that, we also have reports on a few events and activities which took place during the last few months. I would also like to thank all the contributors and editors of the reports for their endless support and hard work to make this issue an interesting reading material. Finally, thanks to all the advertisers and sponsors who have sponsored in IMM's events and publications. It would be great to working closely with our new and regular advertisers and sponsors in future. Hoping this issue of Materials Mind will meet the expectations of Materials Mind existing and new members, and we are open and receptive to the feedback from our readers.

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Materials Edu – Use

Materials Science and Engineering is a multidisciplinary subject which has its roots in Metallurgy, Chemistry, Physics, Engineering and Design. Today the field continues to expand drawing concepts from Biology, Electronics, Energy, Medicine and many other disciplines. Historically Materials has enabled advances in other areas, for example; new lightweight materials allow faster, bigger and more efficient aircraft; improved oxygen permeability improves contact lenses and recent improvements in the polymers used in organic electronics greatly improves the efficiency of solar energy systems.

The diverse nature of the field is one of the key reasons for many of the tremendous technological advances that have been made in recent years and is an important part of what makes materials such a vibrant and dynamic field of study. This same diversity does, however, present problems to those tasked with educating the next generation within our Universities. The tremendous variety of concepts, the range of knowledge not to mention several hundred thousand materials and uncountable applications makes delivering a high quality degree programme very challenging.

These issues are more pronounced if the University aims to furnish its graduates with the breadth and depth of knowledge and the transferable skills they need to be effective in the workplace on day one. Preparing a graduate so they can add value in sectors as diverse as aerospace, medicine, manufacturing, electronics and oil & gas represents a major challenge. This is particularly true today as the pace of change within the Digital Century continues to increase.

In order to adapt to these challenges, the world's leading Universities have changed the way they teach and the tools used to support teaching. Today's leading educationalists promote student centred learning as the most effective approach to enable a deeper understanding compared to more traditional "Talk and Chalk" philosophies. Student centred techniques such as a problem and project based learning are preferred methods as they allow students to learn through discovery.

The learning environment in modern higher education uses a wide range of electronic resources to support teaching. The most common of these include integrated online learning platforms such as Moodle and Blackboard, lecture recording facilities such as Echo360, tools that allow real time in class feedback and Think-Pair-share activities such as those from Turning Technologies. Digital technologies have also resulted in the creation of a range of new tools that can be used to support teaching modern subjects such as data analytics, virtual reality, modelling and simulation.

ucation in the Digital Age

e of CES EduPack

Andrew Spowage, Nigel Brewitt

One software tool specific to Materials Science & Engineering is CES EduPack from Granta Design Ltd. The software is designed for pre-university to post-graduate study as well as being used by a wide range of companies. Originally developed in the Engineering Department of Cambridge University (UK), CES EduPack is now used in over 1,000 University and 70% of the UK's Mechanical engineering departments. A number of Malaysian higher education institutions have also integrated this same software into their teaching on various courses, Figure 1.

Figure 1: Malaysian Higher Education Institutions which have used CES EduPack

What the authors like most about using CES EduPack is that it enables a wide range of student centred learning opportunities. The academic team within the university are able to setup a diverse range of activities from highly structured classroom based exercises to open-ended research projects. These approaches allow students to learn through discovery, promoting deeper understanding compared to more traditional teaching practices. In addition, through both independent investigation and working in groups students are able to develop their transferable skills sets, an area which is highly prized by employers.
At its core the software is a rich database that includes data-tables for the elements, for structural, functional and biological materials as well as processing techniques such as shaping, joining and finishing. The data-tables are connected which allows key information and concepts from the atomic to engineering scale to be linked to processing technique and performance data.

The authors have used the software to teach materials to Mechanical, Materials and Polymer Engineering Undergraduates for around 10 years and would like to share some of the approaches used in this article. As a teaching tool it can be used in many different ways and to answer a wide range of questions, Figure 2. The following sections outline several approaches to support teaching materials in higher education.

Figure 2: Typical questions posed to facilitate learning through discovery

The Elements

At the most basic level students can explore the elements using the interactive periodic table and data-tables associated with individual elements. Simple structured question, Figure 3, allow student centred learning exercises and allow students to familiarise themselves with the software, gain an appreciation of where and how to find information for themselves as well as developing a wide range of transferable skills especially when carried out in groups.

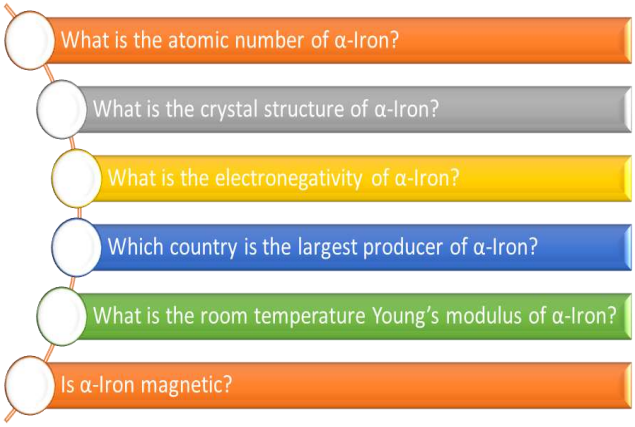

Figure 3: Example of simple structured questions to interrogate the elements database

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ABOUT IAViC

Asset owners and engineers from Oil & Gas, marine, automotive and locomotive industries and even academicians cannot deny the need and importance of vibration technology as an effective diagnostic tool to troubleshoot various problems related to design, construction, operation or maintenance. It has been a proven technology for decades and is very relevant in the era of Industry 4.0. Especially when Internet of Things (IOT), Big Data & Data Analytics, Artificial Intelligence (AI) and smart technology are the current trend, it is important to know how to take advantage of the trend and remain relevant while performing vibration analysis.

This international conference is organised by the IMM vibration committee, the largest technical committee that represents the Vibration community in Malaysia. The IMM vibration committee consist of captains of the industry as well as senior technical specialists from leading organizations such as Petronas, Shell, Woodgroup, Vibratec, Serba Dinamik, RZF Engineering, Baytech and AFCM as well as renowned academicians from UTM, UiTM, UM, UTAR, USM and UNIKL. In addition to that, senior engineers from government agencies such as SIRIM, the R&D arm of the Ministry of Defence and the Royal Malaysian Navy are also active members of the organising committee.

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DAY 1 // 21 NOVEMBER 2018

8.30am - 9.00am	Delegate registration
9.00am - 9.05am	MC speech
9.05am - 9.15am	Opening speech: **Tuan Mohd Azmi Mohd Noor** *IMM President*
9.15am - 9.35am	Welcoming speech: **Dato' Dr. Ir. Mohd Abdul Karim Abdullah** *IMM Vibration Committee Chairman*
9.35am - 10.00am	Guest Speaker: **Innovation Gateway @ Petronas** *By Fadhlan Nik Abdul Aziz, PETRONAS*
10.00am - 10.30am	Morning break
10.30am - 10.50am	Keynote speaker 1: **Synergy Between Industry 4.0 And Vibration Technology** *By Khairul Anwar Bin Mohd Nor, PETRONAS*
10.50am - 11.10am	**Frequent Centrifugal Compressor Failure On Production Platform** *By Juarez Lowe, VROC (Australia)*
11.10am -11.30pm	**Impact - Synchronous Modal Analysis (ISMA) - An Alternative For Operational Modal Testing** *By Ir. Dr. Alex Ong Zhi Chao, University Malaya*
11.30am -11.50pm	**Dealing Vibration With Ageing Process Facilities Rotating Equipment** *By Ahmad Nu'man Ahmad Fawzal, AF Condition Monitoring*
11.50pm - 2.00pm	Lunch break
2.00pm - 2.20pm	Keynote speaker 2: **A Methodology for Railway Ground Borne Noise and Vibration Prediction** *By Brice Nelain, Vibratec (France)*
2.20pm - 2.40pm	**4.0 Technology and Big Data Analytics for Turbomachinery Vibration Analysis** *By TBA, GE*
2.40pm - 3.00pm	**Flow Induced Vibration** *By Dr. Nadiah Yusop, Universiti Teknologi MARA*
3.00pm - 3.20pm	**International Speaker - TBA**
3.20pm - 4.00pm	Afternoon coffee and tea break
4.00pm - 5.00pm	Forum (**The Significance of Vibration Technology In The Industry 4.0**)
5.00pm - 6.00pm	Exhibition time

