

C O N T E N T S

FOREWORD BY THE DEAN	2
PROFILE	3
VALUES AND CLIENT CHARTER	4
MANAGEMENT TEAM	6
EDITORIAL BOARD	8
ANNUAL REPORT COMMITTEE	9
MANAGEMENT REPORT	10
• QUALITY ACHIEVEMENT	11
• HUMAN RESOURCE	13
• ACADEMIC DEVELOPMENT	17
• RESEARCH AND DEVELOPMENT	23
• CONSULTANCY	29
• PUBLICATION	30
DEPARTMENT REPORT	40
STUDENT SOCIETIES	64
TECHNICAL SUPPORT AND SERVICES REPORT	68
FINANCIAL PERFORMANCE	99
DIARY OF ACTIVITIES	100
THE WAY FORWARD	104

FOREWORD BY THE DEAN

I am very pleased to provide this overview of activities within the Faculty of Mechanical Engineering, Universiti Teknologi Malaysia.

The Faculty has an ambitious goal: to be widely recognised as Malaysian's premier engineering school. We have also embarked on rigorous procurement exercise for new teaching and research equipment through the RMK9 funding. The key has been – and will continue to be – an investment in people. In the last three years we have increased our graduate enrolment of international members. These new Faculty members bring industrial experience, diversity, and exciting research interests to the Faculty as seen in the pages below. Currently 30 of our academic staff are pursuing their studies locally and abroad at doctorate level. By the end of this year it will be one of the biggest engineering schools in the country in terms of academic staff with PhD qualifications. To help us in this period of dramatic growth and change, we have brought aboard a few advisors from the industry. The members of the industrial advisory board are prominent people from the industry, academia and public sector. They are a bridge between FKM and the broader engineering, business and academic communities, and provide us with valuable external perspectives.

There is much to look forward to: more expansion and improvement in our graduate programmes, more research with more impact. A new building, which is currently still under construction, will certainly increase our physical infrastructure and this augers well with our ultimate goal. I look forward to a positive growth and a bright future for our Mechanical Engineering and its associated programmes.

Sincerely,

Prof. Dr Roslan bin Abdul Rahman
Dean
Faculty of Mechanical Engineering
Universiti Teknologi Malaysia (UTM)

PROFILE

The Faculty of Mechanical Engineering (FME) was set up in 1975 at the Universiti Teknologi Malaysia Jalan Gurney (now Jalan Semarak) campus in Kuala Lumpur with a student enrolment of 544. Initially, the Faculty consisted of three departments, namely, the Department of Mechanics and Design, the Department of Thermo-Fluids and the Department of Petroleum and Natural Gas, offering both Diploma and Bachelor degree programmes.

In March 1983, the Department of Petroleum and Natural Gas was elevated to faculty status becoming the Faculty of Chemical Engineering and Natural Resources Engineering. In place of it, the Department of Production and Industrial Engineering was formed. During the 1989/90 academic session, the new Skudai campus in Johor became the main campus for the university and the Faculty of Mechanical Engineering also moved to the new premises.

In the 34 years since its establishment, the Faculty has undergone tremendous changes in terms of its structure, academic programmes and activities. By the end of 2010, the Faculty consisted of ten departments offering various academic programmes and services. The Faculty also housed ten centres / laboratories of excellence, fifteen teaching laboratories / workshops and outstanding computing facilities to support academic programmes at the undergraduate and postgraduate levels, as well as research and development, and consultancy activities.

VALUES AND CLIENT CHARTER

Vision

To become a world-class Mechanical Engineering Faculty

Mission

To develop human resource required by the nation through training, development, dissemination of knowledge, research and consultancy

Objectives

To develop quality human resource at undergraduate and postgraduate levels

To assist industries through basic and applied research

To forge cooperative networking with the industry in areas of mutual benefit

To disseminate knowledge through publication of research papers, journals, books and reports

To implement continuous staff development programmes

Client Charter

Realising that the main role of the Faculty is to develop human resource in the field of Mechanical Engineering to fulfill the needs of the country, the society and the university, we hereby pledge to:

- Produce capable and ethical mechanical engineers
- Design and implement world class curricula recognised by professional bodies
- Provide efficient, ethical and professional staff who are capable of executing quality academic and administrative tasks in a planned, orderly and controlled manner
- Provide suitable and conducive infrastructure for teaching and learning
- Be concerned of students' self-development

MANAGEMENT TEAM



Assistant Register (Human Resource)
Mrs. Khairany Mohd Kasim

Deputy Register (Academic)
Mr. Abdullah Suhaimi

Head of Department (Automotive Engineering)
Assoc. Prof. Dr. Kamarul Baharin Tawi

Head of Department (Design)
Dr. Muhamad Noor Harun

Head of Department (Manufacturing & Industrial Engineering)
Assoc. Prof. Dr. Izman Sudin

Head of Department (Marine Technology)
Assoc. Prof. Dr. Mohd. Zamani Ahmad

Head of Department (Thermo-Fluids)
Assoc. Prof. Dr. Mazlan Abdul Wahid

DEAN
Prof. Dr. Roslan Abdul Rahman

Head of Department (Material Engineering)
Assoc. Prof. Dr. Ali Ourdjini

Head of Department (Aeronautical Engineering)
Prof. Dr. Mohammad Nazri Mohd Jaafar

Deputy Dean (Academic)
Assoc. Prof. Dr. Omar Yaakob

Deputy Dean (Development)
Assoc. Prof. Dr. Adi Maimun Abdul Malik

Head of Department (Applied Mechanics)
Assoc. Prof. Dr. Musa Mailah

Head of Department (Postgraduate)
Dr. Nor Azwadi Che Sidik

Head of Department (External Programmes)
Prof. Dr. Safian Sharif

Laboratory Manager
Assoc. Prof. Dr. Muhamad Zameri Mat Saman

IT Manager
Dr. Istas Fahrurrazi Nusyirwan

EDITORIAL BOARD

EDITORS

Assoc. Prof. Hamidon Musa

Assoc. Prof. Ainullofti Abdul Latif

Assoc. Prof. Ir Dr Hayati Abdullah

PROOF READER

Prof. Dr Mohammad Nazri b. Mohd Jaafar

ANNUAL REPORT COMMITTEE



MANAGEMENT REPORT

QUALITY ACHIEVEMENT

HUMAN RESOURCE

ACADEMIC DEVELOPMENT

RESEARCH AND DEVELOPMENT

CONSULTANCY

PUBLICATION



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

RESEARCH UNIVERSITY

QUALITY ACHIEVEMENT



UTM AWARD OF EXCELLENCE AND APPRECIATION

In recognition of their outstanding contributions and exemplary services in the year 2010 several members of the Faculty were presented with various awards in the UTM Award of Excellence and Appreciation Ceremony.

Excellence in Service Award

No	Recipient	Post
1	Dr Mohammad Nazri bin Mohd. Jaafar	Professor
2	Dr Mohd Nasir bin Tamin	Professor
3	Dr Kamarul Baharin bin Tawi	Associate Professor
4	Dr Omar bin Yaakob	Associate Professor
5	Ir. Dr Mohamad Pauzi bin Abdul Ghani	Senior Lecturer
6	Dr Mohd. Zarhamdy bin Md. Zain	Senior Lecturer
7	Dr Raja Ishak bin Raja Hamzah	Senior Lecturer
8	Dr Syahrullail bin Samion	Senior Lecturer
9	Dr Abd. Rahim bin Abu Bakar	Lecturer
10	Mr Mohd. Fazilah bin Abdullah	Senior Assistant Registrar
11	Mr Abd. Basid bin Abd. Rahman	Mechanical Engineer
12	Mr Mohd Hazri bin Ishak	Assistant Engineer
13	Mr Maizan bin Hj. Sulaiman	Vocasional Practice Assistant Officer
14	Mr Sahlan bin Sadiron	Senior Technician
15	Mr Zulkefli bin Adnan	Senior Technician

16	Mrs Nor Aizan binti Md. Yasin	Office Assistant Secretary
17	Mr Ahmad Faizal bin Harun	Technician
18	Mr Elfandy bin Jamaludin	Technician
19	Mr Mohd. Sharizan bin Abu Bakar	Technician
20	Mrs Halizah binti A. Rahaman	Administrative Assistant

'Jasa Setia' Award (30 years of service)

No	Recipient	Post
1	Mr Che Abas bin Che Ismail	Senior Lecturer
2	Mr Sazali bin Ngadiman	Senior Technician
3	Mrs Nor'aizan binti Mohd Yasin	Office Assistant Secretary
4	Mr Dorani bin Chik	General Office Assistant
5	Mr Mohd Khir bin Mohd Noordin	General Office Assistant

'Jasa Bakti' Award (20 years of service)

No	Recipient	Post
1	Dr Abd. Rahman bin Abdul Rahim	Associate Professor
2	Dr Adnan bin Hasan	Associate Professor
3	Dr Amran bin Alias	Associate Professor
4	Dr Mat Rebi bin Abdul Rani	Associate Professor
5	Dr Mazlan bin Abdul Wahid	Associate Professor

6	Dr Normah binti Mohd Ghazali	Associate Professor
7	Ir. Yahaya bin Ramli	Associate Professor
8	Mr Mohd Kamal bin Ariffin	Senior Lecturer
9	Dr Mohd Yazid bin Yahya	Lecturer
10	Mr Hairul Anuar bin Abdullah	Lecturer
11	Mr Mohsin bin Mohd Sies	Lecturer
12	Mr Zulkepli bin Hj Muhamad	Lecturer
13	Mr Mohd Zubil bin Bahak	Assistant Lecturer 'A'

International Award

No	Award	Recipient
1	Doctor of Science	Prof. Dr. Andreas Ochsner

Faculty Publication Award

No	Recipient	Award
1	Prof. Dr Andreas Ochsner	Publication Award (Category of Article in Indexed Journal)
2	Prof. Dr Mohammad Nazri bin Mohd. Jaafar	Publication Award (Category of Article in Indexed Journal)
3	Tn Hj. Yahya bin Samian	Teaching Award
4	Dr Mohammed Rafiq bin Dato' Abdul Kadir	Intellectual Property Award

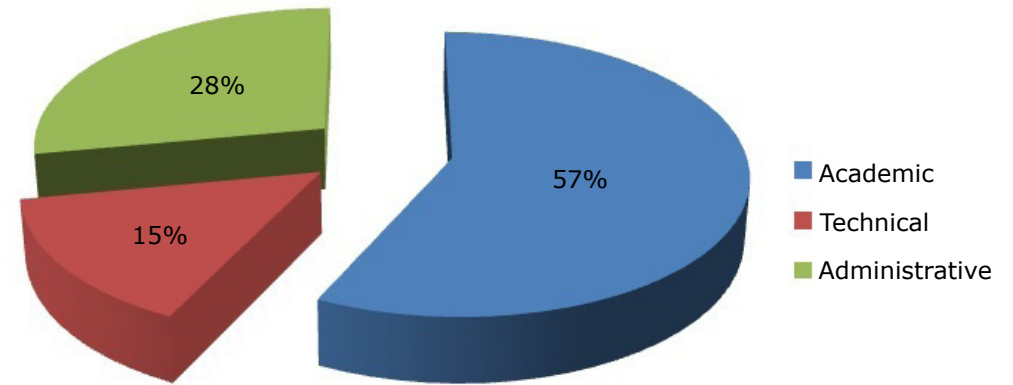
CONVOCATION 2010

The University recognises high academic achievements of students through the presentation of various awards during the convocation ceremonies. The 44th and 45th Convocation ceremonies were held on 27-28 March and 25-28 September 2010 respectively and students from the Faculty who upheld excellent academic standards were among the award recipients.