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9.10am - 9.45am	Keynote speaker 3: **Vibration Analysis on Turbomachinery** *By Mohd Syukri Mohd Khalid, Shell*
9.45am - 10.15am	Morning break
10.15am - 10.35am	**Practical Tips for Vibration Troubleshooting** *By Rob Swindell, Wood PLC (United Kingdom)*
10.35am - 11.05am	**Case Studies on Machinery Vibrational Issues** *By Prof. Ir. Dr. M Salman Leong, Universiti Teknologi Malaysia*
11.05am - 11.25am	**Noise, Vibration and Harshness on Latest Vehicles** *By Ir. Azmi b Osman, Proton R&D*
11.25am - 11.45am	**International Speaker - TBA**
11.45am - 2.00pm	Lunch break
2.00pm - 2.20pm	Keynote speaker 4: **Vibration Battle on Royal Malaysian Navy Warships** *By Commander Ir. Dr. Arman bin Ariffin, Navy*
2.20pm - 2.40pm	**Wireless Vibration Monitoring** *By TBA, SKF*
2.40pm - 3.00pm	**Integrating Vibration Monitoring Into Plant Control System** *By TBA, Siemens*
3.00pm - 3.20pm	**International Speaker - TBA**
3.20pm - 4.00pm	Afternoon coffee and tea break
4.00pm - 5.00pm	Forum (**Challenges To Increase Vibration Analysis Relevance In The 21st Century**)
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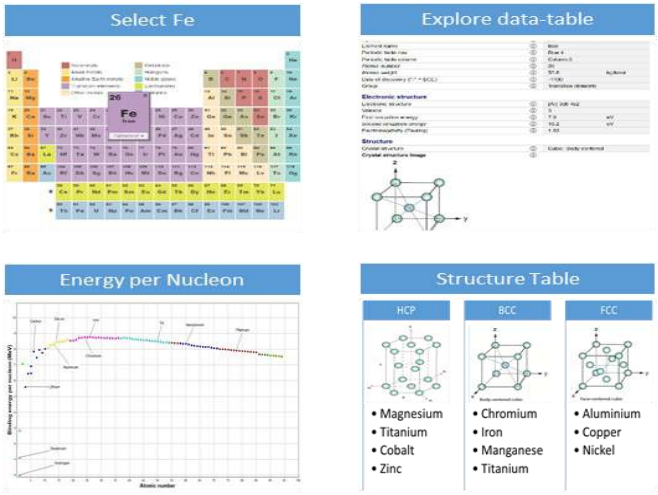

Figure 4: Examples of student exercises using elements

Taking this a step further students can explore the visualisation tools to investigate trends, for example Figure 4b shows the trends in binding energy against atomic number or students can build a classification table like the structures table for key engineering metals shown in Figure 4d. Once the academic is familiar with the software it becomes very easy to reinforce learning objectives by developing problem-based exercises for students to explore.

Visualisation of Materials Properties

The data-tables are not limited to the elements, they cover a wide range of materials and associated processing routes. The examples in Figure 5 shows the mechanical properties of natural materials, woods, piezoelectric materials and a selection of engineering metals. Students can screen materials based on whatever properties they are interested in using the limit and tree functions. The visualisation tools within the software allow students to interrogate the database and generate both bubble charts (commonly known as Ashby plots) and bar graphs. Most of the visuals used in this article were created directly from the software.

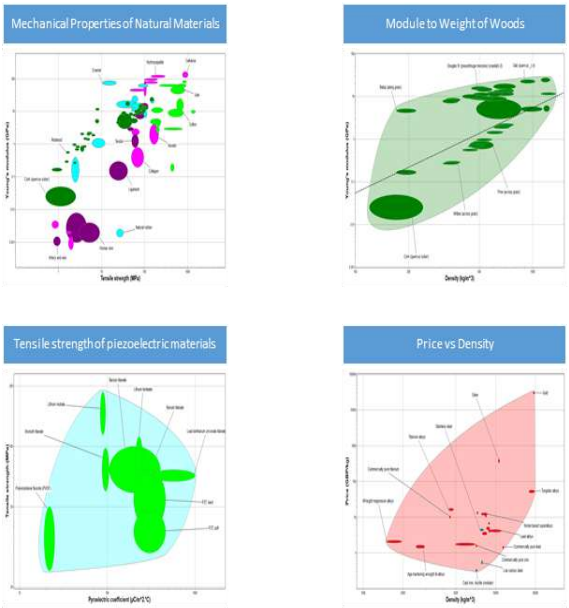

Figure 5: Visualisation examples

Phase Diagram Tool

The Teach Yourself Phase Diagrams tool is a relatively recent addition to the software and provides a visual approach to teaching one of the more challenging subjects in the undergraduate materials syllabus. The software uses simple phase diagrams to help students understand basic concepts such as the Lever rule. More complex systems can be used which introduce ideas of phase transformations, eutectic and eutectoid reactions, deviations from equilibrium and TTT diagrams. Figure 6 shows examples of the Phase diagram created using CES EduPack 2018, Granta Design Ltd. http://www.grantadesign.com/education.

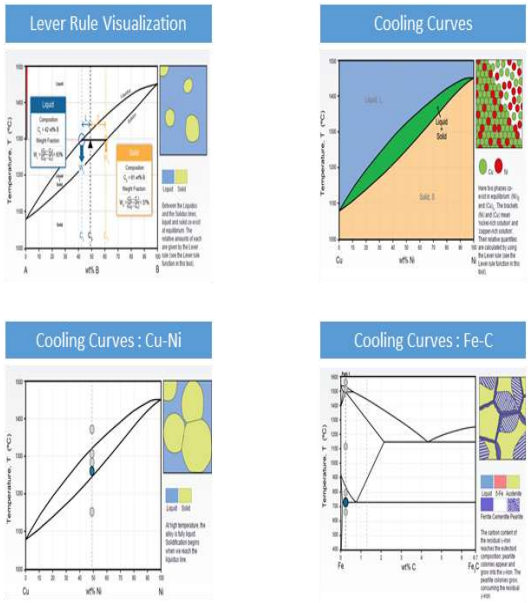

Figure 6: Examples of phase diagram tool

Thermal Mechanical Processing

Many mechanical properties depend, to a greater or lesser degree, on microstructure of the resultant material. Controlling the processing route and associated parameters provides opportunities to manipulate the final property set. The Process-Property Profile data-tables can be used to explore the impact of things like composition, annealing temperature and filter content on properties. Similarly, the trade-offs between strength and conductivity can be explored by setting up problem based learning exercises. These can either be structured worksheets, questions, exercises or open ended investigations for more advanced students.

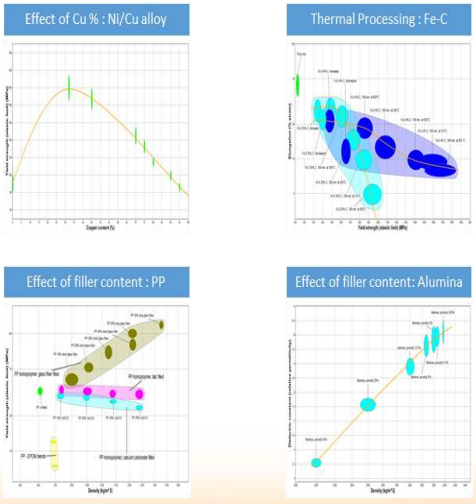

Figure 7: Examples of Property modification with processing conditions

Materials Selection

Selecting the most suitable material for a given application is perhaps the most well-known use of CES EduPack in both academic and industrial environments. The software is sufficiently flexible that it can be used with a wide range of design methodologies or the approach used in most of Granta's teaching resources, Figure 8. At its most simple level students are given structured exercises which focus on the key engineering properties. The sophistication of the exercises can be enhanced by considering other attributes such as aesthetic and sensorial properties (e.g. touch, tactile warmth…). While these are intuitive for some students it can be more difficult to grasp for others. By including these attributes the students are able to select materials or a product which not only meets its engineering requirements but also has an appropriate personality. Academics can create their own projects or can draw on the many "microprojects" which have been developed by Granta, companies and other academics.

Figure 8: Design process used in Granta Design teaching resources

Taking this a step further, the data-tables are sufficiently rich that they include information on a wide range of factors like those listed below, Figure 9. Using these students can explore a more comprehensive solution and gain experience on the importance of much wider reaching concepts.

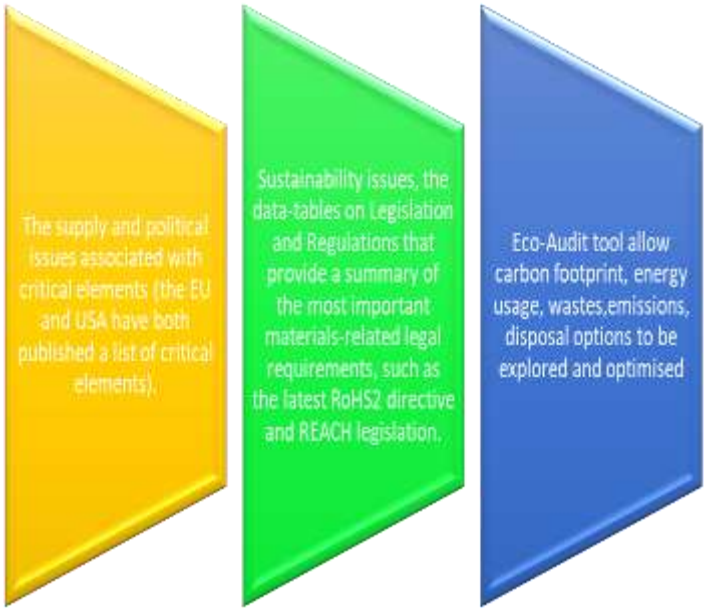

Figure 9: Advanced capabilities for materials selection


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Nigel Brewitt[2,3]
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[3]MTIS Sdn. Bhd.

Work-Integrat Engineering Curtin U Mala

Assoc. Prof. Dr. Vinc
Dr. Mahmo

Abstract

Work integrated learning (WIL) has been increasingly sought for modernization of the professional courses. Being at the forefront of advocating innovative teaching pedagogy, Curtin University Malaysia has implemented WIL in its engineering courses. This paper describes the implementation of WIL program through laboratory exercise for engineering students at Curtin University Malaysia. 24 final year students of Engineering Noise Control course from the department of mechanical engineering have participated in the program. The outcomes and impact of the program with positive feedback from the students also have been reported. This pedagogical program has contributed towards facilitating good interaction between potential employee and employer which is a very helpful aspect for the engineering graduates in the current challenging world.

Introduction

Work integrated learning (WIL) is an innovative teaching pedagogy integrating industrial practical experience with academic learning experience. WIL is widely used in the Australasian context, and increasingly gaining international recognition as a form of teaching pedagogy in ensuring students' exposure to authentic learning experiences with opportunity to apply theoretical knowledge gained in classroom, to industrial practical tasks [1, 2]. Curtin University Malaysia (Curtin Malaysia) is a branch campus of Curtin University in Australia. As one of the pioneers of quality engineering education in Malaysia, it has a good pool of researchers and academics who strive to provide industry-related opportunities to students through close collaborations with relevant industries. A recent implementation of WIL in engineering education at Curtin Malaysia is the unit 'Engineering Noise Control.' Noise level is a very important parameter to assess noise pollution. It is also an essential criteria to maintain the occupational health and safety standards during any engineering operation. Hence, it is important that students are able to have industrial experience, supplementing their academic learning.

Implementation Procedure

The implementation of WIL in 'Engineering Noise Control' is rather simple. What required is a voluntary industrial host for the practical exercise. For this particular exercise, we conducted the WIL at MJM Palm Oil Mill, a local Sarawakian palm oil mill. This exercise was conducted concurrently with an industrial site visit.

Figure 1 Implementation of WIL through Lab exercise.

Outcomes and Impact

Through this exercise, students were able to perform noise measurement at site, produce a graphical model of the noise level, evaluate the noise level (in accordance to OSHA 1994), and use sound judgement in providing recommendation for further improvement (based on Guidelines on Occupational Health Services by the Malaysian Department of Occupational Safety and Health). The exercise was relatively simple yet comprehensive. Hence providing a good practical experience for the student in utilizing their analysis and evaluation skills in a complex engineering environment (Figure1-2). In addition, students were also introduced to the job scope of an engineer at a palm oil mill through the industrial visit.

Figure 2 Students' active involvement through WIL.

The WIL exercise has proven to be well accepted by students and received very positive feedback. An excerpt from the unit evaluating students related to such the exercise is as follows:

ted Learning in Education at University aysia

ent Lee Chieng Chen,
ood Anwar

University

"The most useful aspect of the unit I may say is its usage of the industrial field trip in conducting its lab work. There is a need of more of this on work training in preparing students for the real world."

Conclusion

In a conclusion, Work Integrated Learning (WIL) implementation accelerates students' engagement in engineering courses through role play with direct pedagogical involvement [3-5].

Acknowledgement

This WIL exercise is supported by Curtin Malaysia's Faculty of Engineering and Science and the Institute of Materials Malaysia Curtin Malaysia Student Chapter. Special acknowledgement is given to MJM Palm Oil Mill for allowing us to conduct WIL at their premise.

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Figure 3 Group photo taken after the WIL exercise.


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INSTITUTE OF MATERIALS, MALAYSIA

Updated on 30th June 2018

Institute of Materials, Malaysia (IMM) is a non-profit professional society that promotes honourable practice, professional ethics and encourages education in materials science, technology and engineering. Engineers, academicians, technicians, skilled workers and professionals are amongst its members exceeding 6800.

Registered with the Registrar of Societies on 6th November 1987, the Malaysian Materials Science & Technology Society (MMS) changed its name to the Institute of Materials, Malaysia (IMM) on 16th June 1997. The objectives of the IMM include the training and development of individuals and companies in Malaysia to attain professional recognition in various fields of materials science, technology and engineering.

IMM is administered by a council of 30 members, with volunteers leading 18 materials committees, and 5 regional chapters, and supported by a secretariat with full time staffs.

IMM Vision
To be internationally recognised leading institution in Materials Science and Technology.

IMM Mission
(1) To be the technical authority on material science and technology
(2) To develop an enhance competency and skills for all categories and practitioner
(3) To become an internationally recognized certifying body
(4) To be the forum for industry and academia collaboration
(5) To positively contribute to society and quality of life

The IMM membership is categorised into 6 different grades and open to anyone above the age of 17 years - individuals and companies keen in developing and contributing towards the growth of materials science, technology and engineering in Malaysia.

Over the years, IMM have conducted courses on coatings, coatings fingerprinting, corrosion, welding, vibration etc in support of the oil and gas industry in Malaysia. Over 600 Coatings Inspectors have been trained and certified as well as 2500 Blasters & Painters, Supervisors, Corrosion Technician and Vibration Practitioners. Its certification programmes are recognized by PETRONAS and all oil & gas operators. Since January 2011, 72 Associate Welding Engineers, 80 Welding Engineers, 20 Senior Welding Engineers and 24 Coating Fingerprint Quality Controllers were trained and certified.

IMM has also organised 10 International Materials Technology conferences (IMTCE) on a biennial basis, and numerous technical seminars, educational programmes, technical visits, and materials awareness programmes since 1988.

Public courses, such as Microbiologically Influenced Corrosion (MIC) and Welding Technology for Non-Welding Personnel, are been offered occasionally. Training on materials awareness has also been conducted in public listed companies.

The courses and programmes are being organised by Authorized Training Body/Bodies and Authorized Event Organizer/Organizers.

Collaborations with the Asian Welding Federation, The Society for Protective Coatings, US (SSPC), Sabah Skills Technology Centre (SSTC), and local universities continue to be part of IMM's vision and long term mission to educate, train and serve the materials fraternity.

GENERAL INFORMATION ON MEMBERSHIP

The IMM Membership is opened to all individuals and companies in developing the contribution of Materials science, technology and engineering towards industrial growth in Malaysia. The technology of materials is advancing day-to-day throughout the world. Membership to the IMM will enable networking and exchange of knowledge from a very wide variety of specialised areas of expertise. Please feel free to download or print a copy of the application form together with the IMM regulations. If you have any doubt, please do not hesitate to contact our secretariat through the phone; +603-4256-2286 or email to secretariat@iomm.org.my

Annual subscriptions shall be payable in advance on 1st January of each year. Those admitted into the IMM between 1st July and 31st December in any year shall pay only half the annual subscription. Seniors (above 55 years old) get 50% discount off their annual subscriptions.

We have an online application for membership for selected grades. Membership application forms in document format can be accessed from www.iomm.org.my.

Kindly fill the form and email to secretariat@iomm.org.my or fax it to: +603-7880 1753 or send it to :

IMM SECRETARIAT

Suite 515, Level 5, Block A, Kelana Center Point (Lobby B),
No. 3 Jalan SS 7/19, Kelana Jaya,
47301 Petaling Jaya, Selangor

IMM MEMBERSHIP BENEFITS

(1) IMM activities offer members to interact and network with representative from the industry, academia and government related to the Materials profession.

(2) Members will gain knowledge on career opportunities for their children, friends etc as IMM offers certification courses in skilled trades e.g. Welding, Painting, Inspection, Corrosion etc.

(3) IMM-JWES Welding Engineer Certification program leading to a Welding Engineer Certification which offers great employment opportunities in the oil & gas, heavy industry, marine and energy sectors.

(4) IMM publications – quarterly magazine plus annual conferences offer presenters an opportunity for their technical research or industry-academia papers to be published in ISI- and Scopus-index journals.

(5) IMM organizes many free technical events for members to acquire new knowledge and networking opportunities. Participants to these events will also receive Certificate of Attendance for their Continuing Professional Development records.