Students' Awards of Excellence

No	Award Category	Recipient	Programme
1	Chancellor Award	Sharvinder Singh A/L Bachitara Singh (45 th Convocation)	SMT
2	Pro-Chancellor	Mohd Faizal bin Hasan (44 th Convocation)	SMM
3	Vice Chancellor Award	Fung Chong Wei (45 th Convocation)	SMP
3	Board of Engineers Malaysia Academic Excellence Award	Low Thuan Himm (45 th Convocation)	SMP
4	Malakoff Academic Excellence Award	Chan Yoon Tim (45 th Convocation)	SMP
		Nik Muhammad Nazif bin Tuan Sinuzula (45 th Convocation)	SMM
5	Shell Academic Award	Nor Harris bin Nor Helmi (45 th Convocation)	SMM
		Ahmad Ruzaini bin Zainan (45 th Convocation)	SMK
6	UMW Holdings Bhd Academic Excellence Award	Nur Raihana binti Sukri (44 th Convocation)	SMP
7	Academic Award	Fung Chong Wei (45 th Convocation)	SMP
		Pascal Anthony Loh Onn Wei (45 th Convocation)	SMB
		Nee Siong Chee (45 th Convocation)	SMI
		Mohd Izwan bin Hamdan (45 th Convocation)	SMM
		Krishnan A/L Selvarajoo (45 th Convocation)	SMT
		Abd Fareez Hafiz bin Abd Rahim (45 th Convocation)	SMV

HUMAN RESOURCE



Distribution of staff employed

STAFF EMPLOYED

In the year 2010, the Faculty had a total strength of 336 comprising of academic, technical and administrative support staff. The distribution is as follows:

Staff Category	Number of Staff
Academic	192
Technical	95
Administrative	50
TOTAL	337

ACADEMIC STAFF

Distribution of Academic Staff According to Post

Post	Total	Percentage (%)
Professor	24	12.4
Associate Professor	46	23.8
Senior Lecturer	40	20.7
Lecturer	49	25.9
Assistant Lecturer 'A'	2	1.0
Tutor	31	16.1
TOTAL	192	100.0

Distribution of Academic Staff According to Post in Various Departments

Department	Professor	Associate Professor	Senior Lecturer	Lecturer	Assistant Lecturer 'A'	Tutor	TOTAL
Applied Mechanics	6	9	9	8	1	5	38
Thermo-Fluids	5	8	10	3	1	8	35
Manufacturing and Industrial Engineering	6	10	1	12	-	5	34
Design	0	5	5	11	-	2	23
Aeronautical Engineering	3	3	3	4	-	5	18
Marine Technology	1	4	5	3	-	2	15
Materials Engineering	2	2	3	6	-	2	15
Automotive Engineering	1	4	2	4	-	3	14
TOTAL	24	45	38	51	2	32	192

Distribution of Academic Staff According to Department and Qualification

Department	Qualification			
	PhD	Master	Bachelor	Total
Applied Mechanics	24	10	4	38
Thermo-Fluids	15	15	5	35
Manufacturing and Industrial Engineering	16	15	3	34
Design	7	16	-	23
Aeronautical Engineering	8	7	3	18
Marine Technology	9	5	1	15
Materials Engineering	11	4	-	15
Automotive Engineering	9	3	2	14
TOTAL	99	75	18	192

Academic Staff on Study Leave

Academic staff within the Faculty with PhD qualification makes up 51.6%

of the total academic staff. To increase the number of PhD holders within the Faculty, study leave for a total of 53 academic staff was approved in the year 2010. With such proactive efforts in place, the Faculty is optimistic at enhancing the academic quality and achieving the university's target of having more than 51% PhD holders by the year 2010.

Distribution of Postgraduate Studies Undertaken by Staff on Study Leave

Programme	Total
Master	13
Doctor of Philosophy	40
TOTAL	53

Appointments to the positions of administrative leadership in various external organisations indicate that the contributions of its staff are not only limited to within the Faculty. Out of the 192 academic staff members, 6 staff members were on practical training / attachment / secondment to various positions in external organisations as follows:

Staff on Industrial Attachment / Secondment

Name	Department	Position/Organisation
Dr Raja Ishak bin Raja Hamzah	Applied Mechanics	Perusahaan Otomobil Sdn Bhd Shah Alam, Selangor.
Razali bin Sulaiman	Fluid Mechanics and Design	Pesaka Astana, Shah Alam, Selangor
Dr Faizul Amri bin Adnan	Marine Technology	CWA Marine Sdn Bhd, Johor Bahru, Johor
Dr Mohd Foad bin Abdul Hamid	Fluid Mechanics and Design	Scientige Sdn Bhd, Kuala Lumpur
Assoc. Prof. Dr Mohd Azman b. Zainul Abidin	Automotive	Perusahaan Otomobil Sdn Bhd Shah Alam, Selangor.
Assoc. Prof. Dr Adnan Hassan	Manufacturing and Industrial Engineering	King Abd. Aziz University

Promotion and Appointment of Academic Staff

The year 2010 also saw an impressive number of staff being promoted with a window of opportunity to further develop the Faculty.

Academic Staff Promoted to Various Positions

No	Name	Grade	New Post
1	Dr Intan Zaurah binti Md Darius	DS54	Associate Professor
2	Dr Mohamed bin Hussein	DS54	Associate Professor
3	Badri bin Abd. Ghani	DS52	Senior Lecturer
4	Mohsin bin Mohd Sies	DS52	Senior Lecturer
5	Wan Harun bin Wan Hamid	DS52	Senior Lecturer
6	Dr Jamaluddin bin Hj. Mohd Taib	DS52	Senior Lecturer
7	Dr Mohd Yazid bin Yahya	DS52	Senior Lecturer
8	Dr Haslinda bt. Mohamed Kamar	DS52	Senior Lecturer

To further strengthen the Faculty, 6 new academic staff including 4 international academic staff were appointed in 2010. The Faculty also received 9 visiting professors throughout the year.

Appointment of New Academic Staff

No	Name	Post
1	Dr Dadan Ramdan	Senior Lecturer
2	Dr Henry Nasution	Senior Lecturer
3	Dr Jaswar	Senior Lecturer
4	Dr Joy Rizki Pangestu Djuansjah	Senior Lecturer
5	Mohd Hazmil Syahidy bin Abdol Azis	Tutor
6	Muhammad Akmal bin Azizan	Tutor

Visiting Professors at FME

No	Name	Department
1	Prof. Dr Amresh Chakrabarti	Design
2	Tn Hj. Mohd Azali Abd Rahim	Design
3	En. Goo Yock Tee	Design
4	Prof. Dr Mohammad Rafiqul Islam	Marine Technology
5	Prof. Chengi Kuo	Marine Technology
6	Prof. Dr Purnendu K. Das	Marine Technology

7	Prof. Atilla Incecik	Marine Technology
8	Dr Ricardo Martinez – Botas	Applied Mechanics
9	Li Hong Juang	Applied Mechanics

NON-ACADEMIC STAFF

The Faculty has a total of 145 technical and administrative supporting staff. The distribution is shown in the following tables.

Distribution of Technical Staff According to Post

No	Post	Total
1	Engineer	2
2	Assistant Vocational Training Officer	7
3	Assistant Engineer	2
4	Assistant Information Technology Officer	1
5	Senior Technician	22
6	Assistant Vocational Training Officer	6
7	Senior Technician (KUP)	7
8	Technician	47
9	Craftsman K2 (KUP)	1
TOTAL		95

Distribution of Administrative Support Staff According to Post

No	Post	Total
1	Senior Deputy Registrar	1
2	Senior Assistant Registrar	1
3	Office Secretary	7
4	Assistant Office Secretary	2
5	Senior Administrative Assistant (P/O)	2
6	Senior Administrative Assistant (P/O) (KUP)	2
7	Administrative Assistant (P/O)	18
8	Senior Office Assistant	5
9	Senior Office Assistant (KUP)	5

10	Office Assistant	7
TOTAL		50

Appointment of New Non-Academic Staff

To enhance the quality of services within the Faculty, the year 2010 saw the appointment of a number of new non-academic staff as well as staff transferred to other office and faculty in UTM.

New Non-Academic Staff

No	Name	Post
1	Mohamed Reduan bin S.M. Samsudin	Technician
2	Mohd Faisz bin Yang Ahmad	Technician
3	Mohd Khairul Afnan bin Kasim	Technician
4	Muhamad Zaki bin Ismail	Technician
5	Sabirah binti Sarpan	Administrative Assistant (P/O)
6	Azmi bin Mat Zin	Senior Office Assistant
7	Noor Aniza bte Ghzali@Ghzali	Assistant Vocational Training Officer

Transfer of Non-Academic Staff

No	Name	Position	Department
1	Muhammad Sabri bin Abdul Latif	Senior Office Assistant N4	Fakulti Sains Komputer Dan Sistem Maklumat, UTM
2	Ghzali bin Tambi	Senior Technician (KUP)	Pusat Islam UTM
3	Izad Irman bin Ismail	Technician	Pejabat Timbalan Naib Canselor (Penyelidikan & Inovasi)

Staff Retirement

- Assc. Prof. Dr Amran bin Ayub
- Mr Md Raduan bin Harun
- Mr Abdul Karim bin Yaakob

Others

Mr Mohamed Rahim bin Md. Rais has passed away in 2010, Al-Fatehah.



Function held to commemorate the retirement of FKM senior staff

ACADEMIC DEVELOPMENT



ACADEMIC PROGRAMMES

In the year 2010, FME offered 8 bachelor degree programmes and 10 postgraduate programmes with a total student enrolment of 2,102.

Undergraduate Programmes

- Bachelor of Engineering (Mechanical)
- Bachelor of Engineering (Mechanical – Materials)
- Bachelor of Engineering (Mechanical – Industrial)
- Bachelor of Engineering (Mechanical – Manufacturing)
- Bachelor of Engineering (Mechanical – Aeronautics)
- Bachelor of Engineering (Mechanical – Automotive)
- Bachelor of Engineering (Mechanical – Marine Technology)
- Bachelor of Science (Industrial Design)

Postgraduate Programmes

Postgraduate programmes by taught course:

- Master of Engineering (Mechanical)
- Master of Engineering (Advanced Manufacturing Technology)
- Master of Engineering (Industrial Engineering)
- Master of Engineering (Marine Technology)
- Master of Engineering (Materials Engineering)

Postgraduate programmes by mixed mode:

- Master of Engineering (Mechanical)
- Master of Engineering (Mechanical - Materials)
- Master of Engineering (Mechanical - Marine Technology)

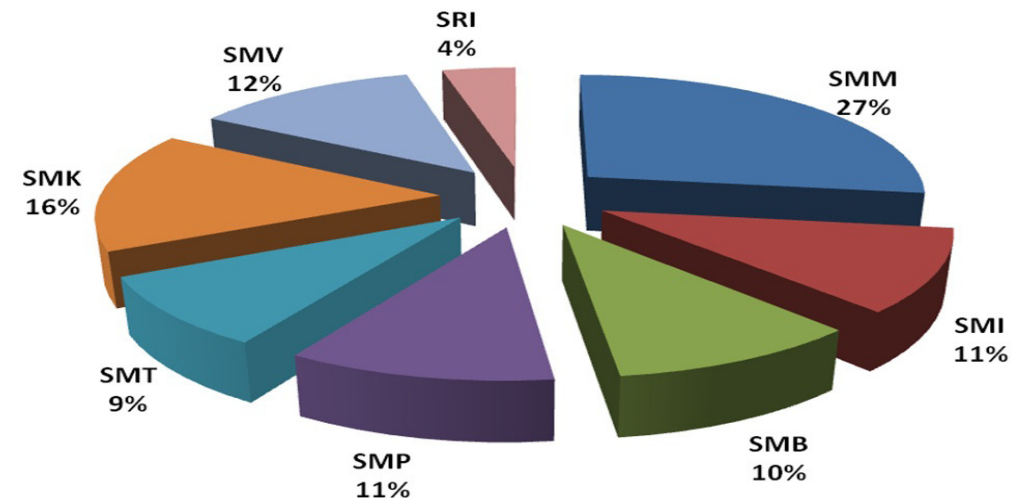
Postgraduate programmes by research:

- Master of Engineering (Mechanical)
- Doctor of Philosophy (Mechanical Engineering)

STUDENT ENROLMENT

Undergraduate Student Enrolment

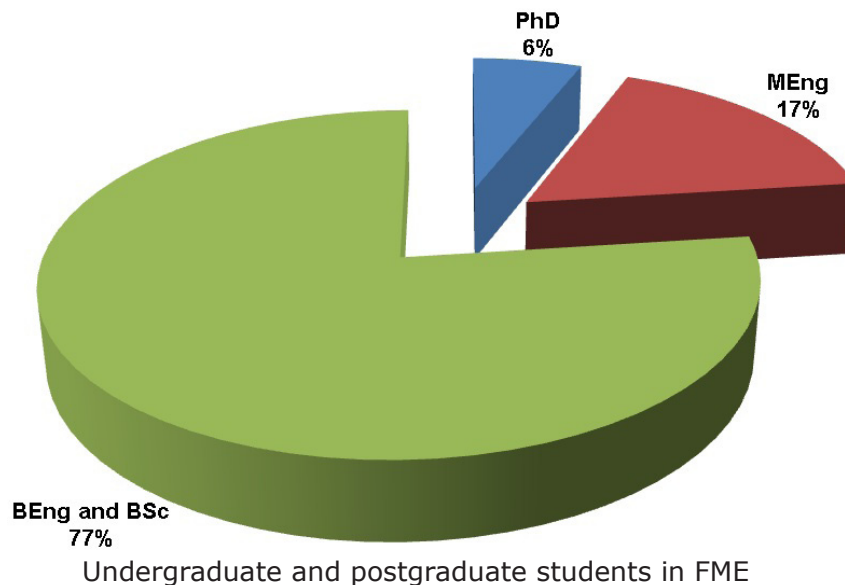
Programme	Number of Students
Bachelor of Engineering (Mechanical) - SMM	439
Bachelor of Engineering (Mechanical – Industrial) - SMI	173
Bachelor of Engineering (Mechanical – Materials) - SMB	164
Bachelor of Engineering (Mechanical – Manufacturing) - SMP	172
Bachelor of Engineering (Mechanical – Aeronautics) - SMT	148
Bachelor of Engineering (Mechanical – Marine Technology) - SMK	252
Bachelor of Engineering (Mechanical – Automotive) - SMV	202
Bachelor of Science (Industrial Design) - SRI	66
Total	1616



Percentage of undergraduate students according to programme

Postgraduate Student Enrolment

Programme	Number of student
Master of Engineering (Advanced Manufacturing Technology)	42
Master of Engineering (Marine Technology)	35
Master of Engineering (Materials Engineering)	30
Master of Engineering (Mechanical)- taught course	78
Master of Engineering (Mechanical)- mix mode	20
Master of Engineering (Mechanical)- research	71
Master of Engineering (Industrial Engineering)	73
Doctor of Philosophy	137
Total	486



INTERNATIONALISATION

FME believes in strengthening international link with foreign universities to add value to its academic programmes. The year 2010 saw the recruitment of 13 academic staff as well as students from abroad. The international student population was 184, with 46 undergraduate students and 138 postgraduate students. FME also received visits from foreign visitors.

International Academic Staff at FME

No	International Academic Staff	Grade	Country of Origin	Department
1	Dr Ali Ourdjini	Associate Professor DS53	Algeria	Materials Engineering
2	Dr Agoes Priyanto	Senior Lecturer DS51	Indonesia	Marine Technology
3	Dr Andreas Ochsner	Professor VK7	Germany	Applied Mechanics
4	Dr Subramaniam Krishnan	Professor VK7	India	Aeronautical Engineering
5	Dr Ashraf Hafiz Amin Radwan	Profesor VK7	Mesir	Manufacturing & Industrial Engineering
6	Dr Yunan Prawoto	Associate Professor DS53	Indonesia	Applied Mechanics
7	Dr Shirish Padmakar Patil	Associate Professor DS53	USA	Automotive Engineering
8	Dr Mohammad Sakhawat Hussain	Associate Professor DS53	United Kingdom	Materials Engineering
9	Dr Dadan Ramdan	Senior Lecturer DS51	Indonesia	Materials Engineering
10	Dr Joy Rizki Pangestu Djuansjah	Senior Lecturer DS51	Indonesia	Materials Engineering
11	Dr Henry Nasution	Senior Lecturer DS51	Indonesia	Thermo-Fluids
12	Dr Jaswar	Senior Lecturer DS51	Indonesia	Marine Technology
13	Dr Li Hong Juang	Associate Professor DS53	Taiwan	Applied Mechanics

MEMORANDUM OF UNDERSTANDING (MoU)

As part of the steps taken towards internationalisation of the Faculty, several MoUs have been signed. These collaborations will allow extensive research opportunities globally and benefit the students directly by student transfer programmes.

Institutions involved in MoU with FME

No	Mou/MoA	Date of Signing Ceremony
1	Kobe University	12.1.2010
2	Sabutek (M) Sdn Bhd	14.4.2010
3	Portland Energy Sdn Bhd	25.10.2010
4	St Petersburg Stte Marine Technical University, Russia	14.7.2010
5	Lambang Wibawa Sdn Bhd	18.8.2010
6	Bureau Veritas	4.11.2010
7	Cameron International Malaysia System Sdn Bhd	25.12.2010

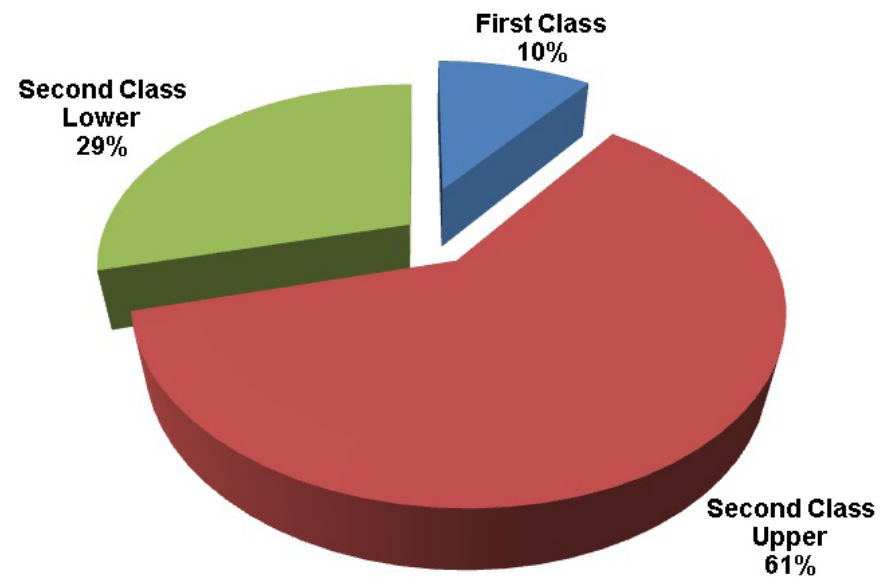
Internship Programmes (International Students)

No	Student & University	Date & FME Supervisor
1	John Mongodin, University of De Rennes, France	12.4.2010 – 18.6.2010 Supervisor: Prof. Ir. Dr Azhar Abdul Aziz
2	Sonu Kumar Adash, Indian School of Mines (ISM), Dhanbad, India	15.5.2010 – 5.7.2010 Supervisor: Dr Abd. Rahim bin Abu Bakar
3	Nihar Ranjan Gautam, Indian School of Mines (ISM), Dhanbad, India	15.5.2010 – 5.7.2010 Supervisor: Dr Abd. Rahim bin Abu Bakar
4	Siddhartha Verma, Indian School of Mines (ISM), Dhanbad, India	15.5.2010 – 5.7.2010 Supervisor: Dr Abd. Rahim bin Abu Bakar
5	Nans Argound, Institute of Automotive Transportation (ISAT), University of Burgundy, France	2.9.2010 – 17.12.2010 Supervisor: Dr Abd. Rahim bin Abu Bakar
6	Stanislas Viossat, Institute of Automotive Transportation (ISAT), University of Burgundy, France	2.9.2010 – 17.12.2010 Supervisor: Dr Abd. Rahim bin Abu Bakar
7	Guillaume Levenez, Institute of Automotive Transportation (ISAT), University of Burgundy, France	2.9.2010 – 17.12.2010 Supervisor: Dr Abd. Rahim bin Abu Bakar
8	Remy Arnaud, Institute of Automotive Transportation (ISAT), University of Burgundy, France	2.9.2010 – 17.12.2010 Supervisor: Dr Abd. Rahim bin Abu Bakar
9	Nicholas Quettier, Institute of Automotive Transportation (ISAT), University of Burgundy, France	2.9.2010 – 17.12.2010 Supervisor: Dr Abd. Rahim bin Abu Bakar

10.	Ahmed Mostafa Mohamed Taher Metwaly, Alexandria University, Alexandria	15.6.2010 – 15.9.2010 Supervisor: Prof. Dr Md. Nor bin Musa
11.	Thomas Ickas, HTW Aalen University, Germany	8.9.2010 – 8.11.2010 Supervisor: Prof. Ing. Dr Andreas Oechsner
12.	Michael Miltz, HTW Aalen University, Germany	8.9.2010 – 8.11.2010 Supervisor: Prof. Ing. Dr Andreas Oechsner

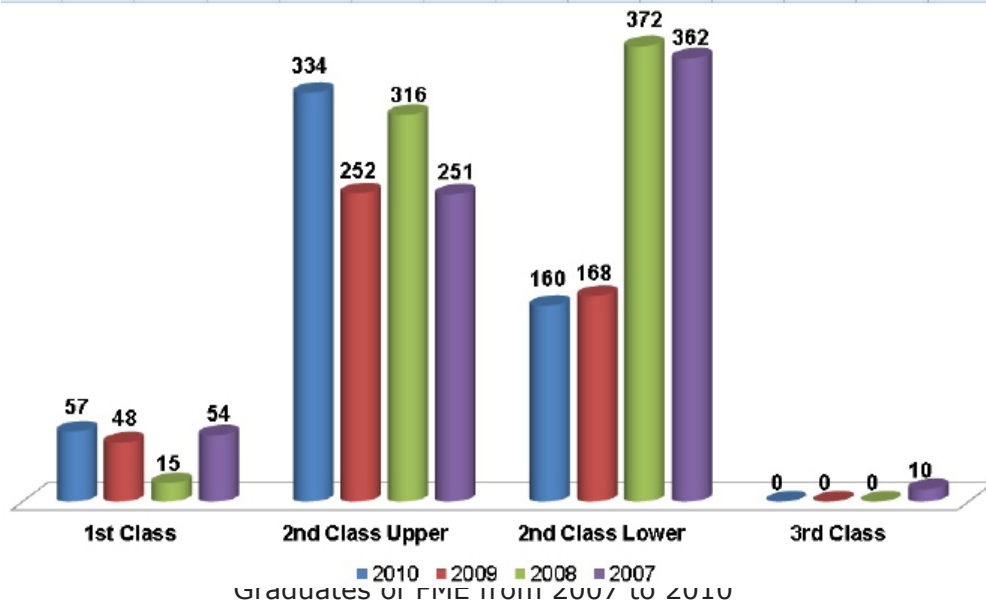
GRADUATION

A total of 551 undergraduate, 141 Masters and 8 Phd students graduated in the year 2010. 57 of these undergraduates received first class (hons).