IMM MEMBERSHIP FEES SCHEDULE AS PER BELOW:

Description	Amount			
	Entrance Fee	Processing Fee	Transfer Fee	Annual Subscription
Fellow (F.I.M.M)	-	RM 300.00	RM 10.00	RM 150.00
Professional (M.I.M.M)	-	RM 150.00	RM 10.00	RM 100.00
Associate (A.M.I.M.M)	-	RM 150.00	RM 10.00	RM 80.00
Company	RM 50.00	-	-	RM 200.00
Ordinary	RM 20.00	-	-	RM 40.00
Student	RM 10.00	-	-	RM 10.00
Ordinary/ Company for affiliates	RM 40.00/ RM 50.00	-	-	NIL

INSTITUTE OF MATERIALS, MALAYSIA

Updated on 30th June 2018

REGULATIONS GOVERNING ADMISSION AND TRANSFER OF MEMBER GRADES

The Council shall establish a Memberships Committee which will be responsible for review of applications for transfer of membership grades. The Memberships Committee shall recommend transfers for Council approval at Council Meetings. All grades of memberships are awarded at the discretion of the Council and may be withheld or withdrawn in the event of conduct likely to prejudice the standing of the Institute. Every member shall receive a membership certificate.

The Memberships Committee shall be responsible for drafting the "Regulations Governing Admission and Transfer of Member Grades" for Council approval. These regulations may be changed from time to time subject to Council approval.

Every application for membership shall be proposed and seconded according to these regulations and shall be forwarded to the Honorary Secretary who shall, at the first convenient opportunity, submit it to the Council for approval the Council may at its discretion reject any application without assigning any reason thereof.

Each company on admission shall be entitled to nominate one representative to exercise all rights of membership. Only representatives of Company membership, Fellows (F.I.M.M.). Professional Members (M.I.M.M.) and Ordinary members shall have the right to vote and to hold office in IMM.

Only Malaysian Citizens, and Blue Identity Card Holders can become Ordinary Members, Associate Members (A.M.I.M.M.), Professional Members (M.I.M.M.) and Fellow Members (F.I.M.M.) with voting rights. Foreigners can join similar grades but shall have no voting rights.

MEMBERSHIP GRADE & REQUIREMENT

Honorary Fellow (Hon. F.I.M.M.)
The Council shall have the power to elect Honorary Fellows who shall be persons of eminence in science or industry. The election shall be based on a majority vote within the Council. Honorary fellows shall enjoy such privileges as may from time to time be determined by the Council.

Fellow (F.I.M.M.)
A person at least 35 years of age with approved academic qualifications, training and 8 years relevant responsible experience who has made significant contributions to the science and practice of profession of Materials Science and Engineering or has given distinguished service to industry or education.

Professional Member (M.I.M.M.)
A person at least 25 years of age, with approved academic qualifications and training, having at least 3 years responsible experience in Materials Science and Engineering, or a person at least 40 years of age, with at least 15 years of experience with practical responsibility, as demonstrated by thesis/dissertation or report and interview.

Associate Member (A.M.I.M.M.)
A person at least 25 years of age, who possesses an interest in Materials Science and Engineering but have not acquired the necessary experience or obtained the qualification, governing entry to Member grade. An Associate Member, on obtaining the necessary qualifications, may apply for transfer to Member grade.

Company Member
Any company that is involved or has interest in Materials Science and Engineering will be qualified to join as a company member.

Ordinary Member
Any Malaysian Citizen and above the age of 18 years engaged in activities related to research, development and applications in Materials Science and Engineering shall qualify for Ordinary Membership. Only Ordinary Members who meet the necessary minimum requirements may apply for transfer to membership grades of Fellow, Member and Associate Member and may use the abbreviated titles upon transfer.

Student Member
A student member shall be a person not under 17 years of age who at the time of application satisfies the Council that he has received a good general education and is studying subjects related to Materials Science or Engineering. A student member shall transfer to the grade of Ordinary Member after graduation provided he or she is suitably qualified and as soon as he or she is earning a full-time salary. A Student shall not become member of the IMM without the prior approval of the Vice-Chancellor or Head of Department of the university or relevant authority concerned.

LOPC 2017

IMM Vibration Conference 2017

ICMTE 2017

MLC 2017

FREE Ordinary Membership for Affiliates:

The Institute of Materials, Malaysia will recognize various professional institutions and societies for **free membership** at "Ordinary Grade". Members of the recognized professional institutions and societies can become Ordinary Members of the IMM without any annual subscriptions. The Council of the IMM approved the proposal in accordance to IMM Rules clause no. 3.2.3 and the members at its 21st Annual General Meeting unanimously approved the proposal on 19th March 2011.

Members of following institutions and societies are welcome to apply.

(1) American Welding Society
(2) Asian Welding Federation
(3) Board of Architects Malaysia
(4) Board of Engineers, Malaysia
(5) Engineering Institutes under the Engineering Council of UK
(6) Geological Society of Malaysia
(7) Institut Kimia Malaysia
(8) Institute of Corrosion UK
(9) Institute of Materials Singapore
(10) Institute of Physics Malaysia
(11) Institution of Engineers, Malaysia
(12) Jabatan Minerals & Geoscience
(13) Malaysian Medical Association
(14) Malaysian Nurses Association
(15) Malaysian Society for Non-Destructive Testing
(16) Malaysian Welding & Joining Society
(17) National Association of Corrosion Engineers USA
(18) Persatuan Arkitek Malaysia
(19) Plastics & Rubber Institute of Malaysia
(20) Singapore Welding Society
(21) Society of Petroleum Engineers
(22) Steel Structures Painting Council USA
(23) The Welding Institute UK

FREE Company Membership for Affiliates:

The Institute of Materials, Malaysia will recognize various professional institutions and societies for free membership at "Company Grade". Company Members of the recognized professional institutions, societies & associations can become Company Members of the IMM without any annual subscriptions. The Council of the IMM approved the proposal in accordance to IMM Rules clause no. 3.2.3 at its Penultimate Council Meeting on 10th January 2014 which was endorsed at the 24th Annual General Meeting held on 21st March 2014.

List of Free Company Memberships for Trade Associations:-

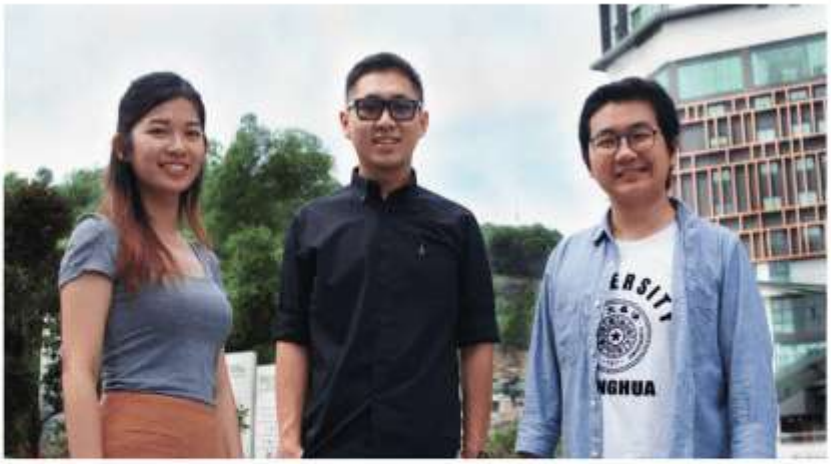
(1) Federation of Malaysian Manufacturers (FMM)
(2) Malaysian Offshore Contractors Association (MOCA)
(3) Malaysian Oil & Gas Engineering Council (MOGEC)
(4) Malaysian Oil & Gas Services Council (MOGSC)

Email : secretariat@iomm.org.my Website : www.iomm.org.my

UCSI University®

Engineering The Future

Prepared and edited by UCSI University
*Submitted by **Dr Yu Lih Jiun, UCSI University***
(yulj@ucsiuniversity.edu.my)



(From left to right)

Thi Shiki, Gary Poh Kwor Xiang and Toong Jin Fung at UCSI University after their research attachments abroad.

UCSI's engineering students contribute significantly to global research endeavours.

Being at the forefront of science and working alongside the world's best minds is not something many would expect when they sign up at a local private university. That is, unless they enrol at UCSI University – Malaysia's best private university in the QS World University Rankings 2019.

Since 2015, UCSI students have been annually selected by the world's best universities for high impact research. It's not an exaggeration. Not when you have renowned varsities like Harvard University, Imperial College London, the University of Chicago, Tsinghua University and the University of Queensland, among others, in the mix.

As far as Engineering is concerned, UCSI students have made pertinent contributions to high impact research at Imperial – one of the world's best universities in science and perennially one of Britain's top three universities.

Five UCSI students have been selected by Imperial so far and the latest student to conclude his call of duty is Gary Poh Kwor Xiang, UCSI's valedictorian of the Class of 2018.

In London, Gary had the privilege of working with Dr Jerry Heng's research team at Imperial's Surfaces and Particle Engineering Laboratory (SPEL). Not keen to make up the numbers, Gary rolled up his sleeves and contributed to an ongoing research project in nanorobotics – an emerging field that will revolutionise science.

"Nanorobotics promises to change the future of healthcare," enthuses Gary. "Nanotechnology allows us to manipulate and control materials at the atomic and molecular level. Throw robots into the picture and you're talking about creating robots whose components are at the scale of a nanometre (10-9 metres).

"Now, imagine these tiny robots carrying drug loads. After being injected into the body, these robots will seek out cancer cells, unloading their drug loads on them, leaving healthy cells largely unharmed.

"This is precision medicine at its best and when nanorobotics is implemented successfully, chemotherapy could one day, be a thing of the past. More chronic diseases will be beatable and lives will be forever changed."

Gary's contributions at Imperial were best exemplified through his work on silicon nanoparticles. Manipulating various conditions like temperature, chemical additives and stirring rates, Gary sought to determine the size of nanoparticles in a bid to fit more of them on a fixed surface area.

Revolutionising science and engineering through collaborative research globally.

Doing so was crucial as this would improve the loads nanorobots could carry, enhancing the effectiveness of precision medicine. Delving deeper, it would also reduce the number of nanorobots needed for a specific task.

Not stopping there, Gary also worked to reduce process times and increase production yield in the pharmaceutical industry through heterogeneous protein cyrstallisation research. Standard process times would normally take an hour and Gary experimented with different materials to reduce the entire process by 20 to 30 minutes.

Waxing lyrical about his many experiences in London, Gary is quick to credit UCSI for equipping him with the aptitude and attitude to excel.

"Many of my UCSI lecturers motivated constantly and special thanks must go out to Assistant Professor Jully Tan and Dr Lee Kiat Moon for getting me ready for Imperial," says Gary. "The University really went out of its way to prepare me for London and I was able to hit the ground running as a result.

"Looking back, I'm proud to say that my UCSI education changed my life. It prepared me not to follow, but to lead. It challenged me to engineer the future, not just through thinking, but doing. I'm a far better person because of my UCSI experience and I'll always look back fondly and say that I was part of this."

Gary is not alone in his scientific pursuit. Thi Shiki and Toong Jin Fung are two more UCSI Engineering students who advanced the science behind protein crystallisation at Tsinghua University – one of China's top two universities.

At Tsinghua, Shiki focused on finding a method of crystallisation that could be applied across all types of proteins while Jin Fung sought to distinguish the relationship between DNA and protein.

Detailing the process, Shiki points out that the process of crystallising proteins is a method of producing solid crystals from a liquid. For crystallisation to occur, the solution has to be supersaturated, meaning the solution must have more solute than ordinary conditions. This can be achieved by various methods like evaporating the solvent in solution to make it saturated, through chemical reactions and cooling.

"My research focused on studying the crystallisation methods for different types of proteins," she says. "Since protein is very specific and complex in structure, different types of crystallising methods are needed to obtain information on the structure of the protein.

"Obtaining this information is crucial as we could use it to target diseases through drug and vaccine design. Also, it can enhance our understanding on protein structure since it is one of the core building structures in all living organisms."

She adds that the ultimate objective of crystallising experiments was to understand the structure of protein macromolecules at an atomic scale. And by using x-ray crystallographic techniques, the protein crystal relationship with other biological systems could be revealed.

Chipping in, Jin Fung explains that the conundrum to address in protein crystallisation experiments lies in the low success rates of crystallising a protein that has an ideal structure, a condition that differs from one protein to another.

"Protein is one of the essential elements in the human body and forming a protein crystal with an ideal shape will help us understand its structure better," he says. "This, in turn, will help us comprehend the interaction of proteins with other chemicals.

"It also has great bearing on the pharmaceutical industry as we can better control the properties of protein and come out with new types of drugs."

In spite of the complexities involved, Jin Fung's research yielded positive results by showing how the addition of different types of DNA would affect the protein crystallisation system in different ways.

Gary's, Shiki's and Jin Fung's accounts are a microcosm of the dynamic learning environment students can expect at UCSI's Faculty of Engineering, Technology and Built Environment. An academic setting which is anything but textbook.

Avenues to excel abound and aspiring engineers can look forward to research opportunities at Imperial, Tsinghua and Queensland, among others, via UCSI's Stark Trek programme – an initiative that sees the world's best universities selecting UCSI students for high impact research.

With these unique advantages in mind, UCSI stands out as a University that offers an education few can, provides experiences others can't and delivers life-defining outcomes for students everywhere.

UCSI University's mission is "To promote transformative education that empowers students from all walks of life to be successful individuals with intergrity, professionalism and a desire to contribute to society."

Development of Mobile Press Welding Machine with Magnetically Controlled Arc for Small Diameter Pipes

Vladimir Kachynskyi[1], Yupiter HP Manurung[2] and Mohamed Ackiel Mohamed[3]
[1]The E.O. Paton Electric Welding Institute, Ukraine,
[2]Faculty of Mechanical Engineering, UiTM Shah Alam and
[3]Serba Dinamik Group Berhad, Shah Alam
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In the construction of industrial, agricultural and power plants, tube or pipes with small diameters from 20 to 60 mm are widely used with material range from mild to high strength steel. Traditionally, manual and semi-automatic arc welding process is commonly applied for joining pipe which requires qualified welders. A significant increase in the quality and productivity of welding operations for small diameter pipes can be achieved through the use of modern technological processes with a high level of automation. In the E.O.Paton Welding Institute in Ukraine, research was carried out on the development of automatic welding processes. One of the processes under investigation is press welding by magnetically controlled arc a.k.a MIAB Welding. The essence of the process is characterized due to the fact that the arc under the influence of an external controlled magnetic field induced by magnetic systems moves in the gap between the ends of the welded pipes (Fig. 1-A). Two pipes ready for welding are set coaxially. Magnetic systems installed on the pipes form magnetic fluxes in the arc gap directed contrary to each other. This magnetic field in the arc gap consists of two vector components of magnetic induction B: radial (Br) and axial (Ba).

The welding arc is excited by the short circuit. The pipes to be welded are brought apart for a definite arc gap (1.5 to 2.5 mm). The interaction of the welding arc's axial component of current and a radial magnetic component, directed perpendicular to the welding arc current, leads to the creation of force. This force moves the welding arc along the ends of pipes being welded. Relatively high speed of arc displacement allows redistribution of the heat energy of the welding arc over the entire surface of the pipe ends. As a result, relatively uniform heating of the welded ends of the pipes will be produced. The welded joint is formed by pressure and joint plastic deformation of the ends of the pipes to be welded (Fig. 1-B). The process of MIAB welding is performed in air without the need of protective gases. A mobile machine for press welding of small diameter pipes was developed and manufactured for operation in production and assembly.

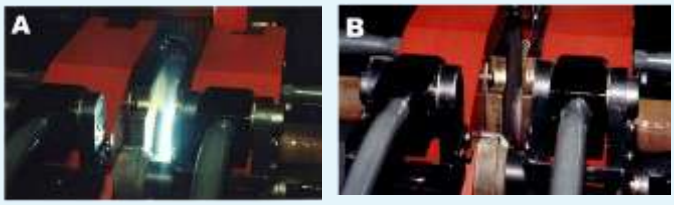

Figure 1: Process of MIAB welding (A) and MIAB welding joint of pipes after upset (B)

The main technical characteristics of the installation of MD-1 are exhibited in Table 1. The welding process on the MD-1 installation (Fig. 2-A), which consists of a machine, a welding rectifier and a control cabinet, is performed as follows. Pipes for welding are installed in the clamping device of the machine (Fig. 2-B). Pipes are clamped by the drives of the machine. Pipes for welding are installed in the clamping devices of the machine (Fig. 2-B). Pipes are clamped by the drives of the machine. The arc burns in the small gap between the edges of the pipes (Fig. 2-C). The welding process is performed by heating the ends of the pipes to the state of plastic deformation. Subsequently after heating, an upset force is formed.