Classification of 2010 graduates

FME has managed to produce more undergraduates with at least a second class upper and above in year 2010 as compared to the previous years of 2009, 2008 and 2007. Proof of excellence in teaching can be seen in 2010, where the number of 2nd class lower graduates was reduced.



ACADEMIC ACTIVITIES

Continuous efforts have been carried out by the Faculty in conducting various programmes aimed at enhancing students' learning and self-development.

Programmes for Students

No	Programme	Date
1	How to get yourself employed	30 – 31 January
2	How to get yourself employed	13 – 14 March
3	How to get yourself employed	20 – 21 March
4	How to get yourself employed	7 – 8 August
5	How to get yourself employed	16 – 17 October
6	How to do your PSM presentation	6 October
7	How to conduct PSM	20 January
8	How to conduct PSM	19 August,
9	Kelas kemahiran Perpustakaan Lanjutan untuk PSM	19, 20, 22, 23 & 26 July

10	Majlis Penyampaian Medal dan Sijil Anugerah Dekan	26 Mac and 24 September
11	Taklimat Dekan kepada pelajar baru	6 July
12	Taklimat Penyeliaan Latihan Industri	4 May
13	Taklimat Latihan Industri	20 October
14	Bengkel Kurikulum	4 – 6 August
15	Explorace FYE FKM 2010	6 – 7 July
16	Bengkel Pemantapan Dokumen Kurikulum	3 March
17	Bengkel Semakan dan Pemurniaan Dokumen Kurikulum Baru	18 – 19 February
18	Pengiktirafan Program Sarjana Muda (SPACE)	8 – 12 November
19	Perjumpaan pelajar Kedudukan Bersyarat (KS) Bersama Dekan	4 June
20	Perjumpaan Ketua Jabatan bersama pelajar yang mendapat PNG bawah 1.00	21 July
21	Taklimat Ketua Jabatan kepada pelajar baru	7 July

FME has maintained its excellence by keeping its programmes accredited and ensuring the undergraduate students undergo industrial training for 10 weeks. An Industrial Advisory Board was appointed and is represented by CEOs, Professional Engineers and General Managers of high ranked companies.

Industrial Advisory Board

No	Course	Name	Company	Date
1	SMM	Hj. Ramli Hj. Hitam	T & L Associates, Kuala Lumpur	07.10.2010 – 06.10.2012
2	SMM	Mr Ab. Razak Hashim	PROTON	07.10.2010 – 06.10.2012
3	SMM	Mr Ong Eng Hock	YTL Power Services Sdn Bhd, Pasir Gudang, Johor	07.10.2010 – 06.10.2012
4	SMM	Mr Mohd Sobri Abu Bakar	Panasonic, Shah Alam, Selangor	07.10.2010 – 06.10.2012
5	SMB	Engr. Ong Chong Hup	Institute of Materials Malaysia (IMM), Puchong, Selangor	07.10.2010 – 06.10.2012
6	SMB	Ir. Dr. Edwin Jong Nyon	Shell Malaysia E & P, Kuala Lumpur	07.10.2010 – 06.10.2012
7	SMB	Ir. Norhisyam Yahya	Institution of Engineers Malaysia, Selangor	28.10.2010 – 27.10.2012

8	SMI	Mr Anwar Ali	INTEL Malaysia, Pulau Pinang	07.10.2010 – 06.10.2012
9	SMI	Mr Kabir Ahmad Mohd Jamil	Malaysia Productivity Corporation, Petaling Jaya, Selangor	07.10.2010 – 06.10.2012
10	SMP	Ir. En. Zainal Fitri bin Zainal Abidin	PROTON	07.10.2010 – 06.10.2012
11	SMP	Mr Nordin bin Othman	Supreme Dimension Sdn Bhd, Pasir Gudang, Johor	07.10.2010 – 06.10.2012
12	SMP	Tengku Jamal Abdul Nassier	JARIZ Technologies Sdn Bhd, Shah Alam, Malaysia	16.11.2010 – 15.11.2010
13	SMT	Mr Naguib Mohd Nor	STRAND Operating Officer, Cyberjaya, Selangor	07.10.2010 – 06.10.2012
14	SMT	Mr Mohamad Khalizi Abdul Razak	Unmanned Systems Technology Sdn Bhd, Durian Tunggal, Melaka	07.10.2010 – 06.10.2012
15	SMT	Mr Basil Sim	Spirit Aerosystems Malaysia Sdn Bhd, Subang, Selangor	07.10.2010 – 06.10.2012
16	SMT	Tuan Haji Norhizam Hamzah	Astronautic Technology (M) Sdn Bhd, Shah Alam, Selangor	07.10.2010 – 06.10.2012
17	SMV	Mr Hasrol bin Hashim	PERODUA	07.10.2010 – 06.10.2012
18	SMV	Dato' Ir. Foong Choy Chye	FCC CONSULTING ENGINEER, Kuala Lumpur	15.11.2010 – 14.11.2012
19	SMV	Mr Azhari Che Hasan	PROTON	07.10.2010 – 06.10.2012
20	SMK	First Admiral Dato' Ir. Hj. Ahmad Murad Hj. Omar	Omahams Corporation Sdn Bhd, Petaling Jaya, Selangor	07.10.2010 – 06.10.2012
21	SMK	Yg Bhg Dato' Ir. Abd. Hak bin Md. Amin	Setiawangsa Business Suites, Kuala Lumpur	07.10.2010 – 06.10.2012
22	SMK	Ir. Tuan Hj. Othman Kadir	Malaysian French Chamber of Commerce & Industry Bhd, Kuala Lumpur	07.10.2010 – 06.10.2012

Global Outreach Programme (GOP)

No	Department	Student	Programme	Date	Academic Staff
1	Department of Automotive Engineering	12	University Tsinghua & Industri di Beijing, China	6 – 14 December	Dr Srithar a/l Rajoo

2	Department of Postgraduate Studies	10	Islamic University of Technology, Dhaka, Bangladesh	16 November - 2 December	Assoc. Prof. Dr Normah bt Mohd. Ghazali
3	Department of Marine Technology	14	Universiti Hasanuddin, Makasar, Indonesia	26 December 2010 - 1 January 2011	Dr Muhamad Pauzi bin Abdul Ghani
4	Department of Manufacturing and Industrial Engineering	11	Tsinghua University dan Peking University, Beijing, China	12 – 18 December	Mr Jafri bin Mohd. Rohani
5	Department of Aeronautical Engineering	23	Indian Institute of Technology, Madras and India Institute of Science Bangalore, India	12 – 18 December	Assoc. Prof. Dr. Tholudin bin Mat Lazim

COLLOQUIUM

In its endeavour to disseminate knowledge, FME introduced the FME Colloquium to create an open forum for the presentation of a broad range of engineering and technology-based topics by academic staff and invited speakers. It also serves as an intellectual forum for knowledge acquisition specially targeting postgraduate students. The colloquium is conducted within an environment where students, members of the Faculty and guests can share knowledge and experience to broaden their perspectives and promote further research activities.

Colloquium Organized by FME in 2010

Date	Presenter	FME Colloquium Presentation Title
6/1/2010	Dr Choon Sooi Tai	Large industrial gas turbines : an introduction and challenges
13/1/2010	Dr Muhamad Azizi Mat Yajid	Advanced electron microscopy and nanofabrication – an introduction
20/1/2010	Mr Trevor Blakeley	The challenges facing the maritime industry
26/1/2010	Mr Naguib bin Mohd. Nor	Designing aircraft structures: an industrial perspective – role of Strand Aerospace Malaysia
26/1/2010	Dr Shaibatul Hamd Macci	Designing aircraft structures: an industrial perspective – experience sharing

29/1/2010	Professor Kozo Obara	The dawn of energy revolution due to solidarity – contribution of the excited states of electrons in material sciences
10/2/2010	Dr Zaini Ahmad	Structural impact and crashworthiness of vehicle protective structures: overview
24/2/2010	Assoc. Prof. Dr Shirish Padmakar Patil	Development of software applications to improve vehicle dynamic performance
24/2/2010	Professor Dr Amaresh Chakrabarti, Indian Institute of Science, Bangalore,INDIA	Encouraging engineers to appreciate the importance of systematic design methodology: practice, teaching and research
24/3/2010	Mr Arulthas Uvakaram, FLEXTRONICS	Introduction to SMT
24/3/2010	Mr Lim Vern Yew, NATIONAL INSTRUMENTS	Solving industrial control challenges with data acquisition
19/5/2010	Professor Dr Mohammad Rafiqul Islam	Dynamics of multi-body system regular and irregular waves
23/6/2010	Professor Dr Chengi Kuo	Generic management system circuit (GMSC) approach for performing environmental impact assessment in maritime activities
30/6/2010	Professor Dr Chengi Kuo	Contributions of safety management to ship stability
14/7/2010	Professor Dr Kirill V. Rozhdestvensky	Peculiarities of aerodynamic of vehicles taking advantages of proximity to an underlying surface
21/7/2010	Mr Dennis Prem Kumar Chandran, INTEL	Introduction to electronic packaging and latest trends in packaging development
4/8/2010	Mr Ooi Chun Keang, INTEL	Thermal management for electronic packaging
4/8/2010	Dr Norhayati binti Ahmad	Synthesis and properties of Si_3N_4 -TiN composites by spark plasma sintering
29/9/2010	Professor Dr Yasukawa	Hull form development of a double-ended catamaran ferry with electric propulsion system
13/10/2010	Dr Raja Ishak bin Raja Hamzah	Gear condition monitoring using acoustic emission (AE) technology
13/10/2010	Professor Dr. Purnendu K. Das	Structural reliability analysis of intact and damaged ships
20/10/2010	Dr Joy Rizki Pangestu Djuansjah	Computational study on misfit dislocations in Ni-based superalloys

20/10/2010	Dr Rd. Dadan Ramdan	Phase-field method as an alternative microstructure evolution simulations
15/12/2010	Professor V.G Idichandy, Deputy Director of IIT Madras	Nurturing creativity of students: an IIT Madras experience

CONFERENCE

Conference Organized by FME in 2010

No	Seminar	Date	Venue	No. of Participant
1	Asia Pacific Offshore Conference (APOC 2010)	13-14 December 2010	Berjaya Time Square Hotel and Convention Center	50



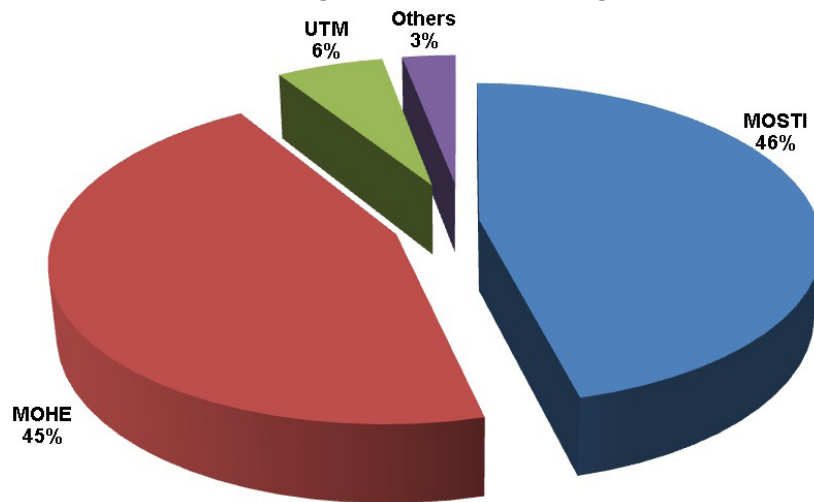
Presentation by Mr Dennis Prem Kumar Chandran (INTEL) on 21 July 2010 in FME Colloquium