Table 1. The main technical characteristics for pipe 51mm (Æd) x 3 mm (t) using MD1

Characteristic	Value
Maximum pipe cross-sectional area [mm^2]	600
Maximum pipe diameter [mm]	57
Maximum upset force [kN or kg]	40 or 4000
The time of welding [s]	15
Voltage Supply [V]	380
Power consumption [kVA]	50
Weight of Machine and DC power supply [kg]	100 and 250
Overall dimensions of the machine [mm]	793 x 366 x 290

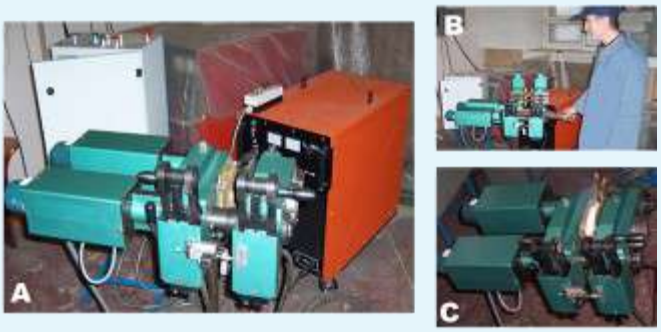

Figure 2: Basic Installation of MIAB Model MD-1 (A), Installation of pipes in the clamping devices of the welding machine (B) and Process of welding pipes Ø51x4mm (C)

After welding, the pipes are taken out of the clamping devices of the machine. The machine returns to its start position for the next welding. The welding process is performed without additional welding materials, cooling water and shielding gas. The welding time of a pipe with a diameter of Ø51x3 mm is 15 seconds. All welded joints were tested in accordance with the international API standard, and additional bend tests were performed in accordance with departmental procedures and standards. Figures 3 shows the different types of welded pipe joints with dimension of Ø38x3mm.

Figure 3: Welded joints of pipes with Ø22mm and Ø51mm (A), Welding to the pipe Ø38x3mm stub and adapter (B) and Welding to the pipe Ø38x3mm with stub with hollow (C)

One of common welding tests is bend test or tulip test for checking the quality of butt weld. Figure 4 (A-D) shows different types of welded joints (Ø38x3mm) after bend tests.

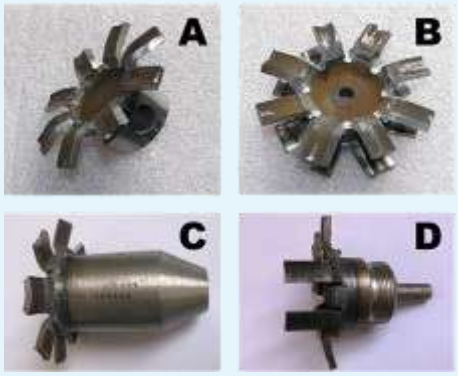

Figure 4: Bend test result pipe (Ø38x3mm) and stud (A), Pipe and adapter (B), Pipe and stud (C) and Pipe and socket (D)

The developed welding machine MDV1 provides welding of pipes up to 57mm in diameter, both in field and stationary conditions in the range of ambient temperature from -20o C to + 40o C. It is possible to manufacture mobile welding equipment for application in the construction of 1 hectare of greenhouses which can significantly raise productivity by 5.3 times, saving 2000 kg of electrodes, and reducing electricity consumption by 5.2 thousand kWh. Wide range of applications are recorded since the first MIAB development, such as welding of pipelines, welding of pipes for thermal stabilization of soil at ambient temperatures up to -40 0C, more than 7 000 kilometers of small diameter pipelines were welded, supporting a total of 25 million cubic meters of soil in the frozen state on an area of 2.5 million square meters, while building greenhouses, more than 50 000 joints of pipes of small diameter. Moreover, areas of industry where butt welding of pipes with fittings, plugs, etc. are used and welding of pipe in the manufacture of hydraulic cylinders in which more than 50 thousand joints was applied.

As conclusions, it can be drawn that the developed MIAB welding process will allow with the help of the manufactured mobile equipment to perform quality and fast work on joining pipes with diameter up to 60 mm. The labour productivity at welding of pipes in the length of 10 m will permit to weld up to 450 welded joints for 7 hours in field conditions. In this case, the developed technology of welding and equipment will allow the process of welding without additional welding materials, cooling water and shielding gas. The main advantages of the MIAB welding technology can be summarized as follow:

The mechanical properties of welded joints are at the level of the properties of the base metal of welded pipes.
Welding of steel pipes is performed in the air.
Welding materials and shielding gas are not used.
No metal is built-up on the inner surface of the pipes.
Monitoring and recording of the main parameters can be done in the welding process.
Application for small companies and in mass production are possible.

Since 2015, Paton Welding Institute (PWI) is collaborating closely for research and development as well as application with AMTEx at Faculty of Mechanical Engineering in UiTM Shah Alam and Serba Dinamik Group.

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*As updated on 26th Feb 2018

Fatigue Analysis and Numerical Fatigue Assessment of Welded Steel Structure Workshop

Reported by: Dr. Mohamed Ackiel Mohamed, Serba Dinamik Group Bhd (IMM Council Member Committee (2018-2020)

Date: 11-13th July 2018
Venue : UiTM Shah Alam

Recently the IMM Welding Committee, Advanced Manufacturing Technology Excellence Centre (AMTEx) from UiTM, Malaysia, Montan University Leoben (Austria) as well as Technogerma Engineering and Consulting jointly organized a Workshop on Fatigue Analysis and Numerical Fatigue Assessment of Welded Steel Structure at UiTM Shah Alam.

Participants with a focus on fatigue related issues for welded structures from a wide range of industries attended this workshop. The main agenda for this workshop was to discuss recent findings related to fatigue analysis of research groups from Montan University in Leoben, Austria and UiTM from Malaysia. The workshop also discussed new technologies and case studies. In addition to that, participants were also allowed to share any technical problems they currently faced in their own respective fields.

The keynotes for this workshop was delivered by Dr. Martin Leitner, Assoc. Prof. Dr. Michael Stoschka from Montan University, Leoben Austria, Prof. Dr. Yupiter HP Manurung from UiTM Shah Alam and facilitated by Council Member and the Welding Committee Deputy Chair, Dr. Mohamed Ackiel Mohamed from Serba Dinamik Group Berhad. The event started with a welcoming speech by the AMTEx Director, Prof. Dr. Yupiter, and then continued with current reaserch topics of interest related to fatigue of welded structures by both Leoben University and UiTM, Malaysia. The rest of the first day was mostly spent on updating recent findings from the IIW comission XIII as well giving a introduction to fatigue of welded structures and assessment methods.

The second day started with a lecture Dr. Martin Leitner on the effect of High Frequency Mechanical Impact (HFMI) post-weld-treatment on fatigue life. This was followed by examples for fatigue assessment of welded structures by Assoc. Prof. Dr. Michael Stoschka. After a delicious lunch break, the workshop continued with deliberate discussions on examples for numerical fatigue assessment of welded structures. Several topics were shared by various presenters from UiTM Weld Fatigue Research Cluster group.

The Third day was mostly spent discussing case studies such as fatigue testing and evaluation of data for design, fatigue strength improvement and life extension, stress analysis, effects of weld imperfections on fatigue strength, residual stress effects in fatigue and well as fatigue design rules. Some industrial issues related to fatigue cracks in rotating equipment was also discussed to find the suitable solutions.

The event ended with a closing speech from the IMM welding Committee Deputy Chairman, Dr. Mohamed Ackiel Mohamed and a token of appreciation given by IMM to all the keynote speakers. All in all, regardless of the fatigue faced by the participants throughout the workshop, the faces remained excited, happy and contented with final findings and achievement of the Fatigue of weld structure workshop. Kudos to the IMM welding committee and UiTM for organizing a very well thought and organized workshop. A special thanks to the main sponsors of the event, namely the Erasmus + from EU, Serba Dinamik Group Bhd and Technogerma Engineering for their kind contribution.

Figure 1: Dr. Ackiel presenting token of appriciation to Dr. Michael

Figure 2: Participants during day-two of the workshop

Breaking the Ceiling - Women Empowerment Talk!


Reported by: Jacqueline Lim (IMM Secretariat)

Edited by: Assoc. Prof. Dr. Melissa Chan Chin Han, Universiti Teknologi MARA (Hononary Secretary of IMM)

Date: 12th July 2018
Venue : NACE International-East Asia and Pacific Area Office, Mid-Valley City, Kuala Lumpur

Nurul Asni Mohamed, the council member of IMM, who is also NACE FMS Past Chair mooted this joint event for National Association Corrosion Engineers (NACE), The Institution of Engineers, Malaysia (IEM) and Institute of Materials, Malaysia (IMM) on Breaking the Ceiling an Empowerment Women session with the objective in mind for women members to widen their knowledge in their profession as well as personal development through networking sessions.

The session was successfully organised on 12th July 2018, Thursday as it garnered an audience of 27 enthusiastic professionals, comprising of members from IEM (5), NACE (20) and IMM (2) who were privileged to grasp the tips and essence of the session from 3 eminent speakers, namely Elaine Bowman - Past President of NACE International (2002-2003), Heleena Seelinger - Executive Director of NACE International Institute and Anita Ahmad - Senior Vice President of Yayasan Hasanah. The attendees participated in the short activity sessions and were rewarded with some treats as fun and excitement purpose.