RESEARCH AND DEVELOPMENT



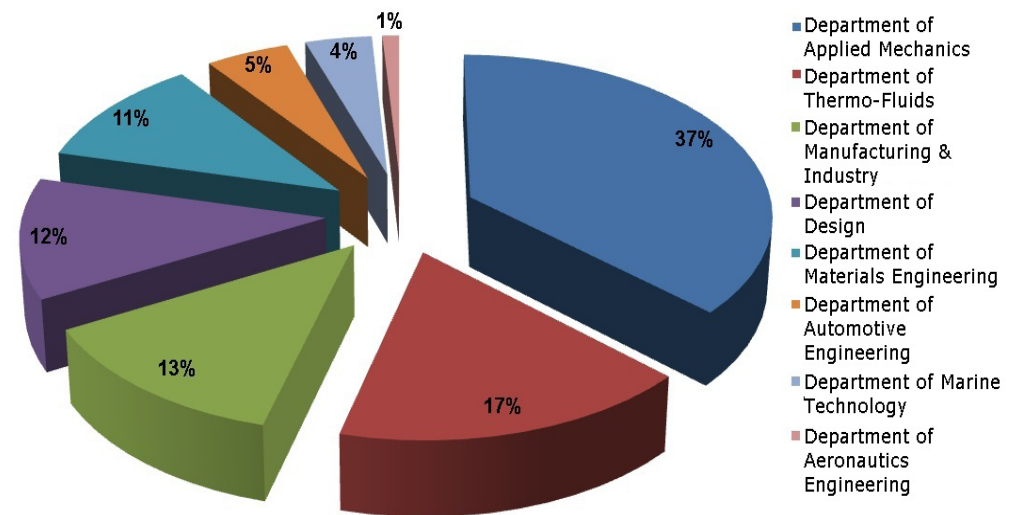
RESEARCH GRANTS

For the year 2010, FME received research grants totalling RM 2.72 million. The distribution according to source of funding is shown below.



Research grants secured by source of funding

The amount of research grants secured by departments is shown in the following chart.



Research grants secured by departments

Details of the distribution according to various departments are listed in the following tables.

Department of Aeronautical Engineering

No	Head of Project	Project Title	Category	Amount (RM)
1	Dr Istas Fahrurrazi Nusyirwan	Malaysia airspace safety monitoring agency	UTM	20,000.00
TOTAL				20,000.00

Department of Materials Engineering

No	Head of Project	Project Title	Category	Amount (RM)
1	Dr R Dadan Ramdan	Nanocrystalline diamond (NCD) deposited on titanium alloy for bio-medical applications	UTM/Foreign Academic Visitors R&D Fund	20,000.00
2	Prof. Dr Esah Hamzah	The bonding interface morphology of nanocrystalline diamond deposited on tungsten carbide using hot filament chemical vapour deposition technique	MOHE	88,000.00
3	Assoc. Prof. Dr Ali Ourdjini	The effect of steel mould parameters and granular size on heat transfer rate of in-situ melted magnesium investment casting	MOHE	43,000.00
4	Dr Muhamad Azizi Mat Yajid	Nanoscale microstructural characterization and nanomechanical testing on metallic multi-layer coatings for electronic applications	MOHE	55,900.00
5	Dr R Dadan Ramdan	Study on the appropriate TiO ₂ layer for the coating of hydroxyapatite on titanium alloys by high velocity oxy-fuel (HVOF) spray process	MOHE	49,020.00
6	Assoc. Prof. Dr Mohd. Hasbullah Hj Idris	Diffusion evaluation of hydroxyapatite on biometallic implant using investment casting technique	MOHE	52,000.00
TOTAL				307,920.00

Department of Applied Mechanics

No	Head of Project	Project Title	Category	Amount (RM)
1	Prof. Dr Mohd Nasir Tamin	Damage and fracture mechanics-based design methodology	MOSTI	592,800.00
2	Prof. Dr Mohd Nasir Tamin	Damage mechanics-based fatigue design methodology for structural components	Libyan People's Bureau-Kuala Lumpur	20,000.00
3	Dr Mohd Yazid bin Yahya	Biomechanical analysis and implant development for total arthroplasty of the shoulder and elbow joints	MOSTI	235,100.00
4	Dr Zaini Ahmad	Crash-worthiness optimization of aluminium alloy foam-filled rectangular tapered tubes for automotive application	UTM/SHORT TERM GRANT	20,000.00
5	Dr Raja Ishak Raja Hamzah	Gear condition monitoring using acoustic emission technology	UTM/SHORT TERM GRANT	20,000.00
6	Dr Zaini Ahmad	Fundamental investigation of wave propagation and impact characteristic of thin-walled structures under high strain rate	MOHE	58,480.00

7	Dr Raja Ishak Raja Hamzah	Mechanism of validating the quality of incoming automotive gearboxes via innovative fusion techniques	MOHE	69,060.00
TOTAL				1,015,440.00

Department of Thermo-Fluids

No	Head of Project	Project Title	Category	Amount (RM)
1	Dr Syahrullail Samion	Development of novel implant with micropatterns to improve wear resistance in load bearing joint of the hip and knee	MOSTI	192,600.00
2	Assoc. Prof. Dr Kahar bin Osman	Fluid-structure interaction method for detection of structural vibration due to fluid flow	MOHE	34,400.00
3	Prof. Ir. Dr Farid Nasir Ani	Characteristics of microwave heating on various materials	MOHE	44,000.00
4	Prof. Dr Md Nor Musa	Theoretical investigation of the aerodynamic induced velocity due to vortex generated by vehicles on Malaysian highways	MOHE	52,000.00
5	Assoc. Prof. Dr Mazlan Abdul Wahid	Theoretical and experimental investigation on hydrogen-enriched gaseous diffusion flames	MOHE	44,000.00
6	Dr Syahrullail Samion	Controlling sliding friction force by micro-pattern tool surface in cold work extrusion	MOHE	44,000.00
7	Dr Henry Nasution	Performance characteristics study of DC compressor for automotive air conditioning system (DCC-AAC)	MOHE	55,900.00
TOTAL				466,900.00

Department of Manufacturing and Industrial Engineering

No	Head of Project	Project Title	Category	Amount (RM)
1	Prof. Dr Noordin Mohd Yusof	Study on the use of electrodeposited interlayers for diamond coated WC substrates	MOHE	48,000.00
2	Assoc. Prof. Dr Wong Kuan Yew	Analysis of green supply chain performance using ant colony optimization based fuzzy inference algorithm	MOHE	44,000.00
3	Assoc. Prof. Dr Izman Sudin	A study on the effect of carbon content of cobalt chrome molybdenum alloys to diamond coating surface treatment	MOHE	44,000.00
4	Assoc. Prof. Dr Muhamad Zameri Mat Saman	Development of sustainable product design indicator for Malaysian manufacturing industries	MOHE	40,000.00
5	Prof. Dr Noordin Mohd Yusof	Pembangunan modul pemantauan penyelidikan, modul aktiviti penyelidikan dan modul perlantikan penyelidikan secara online bagi pengurusan penyelidikan di UTM	UTM	30,000.00
6	Assoc. Prof. Dr Wong Kuan Yew	An expert system for measuring the performance of lean supply chain	Intel Technology Sdn Bhd	33,981.00
7	Prof. Dr Safian Sharif	Modelling and performance prediction of diamond-coated carbide cutting tools in machining wood-based products	MOHE	48,680.00
8	Dr Norizah Hj Redzuan	Modelling of cold plasma with uniform field electrode	MOHE	47,300.00
TOTAL				335,961.00

Department of Design

No	Head of Project	Project Title	Category	Amount (RM)
1	Dr Jamaludin bin Mohd Taib	Computer performance evaluation of the traffic flow simulation based on the level of intelligence and the number of vehicles	MOHE	44,000.00
2	Dr Muhammad Noor Harun	Development of porous tantalum chondrocyte implant for repair of focal osteochondral defects-in vivo study in goats	MOSTI	238,600.00
3	Assoc. Prof. Dr Mohamad Kasim Abdul Jalil	Investigation and study of the use of cubic spline and B-spline curves for dynamic motion analysis of land vehicle 2D maneuverability	MOHE	44,720.00
TOTAL				327,320.00

Department of Marine Technology

No	Head of Project	Project Title	Category	Amount (RM)
1	Assoc. Prof. Dr Adi Maimun bin Abdul Malik	A new numerical solution on banking effects for manoeuvrability of large vessel in restricted waters	MOHE	44,000.00
2	Nasruddin Hj Ismail	An ICT-based engineering, science, technology and quality awareness model to harness Malaysian fishing industry workforce	MOHE	48,000.00
3	Assoc. Prof. Dr Omar Yaakob	Study on ship's EEDI and EEOI	MISC	9,900.00
TOTAL				101,900.00

Department of Automotive Engineering

No	Head of Project	Project Title	Category	Amount (RM)
1	Assoc. Prof. Dr Pakharuddin Mohd Samin	Air cushion vehicle - 2 seater hovercraft	Soyotech (M) Sdn Bhd	15,000.00
2	Dr Srithar Rajoo	1D gas dynamic modelling of twin entry and variable geometry turbine for automotive turbochargers	MOHE	44,000.00
3	Assoc. Prof. Dr Pakharudin Mohd Samin	Advanced control for semi active suspension system using non-linear model predictive control	MOHE	44,000.00
4	Dr Srithar Rajoo	Feasibility study for the development of electric assisted turbocharger	UTM/SHORT TERM GRANT	20,000.00
5	Assoc. Prof. Dr Shirish Padmakar Patil	Knowledge based software development to evaluate acceleration, braking, ride, handling and roll-over performance of vehicles and to design vehicle configuration to meet safety standard	UTM/Foreign Academic Visitors R&D Fund	20,000.00
TOTAL				143,000.00

STAFF MEMBERSHIP WITH RESEARCH ALLIANCES

A Research Alliance (RA) is a formal and strong association of existing centres of excellence, laboratories, formal and informal groups of individual professors and established research groups within UTM (possibly involving outside parties). The RAs aim to conduct world-class leading-edge research right through the whole value chain including knowledge discovery, dissemination and commercialisation within focused areas which by nature are multi-disciplinary. Academicians from the Faculty of Mechanical Engineering are involved in several Research Alliances as listed below:

- Energy (ERA) - 21 staff
- Transportation (TRA) - 55 staff
- Materials & Manufacturing (MMRA) - 62 staff
- Infocomm (IcRA) - 1 staff
- Frontier Science - 3 staff
- Sustainability (SUTRA) - 1 staff
- K-economy (RAKE) - 2 staff

INTELLECTUAL PROPERTY

No	Project/Product	Researcher	Status	File No.	Filing Date
1	Swirlers	1. Prof. Dr. Mohammad Nazri Mohd Jaafar 2. Ardiyansyah Syahrom	Registered in 2010	09-01342-0103	10-Dec-09
2	Swirlers	1. Prof. Dr. Mohammad Nazri Mohd Jaafar 2. Ardiyansyah Syahrom	Registered in 2010	09-01343-0203	10-Dec-09
3	Retainers	1. Prof. Dr. Mohammad Nazri Mohd Jaafar 2. Ardiyansyah Syahrom	Registered in 2010	09-01344-0303	10-Dec-09
4	Magnetorheological damper tube	1. Assoc. Prof. Dr. Pakharuddin Mohd. Samin 2. Prof. Dr. Hishamuddin Jamaluddin 3. Prof. Dr. Roslan Abdul Rahman 4. Saiful Anuar Abu Bakar	Patent Pending	PI 2010 001243	22-Mar-10
5	Developing system information technology on planning demand and supply	1. Prof. Dr. Ashraf Hafiz Radwan 2. Fitra Lestari Norhiza	Copyright	©2010/80/1208	17-Jun-10
6	Savonius turbine for marine current application	1. Assoc. Prof. Dr. Omar Yaacob 2. Assoc. Prof. Dr. Kamarul Baharin Tawi 3. Ir. Dr. Mohamad Pauzi Abdul Ghani 4. Dedy Triawan Suprayogi	Patent Pending	PI 2010 001123	15-Mar-10
7	A control system and methods of maintaining temperature thereof	1. Prof. Dr. Md. Nor Musa 2. Assoc. Prof. Ir. Hayati Abdullah 3. Mohammad Akmal Baharain A. Rahim	Patent Pending	PI 2010 001770	19-Apr-10
8	Assistive robotic system for hemiplegic/hemiparetic patients	1. Assoc. Prof. Dr. Mohamed Hussein 2. Assoc. Prof. Dr. Mohd Shafiek Yaacob 3. Dr. Mohd Zarhamdy Md. Zain 4. Assoc. Prof. Dr. Robiah Ahmad 5. Dr. Mohd Nasir Hussain 6. Khairul Fadzli Samat	Copyright	©2010/108/1236	28-Jul-10

9	Green supply chain performance expert system	1. Assoc. Prof. Dr. Wong Kuan Yew 2. Olugu Ezutah Udony 3. Prof. Dr. Awaludin M. Shahrour	Copyright	©2010/115/1243	28-Jul-10
10	Improved truck chassis	1. Prof. Dr. Roslan Abd. Rahman 2. Ismail Musa	Patent Pending	PI 2010 002315	18-May-10

ACCOMPLISHMENTS AT EXHIBITIONS

National Level

No	Project Leader	RA	Event/Organizer	Title Of Invention	Award
1	Prof. Dr. Mohammad Sakhawat Hussain	EsciNANO	INATEX 2010	Nanocrystalline Ni plating directly on aluminium by high speed electroforming	SILVER
2	Assoc. Prof. Dr. Mohd Shafiek B Yaacob	MMRA	INATEX 2010	Electronic braille teaching panel (eBRAILLE panel)	SILVER
3	Dr. Mohd Zarhamdy Md Zain	MMRA	INATEX 2010	Electronic braille al- quran teaching aid (eBRAILLE)	SILVER
4	Assoc. Prof. Dr. Wong Kuan Yew	MMRA	INATEX 2010	Green supply chain performance expert system	SILVER
5	Assoc. Prof. Dr. Adi Maimun bin Abdul Malik	TRA	INATEX 2010	Multi - Chine Semi - SWATH vessel design	BRONZE
6	Assoc. Prof. Dr. Omar Yaakob	TRA	INATEX 2010	Savonius rotor vertical axis marine current turbine for renewable energy application	BRONZE
7	Assoc. Prof. Dr. Mohamed Hussein	MMRA	INATEX 2010	Assistive robotic system for hemiplegic / hemiparetic patients	BRONZE
8	Assoc. Prof. Dr. Mohd Hasbullah Hj Idris	MMRA	INATEX 2010	Reactive materials processing by in- situ melting investment casting technique	BRONZE
9	Prof. Ir. Dr. Farid Nasir Ani	ERA	MTE/MARS	Continuous microwave induced treatment of solid and liquid organic waste materials	SILVER
10	Prof. Dr. Mohammad Nazri Mohd Jaafar	TRA	MTE/MARS	New retainer design for greener environment	SILVER
11	Assoc. Prof. Dr. Wong Kuan Yew	MMRA	MTE/MARS	An intelligent facility layout optimizer using fuzzy controlled ant system	SILVER
12	Dr. Mohd Zarhamdy Md Zin	MMRA	MTE/MARS	A tremor control system and an experimental rig for measuring the suppressing efficiency thereof	BRONZE
13	Assoc. Prof. Dr. Muhammad Zamari Mat Saman	MMRA	MTE/MARS	Software for end-of-life products disassembly and recyclability	BRONZE
14	Assoc. Prof. Dr. Pakharuddin Mohd Samin	TRA	MTE/MARS	Non-pressurized magnetorheological shock absorber for vehicle's suspension system	BRONZE
15	Assoc. Prof. Dr. Intan Zaurah Mat Darus	MMRA	ITEX/MINDS	Active vibration control of flexible structure using smart material	GOLD

Equipment Received For Research And Teaching

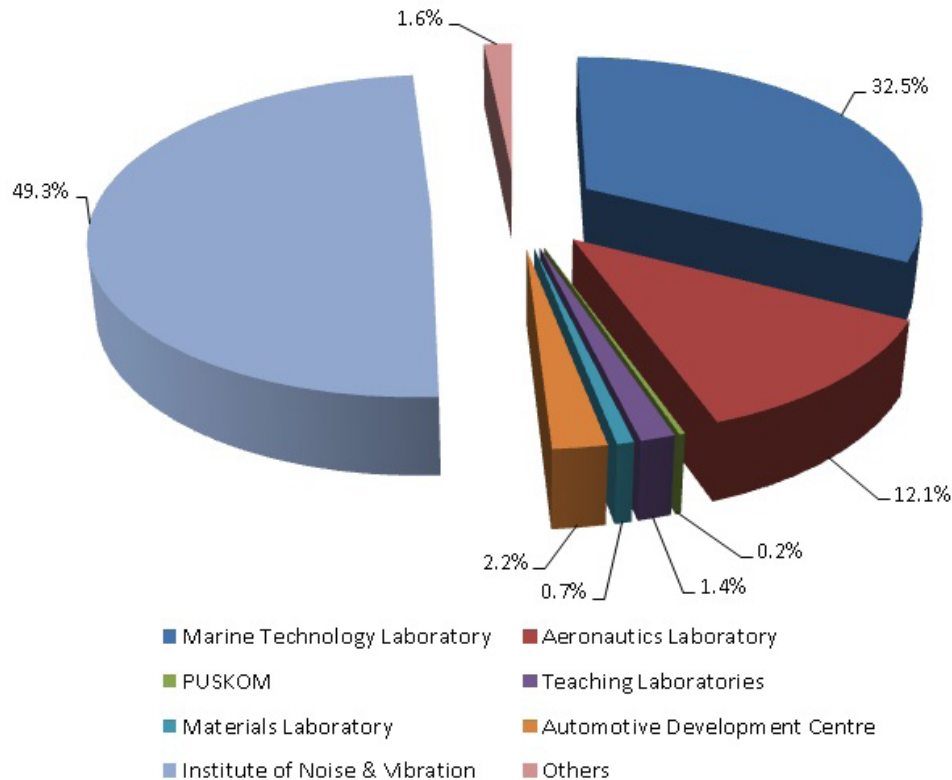
No	Equipment	Company	Purpose	Estimated Price (RM)
1	Light Aircraft	DYAM Sultan Johor	Research/Teaching	150,000
2	Car (Gen 2)	PROTON	Research/Teaching	50,000
3	XRF Machine Table	SJA Trade and Services Sdn Bhd	Research/Teaching	4,900
Total				204,900

CONSULTANCY



CONSULTANCY PROJECTS

For the year 2010, FME received numerous consultancy projects from government and private sectors amounting to approximately RM2.20 Million. The contribution by various laboratories is tabulated in table and pie-chart below.



Earnings by centre of excellence and laboratories

The details of the earning distribution according to various laboratories are listed in the following table. Further information regarding the consultancy projects can be obtained in respective research centre / laboratory reports.

Other Consultancy Projects

One of the academic staff from the Faculty has involved in consultancy projects managed by the university's Bureau of Innovation and Consultancy (BIP). For the year 2010, the following project was undertaken with BIP.

Projects Managed by BIP

No	Project Leader	Client	Project	Total Earnings (RM)
1	Assoc. Prof. Ir. Mustafa Yusof	Pioneer Coachbuilders Sdn Bhd	Rollover test simulation of double deck bus in accordance to UNECE Regulation 66 imposed by the Malaysian government	35,000.00

PUBLICATION



PUBLICATION

In the year 2010, FME continued to be increasingly productive in publication, both locally and internationally with its staff members publishing 112 articles in SCOPUS/ISI-indexed journals, 20 articles in non-indexed journals, and 4 original manuscripts as listed in the following tables. The total impact factor for the indexed journal is 68.131.

Original Manuscripts

No.	Manuscript/Book Title	Author
1	Introduction to compressed air systems	Yahaya Ramli
2	One-dimensional finite elements : an introduction into the method	M. Merkel, A. Ochsner
3	Gaya & panduan penerbitan Book chapters	Khalid Mazlan, Azman Hassan, Che Yah Yaacob, Hishamuddin b. Jamaluddin, Mohammad Nazri b. Mohd. Jaafar, Safian b. Sharif, Shamsudin Mohd. Amin, Zalina Pareng
4	Garis panduan polisi kenaikan pangkat staf akademik (1)Kumpulan pengajaran dan penyeliaan (2)Kumpulan penyelidikan, perundingan dan penerbitan:	Mohammad Nazri b. Mohd. Jaafar, Kamarul Baharin b. Tawi, Roslan b. Abdul Rahman, Mohd. Nasir b. Tamin

Articles in SCOPUS/ISI-Indexed Journals

No	Title	Author	Journal	Publisher	Vol./Year/Page
1	A hybrid ant colony optimization algorithm for solving facility layout problems formulated as quadratic assignment problems	Wong, K.Y. and See, P.C.	Engineering Computations (0.651)	Emerald	27(1)/2010/ pp 117-128
2	A Hybrid Fuzzy-based Robust Controller for Pneumatically Actuated Micro Robot	Y. Sabzehmeidani, M. Mailah, M. Hussein, E. Gatavi, MZ. Md Zain	International Review of Modelling and Simulation (IREMOS)-(Scopus)	Praiseworthyprize	3(6), Part A/2010
3	A Lattice Monte Carlo Analysis of Thermal Transport in Phase Change Materials	Thomas Fielder, I.V.BELOVA, G.E.Murch, Andreas Ochsner	Defect and Diffusion Forum (Scopus)	Trans Tech Publications, Switzerland	297-301/2010/pp 154-161
4	A Lattice Monte Carlo Analysis on Thermal Diffusion in Syntactic Hollow-Sphere Structures	A. Ochsner, J. Farnworth, G.E Murch, I.V Belova,	Materialwissenschaft & Werkstofftechnik (0.365)	Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim	41 (5)/2010/pp. 283-286
5	A mathematical model for predicting spray atomization characteristics in an Eulerian-Eulerian framework	Aly, H.S., Eldrainy, Y.A., Saqr, K.M.,Lazim, T.M., Jaafar, M.N.M.	International Communications in Heat and Mass Transfer (1.189)	Elsevier	37(6)/2010/pp 618-623
6	A Review on Oil Palm Empty Fruit Bunches Fibre-reinforced Polymer Composite Materials	Azman Hassan, Arshad Adam Salema, Farid Nasir Ani, Aznizam Abu Bakar	Polymer Composites (1.194)	Wiley	31(12)/2010/ pp 2079-2101
7	A three-dimension double population thermal lattice BGK model for simulation of natural convection heat transfer in a cubic cavity	N. A. C. Sidik and T. Tanahashi	MATEMATIKA (Scopus)	UTM	26(2)/2010/pp 157-165
8	Aerodynamic Characteristics of Wing of WIG Catamaran Vehicle During Ground Effect	A. M. Adi Maimun, N. A. C. Sidik, A. Priyanto, S. Jameei	WSEAS Transaction on Fluid Mechanics (Scopus)	WSEAS Transactions	5(3)/2010/pp 196-205
9	Aerodynamic Derivatives Identification for Ground Vehicle in Crosswind Using Neural Network and PCA	Ramli N, Jamaluddin H, Mansor S, Faris W	International Journal of Vehicle Systems Modeling and Testing (Scopus)	Inderscience	5(1)/2010/pp 59-71
10	An accurate numerical method to predict fluid flow in a shear driven cavity	N. A. C. Sidik and M. R. M. Zin	International Review of Mechanical Engineering (Scopus)	Praise Worthy Prize	4(6)/2010
11	Anti-corrosive properties of natural honey on Al,Mg,Si alloy in seawater	R. Rosliza, W.B. Wan Nik, S. Izman, Y. Prawoto	Current Applied Physics (1.586)	Elsevier	10/2010/pp 923-929
12	Application of GA to observe the optimal effect of the radial rake angle for minimising surface roughness in end milling	Zain, A.M., Haron, H., Sharif, S.	International Journal of Machining and Machinability of Materials (Scopus)	Inderscience	8 (3/4), 2010, pp 283-305
13	Application of GA to optimize cutting conditions for minimizing surface roughness in end milling machining process	Zain, A.M., Haron, H. and Sharif, S.	Expert Systems with Applications (2.908)	Elsevier	37 (6), pp. 4650-4659
14	Applying ant system for solving unequal area facility layout problems	Komarudin and Wong, K.Y.	European Journal of Operational Research (2.093)	Elsevier	202(3)/2010/pp 730-746