Figure 1: Historic snapshot with the speakers

Figure 2: Welcoming speech by Nurul Asni Mohamed

In summary the Takeaways of the session were to adopt a paradigm shift through the 'Lean In's Concept', i.e. ways to break the ceiling, the challenges and support received, the distinctive between mentor and mentoring as well as on the importance of networking.

Figure 3: A group photo of the members from NACE, IEM and IMM together with the 3 speakers, Anita Ahmad, Elaine Bowman and Heleena Seelinger who were sitted on the front row further to the right

Formation of the IMM Young Professionals Committee

Reported by: Ir. Dr. Alex Ong Zhi Chao, University of Malaya (IMM Young Professionals Committee, member; IMM Vibration Committee, Treasurer)

Date: 5th July 2018
Venue : VibraTec Asia Pacific Sdn Bhd, Menara UOA Bangsar, Kuala Lumpur

On 5th July 2018, at VibraTec Asia Pacific Sdn. Bhd., Menara UOA Bangsar, Kuala Lumpur. The full list of the committee is as follows:

1. Mohd Fairuz Mohd Salleh (Chairman) - Serba Dinamik Holdings
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6. Redzarul Redzuan - Suez Water Treatment (Malaysia) Sdn. Bhd.
7. Wong Chung Han – Cargill Food Ingredients Sdn. Bhd.
8. Kamila Abdul Hamid – WOODPLC
9. Ahmad Nu'man Ahmad Fawzal – AFCM Sdn. Bhd.

Figure 1: IMM Young Professionals Committee Members

The Chairman, Mr. Fairuz started the meeting with a welcoming note, and thanked all the members spending their precious time after work to attend the meeting. Mr. Hadi Hasmadi from IMM was also present to grace the meeting. He briefed the new committee members on the IMM's history, existing committees and their roles and IMM's membership subscription, followed by a quick self-introduction by each member. The committee members thanked Mr. Hafiz for his willingness to share the VibraTec office for the meeting.

Guided by the vision and mission of IMM, the committee members have prescribed the following to be the objectives of IMM Young Professionals Committee:

1. To enhance awareness on IMM at different industries, specifically targeting graduates and young professionals
2. To bridge IMM's student chapters with its committees
3. To increase membership of graduates and young professionals from different industries
4. To assist in career advancement for graduates and young professionals through social and career specific activities
5. To work closely with IMM Resources in providing young and competent subject matter experts from different industries

Some of the immediate initiatives of the committee are to:

1. Design a logo for the committee
2. Increase representation of woman committee members
3. Identify and invite potential committee members from IT and Computing Industry
4. Write and publish articles in Materials Mind Magazine or other relevant platforms
5. Create social media accounts for the committee to promote the group and activities

Figure 2: Brainstorming on objectives of the committee

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Corrosion Forum: Corrosion and Coatings Development in Industry


Reported by: Nurul Nazirah Mohd Yasin, Universiti Teknologi MARA, Shah Alam
Edited by: Dr. Tay Chia Chay, Universiti Teknologi MARA, Shah Alam (IMM Council Member)

Date: 5th July 2018
Venue : Auditorium 1, Level 4, Institute of Business Excellence, UiTM Shah Alam

The "Forum on Corrosion and Coatings Development in Industry" is a program organized by Faculty of Applied Sciences, Universiti Teknologi MARA (UiTM) with collaboration between of Institute of Materials Malaysia (IMM). IMM is a non-profit professional society which promotes honourable practice, professional ethics and encourages education in materials science, technology and engineering. IMM is registered with the Registrar Societies since 1987.

This forum were discussed about the corrosion and coatings development in industry. The forum was conducted by a moderator Miss Syazni Hanun Nur Ili Dedy Dasiano with two speakers, Mr. Mark Hew Yoon Onn, the Executive Director of Universal Corrosion Engineering (M) Sdn Bhd and Mr. Kang Kim Ang, the Managing Director of Corrtrol Group of Companies. The invited speakers in this forum were material science expertised from the industry area. The forum was discussed about the latest corrosion and coating technology and issues. The forum aimed to share knowledge with the students in the practical application of corrosion and coatings development in the industry sector.

Figure 1: Forum session.

A Q and A session was held and drew attention of students. The invited speakers shared their experience in application of knowledge from various backgrounds in corrosion and coatings investigation. The following are the general questions which open mind of students in corrosion industry:

1. Usually pipeline industry are dominated by XY gender. As a pipeline operator need hulk like power. Si is there any female workers in this industry? If there is, what is the criteria for them to join this industry?
   Actually there is no specific criteria because it is open for both gender to join this industry. For now, females are more advance and aggressive than male but in a certain department there is only males that suitable for example who are working in site.

2. How would you describe the pipeline industry's overall safety record?
   In safety, there are schedule for waste management, specular safety insurance and a good teamwork are needed when working in a team because a slight mistake can cause a life.
   In health, for heavy industry you can attend general industry safety course for example NIOSH and specific induction course.

This forum was adjourned at 12 pm. The organizer would like to convey their appreciation to IMM as well as the speakers Mr. Mark Hew Yoon Onn and Mr. Kang Kim Ang for their support.

Figure 2: Q&A session

Figure 3: Photo session between Materials Technology Society and IMM representatives

Strategic Collaboration between Polytechnic of Sultan Azlan Shah, Ministry of Higher Education and Institute of Materials, Malaysia


Reported by: Jacqueline Lim, (IMM Secretariat)
Edited by: Assoc. Prof. Dr. Melissa Chan Chin Han, Universiti Teknologi MARA, (Honorary Secretary of IMM)

Date: 16th August 2018
Venue : Dewan Mualim, Behrang, Perak Darul Ridzuan

On 16th August 2018, marked a historical moment for Institute of Materials, Malaysia (IMM) and Politeknik Sultan Azlan Shah (PSAS), during the signing of the Collaboration of Certificate (CoC) at Dewan Mualim PSAS, Behrang, Perak.

IMM was honoured to be among the nine (9) collaborative partners present at the auspicious occasion as well as for the launching ceremony of Innovation Proton-Politeknik (PIPPo) and the presentation of mock keys to the 12 selected Polytechnic in Malaysia; in the presence of the Director General of the Department of Education Polytechnics and Community Colleges (JPPKK), Prof. Datuk Dr. Mohd. Ismail Ab. Aziz; Deputy Director General (Governance), Department of Education Polytechnics and Community Colleges, Mohamad Amin Hamat and Director of PSAS, Dr. Naimah Md Khalil.

Figure 1: Assoc. Prof. Dr. Melissa Chan Chin Han, IMM Honorary Secretary at the exchange of the Collaboration of Certification

There was a dialogue session involving three panellists, namely visiting lecturer Malaysian Spanish Institute, Dr. Horizon Walker Gitano-Briggs; research officer from Research Institute of Road Safety Research (MIROS), Noorfaradila Paiman and Managing Director ENDStruct, Khairul Muzammil Saipullah.

The intention of the one-day program is to provide exposure in relation to the autonomous technology that is able to reduce reliance on human labour.

PSAS is the only Polytechnic in Malaysia that produces autonomous vehicles featuring an unmanned autonomous vehicle which took three months to complete since last June 2018. There is an in-built control panel in the autonomous vehicle that is programmed to avoid any obstacles while moving.

The autonomous vehicle was produced by five lecturers and 10 students of Semester 3 and 5 of Department of Mechanical Engineering in automotive programme with a research grant of RM80,000 provided by Jabatan Pendidikan Politeknik & Kolej Komuniti (JPPKK).

Figure 2: Nine (9) collaborative partners at the Collaborative of Certification ceremony

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Memorandum of Understanding Signing Ceremony between Universiti Teknologi MARA and Institute of Materials, Malaysia


Reported by: Nurul Nazirah binti Mohd Yasin, Universiti Teknologi Mara, Shah Alam
Edited by: Dr. Tay Chia Chay, Universiti Teknologi Mara, Shah Alam (IMM Council Member)

Date: 13th September 2018
Venue : Auditorium 1, Level 4, Institute of Business Excellence, UiTM Shah Alam

The collaboration was sealed with a signing of a Memorandum of Understanding (MoU) between Universiti Teknologi Mara (UiTM) and Institute of Materials Malaysia (IMM) on 13 Sept 2018 at the UiTM Shah Alam campus. The collaboration between UiTM and IMM provides opportunities for both parties to organise various activities such as joint organisation of conference, skill training, short courses and technical talks through the establishment of UiTM-IMM Student Chapter.

The MoU was signed by the UiTM Deputy Vice Chancellor of Academics & International, Prof. Ts. Dr. Mohamad Kamal Harun witnessed by Dean of Faculty of Applied Sciences, Prof. Dr. Khudzir Ismail while IMM was represented by Honorary Treasurer, Dr. Zulkarnain Kedah and IMM Honorary Secretary, Assoc. Prof. Dr. Melissa Chan Chin Han.