15	Artificial neural networks to predict liquidus temperature in hypoeutectic Al-Si cast alloys	Farahany S., Erfani, M., Karamoozian A., Ourdjini A., and Idris M. H.	Journal of Applied Sciences (Scopus)	Science Alert	10(24)/ 2010/ pp 3243-3249
16	Augmented photoplethysmographic low frequency waves at the onset of endotoxic shock in rabbits	Gregory S. H. Chan, Collin H. H. Tang, Paul M. Middleton, Grant Cave, Martyn Harvey, Andrey V. Savkin and Nigel H. Lovell	Physiological Measurement (1.43)	IOP Science	31(12)/2010/pp 1605-1621
17	Automatic steering control for lanekeeping manoeuvre: outer-loop and inner-loop control design	Em Poh Ping, Khisbullah Hudha and Hishamuddin Jamaluddin.	Int. J. Advanced Mechatronic Systems (Scopus)	Inderscience	2(5/6)/2010/pp 350-368
18	Biomechanics of a Lumbar Section after Disc Arthroplasty	Mohammed Rafiq Abdul Kadir Nazri Kamsah Al Hamzee Idrose	European Journal of Scientific Research (Scopus)	EuroJournals	39(1)/2010/pp 22-28
19	Comparative study of TQM practices between Japanese and non-Japanese electrical and electronics companies in Malaysia	Ahmad, M. F. and Yusof, S.M	Total Quality Management & Business Excellence (0.299)	Taylor & Francis Group	21(1)/2010/ pp 11-20
20	Comparison of technique for dealing with empty spaces in unequal area facility layout problems	Komarudin and Wong, K.Y.	Journal of Industrial and System Engineering (Scopus)	Inderscience	6(3)/2010/pp 289-300
21	Computational simulation of current forces on floating production storage and offloading in irregular waves	Islam, M.R., Yaakob, O.B., Abdul Malik, A.M., Kamal, M.Y.B.M.	Scientia Iranica (0.123)	Sharif University of Technology	17(1)/2010/pp 53-60
22	Computations of Shear Driven Vortex Flow in a Cylindrical Cavity Using a Modified k-e Turbulence Model	Sagr, K.M., H.S. Aly, H.I. Kassem, M.M. Sies, and M.A. Wahid	International Communications in Heat and Mass Transfer (1.189)	Elsevier	37(8)/2010/pp 1072-1077
23	Computer Simulation of Current Forces on Motion of FPSO in Irregular Waves	M. Rafiqul Islam, Omar Yaakob, Maimun Adi and Yusof M	Scientia Iranica (International Journal of Science and Technology)-(0.123)	Sharif University of Technology	17(1)/2010
24	Computer Simulation Studies on the Effect of Overlap Ratio for Savonius Type Vertical Axis Machine Current Turbine	Yaakob, O.B., K.B. Tawi , D.T. Suprayogi Sunanto	International Journal of Engineering (Scopus)	Transactions A: Basics	23(1)/2010/pp 79-88
25	Development of Piezoelectric Braille Cell Control System Using Microcontroller Unit (MCU)	S. Mad Saad, F. Razaly, M. Z. Zain, M.Hussein, M.S. Yaacob, A.R. Musa, M.y. Abdullah	WSEAS Transactions on Circuits and Systems (Scopus)	WorldScientific AndEngineering Academy And Society	9(6)/2010/pp 379-388
26	Direct growth of carbon nanofibers on metal mesh substrates by ion irradiation method	M.Zamri, Pradip Ghosh, Z.P. Wang, M. Kawagishi, A. Hayashi, Y. Hayashi and M. Tanemura	Journal of Vacuum Science and Technology B (1.44)	AVS Publications	28(2)/2010
27	Dynamic Analysis on Noise and Vibration Study of Flexible Wiper Blade System	M. A. Salim, A. Noordin, M. Z. Md Zain, A. R. Abu Bakar	Advanced Materials Research	Trans Tech Publications, Switzerland	97-101/2010/pp 4530-4536
28	Dynamic Energy Absorption Characteristic of Foam-Filled Conical Tubes Under Oblique Impact Loading	Ahmad, Z; Thambiratnam, DP; Tan Acc	International journal of Impact Engineering (1.301)	Elsevier	37(5)/2010/pp 475-488
29	Effect of Cathodic arc PVD Parameters on Roughness of Tin Coating on Steel Substrate	Ali, M., Hamzah, E., Qazi, I.A., Toff, M.R.M	Current Applied Physics (1.586)	Elsevier	10(2)/2010/pp 471-474

30	Effect of Ethanol as Gasoline Additive on Vehicle Fuel Delivery System Corrosion	H. Jafari, M.H. Hasbullah, A. Ourdjini, H. Rahimi, B. Chobadian	Materials and Corrosion (0.823)	Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim	61(5)/ 2010/ pp 432-440
31	Effect of Free Stream Turbulence on NOx and Soot Formation in Turbulent Diffusion CH4-Air Flames	Saqr, K.M., Aly, H.S., Sies, M.M., and Wahid, M.A.	International Communications on Heat and Mass Transfer (1.189)	Elsevier	37/2010/pp 611-617
32	Effect of Microstructures and Material Compositions on Blister Formation	Y. Prawoto. JP Tan, CY Loh,	Materials Sciences and Applications (Scopus)	SCIRP	1/2010/pp 158-161
33	Effects of lining thickness on squeal in drum brake assembly: Experimental investigations	M.H. Hussin, A.R. Abu Bakar, M.R. Jamaluddin, and R. Szlapka	Int. J. Vehicle Structures & Systems (Scopus)	MechAero Foundation for Technical Research & Education Excellence (MAFTREE)	2(2)/2010/pp 69-73
34	Elastic Finite Element Analysis on Cross -Sections of Random Hollow Sphere Structures	A. Ochsner, T. Fielder, H.S Kim, I. V Belova, S. W. Sloan, G. E Murch	Materialwissenschaft & Werkstofftechnik (0.365)	Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim	41 (5)/2010/pp. 250-256
35	Electroforming a Process for Macro/Nano-Manufacturing	M. S. Hussain	International Journal of Nanomanufacturing (Scopus)	Inderscience	6(1-4) /2010/pp 324 - 333
36	Empirical delays from actuated and optimised static signal settings compared	Ben-Edigbe J., Ibrahim I.b.M.	Journal of Engineering and Applied Sciences (Scopus)	ARNP	5(1)/2010/pp 42-48
37	Energy Saving Quality Index for Palm Oil Processing in Oil Palm Mills	Farid Nasir Ani and Noruzaima Mohamad Nor	International Journal of Quality and Innovation (Scopus)	Inderscience	1(2)/2010/pp 112 – 123
38	Experimental Analysis of Added Resistance of Ship due to Regular Head Waves,	M.P Abdul Ghani, J. Julait, P.A Wilson	International Journal of Maritime Engineering, The Royal Institution of Naval Architects UK. (Scopus)	The Royal Institution of Naval Architects UK.	2010
39	Experimental Engineering and Application	Ochsner A., da Silva L.F.M	Experimental Mechanics (1.542)	Springer	50(5)/2010/pp 561
40	Experimental Implementation of Smart Glove Incorporating Piezoelectric Actuator for Hand Tremor Control	Suhail Kazi, Azizan As'ary, MZM Zain, Musa Mailah	WSEAS Transactions on Systems and Control (Scopus)	WorldScientific AndEngineering Academy And Society	5(6)/2010/ pp. 443-453
41	Experimental Studies on Savonius-Type Vertical Axis Turbine for Low Marine Current Velocity	Yaakob O., Tawi, K.B., Suprayogi, D.T, M.P Abdul Ghani	Renewable Energy Journal (2.26)	Elsevier	2010
42	Finite Different and Lattice Boltzmann Modelling for Simulation of Natural Convection in a Square Cavity	Nor Azwadi Che Sidek and Idris Mat Sahat	International Journal of Mechanical and Materials Engineering (Scopus)	University of Malaya	5(1)/2010/pp 80-86
43	Finite element modelling for a piezoelectric ultrasonic system	Li-Hong Juang	Measurement (0.761)	Elsevier	43(10)/2010/pp 1387-1397