Figure 1: The changing of documents between UiTM and IMM.

Figure 2: The signing of UiTM-IMM MoU documents. From left: The Dean of Faculty of Applied Sciences - Prof. Dr. Khudzir Ismail, UiTM Deputy Vice Chancellor of Academics & International - Prof. Ts. Dr. Mohamad Kamal Harun, IMM Honorary Treasurer - Dr. Zulkarnain Kedah and IMM Honorary Secretary, Assoc. Prof. Dr. Melissa Chan Chin Han.

Figure 3: Group photo session.

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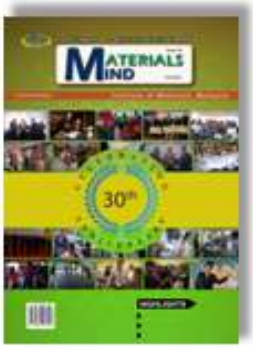

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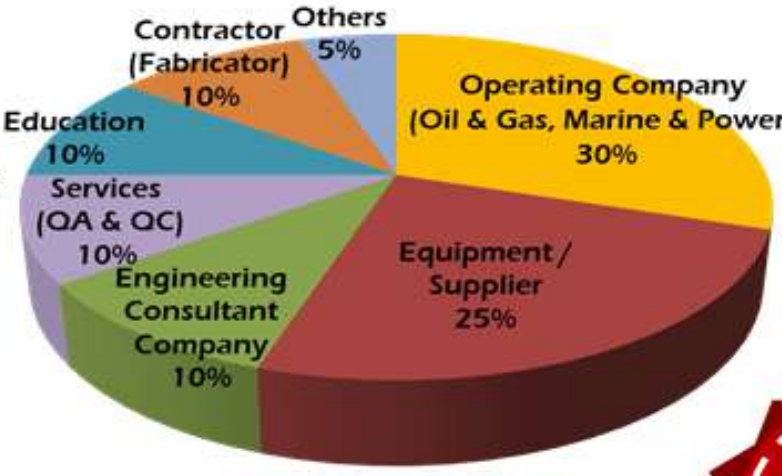

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2018-2020 SESSION

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Alternate: Hadi Syahirman Hasmadi

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Alternate: Jaqueline Lim Mei Mei

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Secretariat Coordinator: Jaqueline Lim Mei Mei
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	Abdul Haziz Haron	SIRIM Bhd
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	Mohd. Wahidduzzaman Zainal (alt)	PPG-Sigma Coatings (M) Sdn Bhd
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	Nurul Asni Mohamed	PETRONAS Group Technical Solution
	Paramjit Singh Darjit Singh (alt)	Hempel (M) Sdn Bhd
	Phuah Shok Chan (alt)	Agilent Technologies Sales (M) Sdn Bhd
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	Selvandram Vello	Hempel (M) Sdn Bhd
	Terence Wee Tee Hin	PPG-Sigma Coatings (M) Sdn Bhd

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Secretariat Coordinator: Maziazaman Abd. Malek
Alternate: Hadi Syahirman Hasmadi

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	Ir. Mohd. Nizam Ab. Wahab	PETRONAS Group Technical Solutions
	Abdul Qaiyum Alidin	Resonic Consultancy
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	Ahmad Nu'man Fawzal	AF Condition Monitoring (M) Sdn Bhd
	Fairuz Salleh	Serba Dinamik Group Bhd
	Mokhtar Mohd. Tahir	Serba Dinamik Group Bhd
	Mohd. Shukri Mohd. Khalid	Sarawak Shell Bhd
	Muhammad Ariff Othman	BAYTECH Engineering Sdn Bhd
	Muhamad Azhan Anuar	Universiti Teknologi MARA
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	Ravindra Kalidas	VibraTec Asia-Pacific Sdn Bhd
	Razaman Maydin	RZF Engineering Services
	Yogeswaran Sinnasamy	Sciences and Technologies Research Institute for Defence (STRIDE)
	Zaharudin Ariffin	PETRONAS Group Technical Solutions

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Secretariat Coordinator: Maziazaman Abd. Malek
Alternate: Hadi Syahirman Hasmadi

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2018-2020 SESSION

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	Noridah Nordin	SIRIM Bhd
	Nurul Hana Kamaruzaman	PETRONAS Group Technical Solutions
	Richard Ang Soon Huat	SGS (Malaysia) Sdn Bhd

WELLS CORROSION COMMITTEE

Secretariat Coordinator: Hadi Syahirman Hasmadi
Alternate: Maziazaman Abd. Malek

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Secretary:	Michael Fong Chin Hoe	TGT Oilfield Services
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YOUNG PROFESSIONALS

Secretariat Coordinator: Hadi Syahirman Hasmadi
Alternate: Maziazaman Abd. Malek

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Treasurer:	Mohd. Hafiz Karim	Vibratec Asia Pacific Sdn Bhd
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	Kamila Abdul Hamid	Wood plc
	Muhammad Qazafi bin Mat Zaid	Norimax Sdn Bhd
	Redzarul Redzuan	Suez Water Treatment (M) Sdn Bhd
	Wong Chung Han	Cargill Food Ingredients Sdn Bhd

Compiled by: Kabigail John, IMM Secretariat, updated as of 19th September 2018.

IMM TRAINING & CERTIFICATION PROGRAM

Coating Certification Scheme

1. Certified Protective Coating Technician (Blaster and/or Painter) Level 1 & Level 2
2. Certified Blasting and Painting Supervisor
3. Certified Coating Inspector Level 1 & Level 2
4. Certified Coating Quality Control Technician
5. Corrosion Control by Protective Paints
6. Certified Thermal Spray Coating Applicator
7. Basic Knowledge on Corrosion Protection for Technicians and Engineers
8. Certified IMM-SSPC C6 Surface Preparation and Paint Application for Power Tool Cleaning Operators and Brush and Roll Paint Applicators
9. Certified IMM-SSPC C7 Abrasive Blasting [a]
10. Certified IMM-SSPC C12 Spray Application [a]
11. Certified IMM-SSPC CAS L1 Coating Applicator Specialist Level 1 [a]
12. Certified IMM-SSPC CAS-L2 Coating Applicator Specialist Level 2 [a]
13. Certified IMM-SSPC CAS L3 Coating Applicator Specialist Level 3 [a]
14. Certified IMM-SSPC C7 (Blasting) & C12 (Painting) Instructor [a]

Materials Courses

1. Materials Selection & Corrosion
2. Metallurgical Failure Investigation
3. Basic Course on Operation of Mobile Air Compressor

Coating Fingerprint Certification Scheme

1. Coating Fingerprint Foundation Course
2. Certified Coating Fingerprint Quality Controller
3. Certified Coating Fingerprint Trainer
4. Refresher Course of Certified Coating Fingerprint Quality Controller

Welding Certification Scheme

1. Certified Welding Inspector
2. IMM-JWES Welding Engineers Certification Courses (AWE/WE/SWE) [b]
3. Repair Welding of Pressure Equipment in Refineries & Chemical Plants
4. Welding & Joining Technology for Non-Welding Personnel
5. Steel Technology for Non-Technical Personnel

Flange Integrity Certification Scheme

1. Certified Flange Integrity Technician

A.P.I Courses

1. A.P.I 510 Pressure Vessel Inspector
2. A.P.I 570 Piping Inspector
3. A.P.I 653 Above Storage Tank Inspector

Vibration Certification Scheme

1. Certified Vibration Practitioner Category 1 [c]
2. Certified Vibration Practitioner Category 2 [c]
3. Certified Vibration Specialist Category 3 [c]
4. Certified Vibration Specialist Category 4 [c]

Corrosion Certification Scheme

1. Certified Corrosion Technician Level 1 & Level 2
2. Certified Cathodic Protection Technician Level 1 & Level 2
3. Certified Cathodic Protection Engineer
4. Corrosion Control by Cathodic Protection
5. Basic Corrosion & Coating Course
6. Certified Cathodic Protection Technologist

Thermal Insulation Certification Scheme

1. Introduction to Thermal Insulation
2. Certified Thermal Insulation Installer

Thermal Analyst Certification Scheme

1. Thermal Analyst Foundation Course
2. Certified Thermal Analyst
3. Certified Thermal Analyst Trainer
4. Refresher Course of Certified Thermal Analyst

and many more !!

[a] non-IMM course; certification scheme of the IMM in collaboration with The Society for Protective Coatings (SSPC) based on SSPC certification requirements.

[b] non-IMM course; certification scheme of the IMM in collaboration with the Japan Welding Engineering Society (JWES).

[c] based on ISO 18436

Updated on 23rd Mar 2018