44	Finite Elements Analysis of Idealised Unit Cell Cancellous Structure Based On Morphology Indices of Cancellous Bone	Mohammed Rafiq Abdul Kadir, Andreas Ochsner	Medical and Biological Engineering and Computing (1.757)	International Federation for Medical and Biological Engineering	48/2010/ pp 497-505
45	Fracture Characterisation of Short Bamboo Fibre Reinforced Polyester Composites	K.J. Wong, S. Zahi, K.O.Low, C.C.Lim	Materials & Design (1.518)	Elsevier	31(2)/2010/pp 4147-4154
46	Genetic algorithm and simulated annealing to estimate optimal process parameters of the abrasive waterjet machining	Zain, A.M., Haron, H., Sharif, S.	Engineering with Computers (0.704)	Springer	2010, pp. 1-9
47	Genetic Algorithm-based Identification of a Rectangular Flexible Plate System for Active Vibration Control	Intan Zaurah Mat Darus, Ali Reza Tavakolpour, Osman Tokhi, Musa Mailah	Engineering Applications of Artificial Intelligence (1.444)	Elsevier	23/2010/pp 1388-1397
48	Hard Machining of Stainless Steel Using Wiper Coated Carbide: Tool Life and Surface Integrity	Kurniawan, Denni , Yusof, Noordin Mohd. and Sharif, Safian	Materials and Manufacturing Processes (0.968)	Taylor & Francis Group	25 (6)/2010/pp. 370-377
49	Hardware-in-the-loop simulation of automatic steering control for lanekeeping manoeuvre: outer-loop and inner-loop control design	Em Poh Ping, Khisbullah Hudha and Hishamuddin Jamaluddin	Int. J. Vehicle Safety (Scopus)	Inderscience	5(1)/2010/ pp 35-59
50	Hybrid Experimental-Computational Approach for Solder/IMC Interface Shear Strength Determination in Solder Joints	M.N. Tamin, F.M. Nor and W.K. Loh	IEEE Transaction on Components and Packaging Technologies (0.94)	IEEE Components, Packaging, and Manufacturing Technology Society	33(3)/2010/pp 614-620
51	Image noise reduction using Wiener filtering with pseudo-inverse	Li-Hong Juang, Ming-Ni Wu	Measurement (0.761)	Elsevier	43(10)/2010/pp 1649-1655
52	Influence of Thickness Variation on the Buckling Load in Plates made of Functionally Graded Materials	H Mozafari, Amran Ayob, A Ochsner and A Alias	European Journal of Scientific Research (Scopus)	EuroJournals	47(3)/2010/pp 422-435
53	Influence of Gating System, Sand Grain Size, and Mould Coating on Microstructure and Mechanical Properties of Thin-Wall Ductile Iron	H. Jafari, M.H. Idris, A. Ourdjini, M. Karimian, G. Payganeh	Journal of Iron and Steel Research International (0.292)	Elsevier	17(12)/2010/pp 38-45
54	In-situ and ex-situ TEM investigation of Cu-Al and Cu-Al-Cu-Ti reactive metallic multilayer coatings	Mat Yajid, M.A., Bagshaw, H., Doole, R.C., Wagner, T. & Möbus, G.	Journal of Materials Research (1.743)	Cambridge Journals	2010
55	Investigation of Thickness and Thermal Treatments on the Deep Drawing Process for Aluminum Plate	H Mozafari, M Hassanipour and A Ayob	International Journal of Engineering Science and Technology	Engg Journals Publications	2(10)/2010/ pp 5915-5920
56	Issues in development of artificial neural network-based control chart pattern recognition schemes	Masood, I. and Hassan, A.	Journal of Scientific Research (Scopus)	EuroJournals	39(3)/2010/ pp 336-355
57	Large Deformation of Core materials for Sandwich panels	A. Ochsner, M.Speich, M. Merkel	Materialwissenschaft & Werkstofftechnik (0.365)	Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim	41(5)/2010/pp 270-275
58	Lattice Boltzmann Numerical Scheme for the Simulation of Natural Convection in an Inclined Square Cavity	Nor Azwadi Che Sidek and Nik Izual Nik Ibrahim	WSEAS Transactions on Fluid Mechanics (Scopus)	WSEAS Transactions	9(6)/2010/pp 417-426
59	Macro and Mesoscale Simulations of Free Convective Heat Transfer in a Cavity at Various Aspect Ratio	Nor Azwadi Che Sidek and Mohd Irwan Mohd Azmi	Journal of Applied Sciences (Scopus)	Science Alert	10(3)/2010/pp 203-208

60	Magnetic Circuit Simulation for Magnetorheological (MR) Fluids Testing Rig in Squeeze Model	I. Ismail, S.A. Mazlan and A.G. Olabi	Advanced Materials Research (Scopus)	Trans Tech Publications, Switzerland	123-125/2010
61	Measurement of a Bluff Body Aerodynamic Yaw Moment Magnification and Damping Using a Dynamic Wind Tunnel Facility	Mansor S, Passmore M	ACME Journal of Applied Mechanics (0.915)	American Institute of Physics (AIP)	2010
62	Mechatronic Implementation of An Intelligent Active Force Control Scheme Via A Hardware-in-the-Loop Configuration	M. Mailah, G. Priyandoko	International Review of Mechanical Engineering (Scopus)	Praiseworthyprize	2010
63	Mesoscale Numerical Approach to Predict Macroscale Fluid Flow Problems	Nor Azwadi Che Sidek and Idris Mat Sahat	Journal of Applied Sciences (SCOPUS)	Science Alert	10(15)/2010/pp 1511-1524
64	Mesoscale Simulation of Natural Convection in an inclined square cavity	N. A. C. Sidik and N. I. N. Ibrahim	WSEAS Transaction on Mathematics (Scopus)	WSEAS Transactions	9(6)/2010/pp 417-426
65	Modelling of dynamics of the droplet using lattice Boltzmann method	N. A. C. Sidik and M. Z. M. Rody	International Journal of Mechanical and Material Engineering (Scopus)	University of Malaya	5(2)/2010/pp 276-281
66	MRI brain lesion image detection based on color-converted K-means clustering segmentation	Li-Hong Juang, Ming-Ni Wu	Measurement (0.761)	Elsevier	43(7)/2010/pp 941-949
67	Nanoscale sculpting of ferromagnetic structures by electron beam ablation	Gnanavel, T., Saghi, Z., Mat Yajid, M.A., Peng, Y., Inkson, B.J. & Moebus, G.	Journal of Physics (Scopus)	IOP Science	241(1)/2010/pp 012075
68	Nanostructured reactive metallic multilayers	Mat Yajid, M.A. & Moebus, G.	Journal of Physics (Scopus)	IOP Science	241(1)/2010/pp 012030
69	Natural Frequency Analysis of All Edges Clamped Flexible (I.R.E.M.E)	Safizadeh, M.R and Mat Darus, I. Z	International review of mechanical engineering (Scopus)	Praiseworthyprize	4(4)/2010/pp 433-440
70	Non-invasive classification of severe sepsis and systemic inflammatory response syndrome using a nonlinear support vector machine: a preliminary study	C.H.H. Tang, P.M. Middleton, A.V. Savkin, G.s.h. Chan, S. Bishop, and N.H.Lovell	Physiological Measurement (1.43)	IOP Science	31/2010/pp 775-793
71	Numerical Investigation of Incompressible Fluid Flow through Porous Media in a Lid-Driven Square Cavity	N. A. C. Sidik, M. I. M. Azmi and M. Goudarzi	American Journal of Applied Science (Scopus)	Science Publications	7(10)/2010/pp 1341-1344
72	Numerical Prediction of the Effective Thermal Conductivity of Open- and Closed- Cell Foam Structures	S. M.Hussien Hosseini, Andreas Ochsner, Thomas Fielder	Defect and Diffusion Forum (Scopus)	Trans Tech Publications, Switzerland	297-301/2010/pp 1210-1217
73	Numerical simulation of natural convection in an inclined square cavity	N. A. C. Sidik, N. M. I. Nik Ibrahim and F. A. Munir	Journal of Applied Sciences (SCOPUS)	Science Alert	11(2)/2010/pp 373-378
74	Numerical Simulation of the mechanical Properties of Sintered and Bonded Perforated Hollow Sphere Structures (PHSS)	Andreas Ochsner, Seyed mohammad, Hossein Hoseini, markus Markel	Journal of Materials Science & Technology (0.828)	Elsevier	26(8)/2010/pp 730-736
75	On Physical Nanoscale Aspects of Compatibility of Steels with Hydrogen and Natutral Gas	Nechaev, YS and Ochsner, A	Journal of Nanoscience and Nanotechnology (1.435)	American Scientific Publisher	10 (2)/2010/ pp 1398-1413

76	On the Evaluation of Mechanical Properties from the Axisymmetric Tensile	A. Ochsner, M.Gromada, G. Mishuris	Archives of Metallurgy and Materials (0.187)	Biblos	55(1)/2010/pp 325-330
77	On the Mesh Dependence of Non- Linear Mechanical Finite Element Analysis	Venhly, C; Belova, IV; Murch, GE; Ochsner, A; Fiedler, T	Finite Elements In Analysis and Design (1.262)	Elsevier	46(5)/2010/ pp 371-378
78	Optimal Transmission Conditions for Thin Adhesive Layer based on Colonial Competitive Algorithm	H Mozafari, B Abdi and Amran Ayob	International Journal of Applied Sciences (Scopus)	CSC Journals	1(2)/2010/pp 16-22
79	Optimization of Composite Plates Based on Imperialist Competitive Algorithm	H Mozafari, B Abdi and Amran Ayob	International Journal on Computer Science and Technology (0.632)	Engg Journals Publication	2(9)/2010/ pp 2816-2819
80	Optimization of Transmission Conditions for Thin Interphase Layer based on Imperial Competitive Algorithm	H Mozafari, B Abdi and A Ayob	International Journal of Computer Science and Technology (0.632)	Engg Journals Publication	2(7)/2010/ pp 2486-2490
81	Prediction of surface roughness in the end milling machining using Artificial Neural Network	Zain, A.M., Haron, H. and Sharif, S.	Expert Systems with Applications (2.908)	Elsevier	37 (6), pp. 4650-4659
82	Presentation and Validation of Remote Sensing Ocean Wave Data	Omar Yaakob, Norazimar Zainudin, Yahya Samian, Adi Maimun, Abdul Malik & Robiahtul Adawiah Palaraman	International Journal of Research and Reviews in Applied Sciences (IJRRAS)-Scopus	Academic Research Publishing Agency Press	4(4)/2010
83	Properties of Si3N4-TiN composites by spark plasma sintering by using a mixture of Si3N4 and Ti Powders	Norhayati Ahmad, Hidekazu Sueyoshi,	Ceramics International (1.3)	Elsevier	2010, Vol.36, pp 491-496
84	Proposed relationship of TQM and organisational performance using structured equation modelling	Zakuan, N.M., Yusof, S.M., Laosirihongthong, T. and Shaharoun, A.M.	Total Quality Management & Business Excellence (0.299)	Taylor & Francis Group	21(2)/2010/ pp 185-203
85	Quantitative Failure Analysis Using a Simple Finite Element Approach	Y. Prawoto	Journal of Failure analysis and Prevention (Scopus)	Springerlink	10(1)/2010/pp 8-10
86	Removal of NOx and CO from a Burner System	Jaafar, M.N.M., Ishak, M.S.A., Saharin, S.	Environmental Science and Technology (4.63)	ACS Publications	44(8)/2010/pp 3111-3115
87	Roughness models for sanded wood surfaces	Tan, P.L., Sharif, S., Sudin, I.	Wood Science and Technology (1.737)	Springer	2010, pp. 1-14
88	Safety and Environmental Risk and Reliability Modeling Process for Sustainable Inland Water Transportation	O.Sulaiman, Ab Saman Abd Kader, A.H. Saharuddin, W.B. Wan Nik, K.B. Samo	Journal of Marine Environmental Engineering (Scopus)	OCP Science	9/2010/pp 145-173
89	Self-Learning Active Vibration Control of a Flexible Plate Structure with Piezoelectric Actuator	Ali Reza Tavakolpour, Musa Mailah, Intan Zaurah Mat Darus	Simulation Modelling Practice and Theory (0.799)	Elsevier	18(5)/2010/pp 516-532

90	Simplified Mesoscale Lattice Boltzmann Numerical Model for Prediction of Natural Convection in a Square Enclosure Filled with Homogeneous Porous Media	Nor Azwadi Che Sidek and Mohd Irwan Mohd Azmi	WSEAS Transactions on Fluid Mechanics (Scopus)	WSEAS Transactions	5(3)/2010/pp 186-195
91	Simulated Annealing to estimate the optimal cutting conditions for minimizing surface roughness in end milling Ti-6Al-4V	Zain, A.M., Haron, H. and Sharif, S.	Machining Science & Technology (0.433)	Taylor & Francis Group	14 (1), pp. 43-62
92	Simulation of an input shaping scheme technique to investigate unwanted noise and vibration in wiper blade	M A Salim, M Z Md Zain, A R Abu Bakar and A Noordin	Journal of Mechanical Engineering & Technology (Scopus)	Universiti Teknikal Malaysia Melaka (UTeM)	1(1)/2010/pp 1-14
93	Solving facility layout problems using flexible bay structure representation and ant system algorithm	Komarudin and Wong, K.Y.	Expert Systems with Applications (2.908)	Elsevier	37(7)/2010/pp 5523-5527
94	Spray Characteris of Palm Biofuel Blends	N.L Ing, M.N.M. Jaafar, M.S.A. Ishak, M.A.A. Arizal	International Journal Mechanical & Material Engineering (Scopus)	University of Malaya	5(2)/2010/pp 214-221
95	Strategies to achieve labor flexibility in a garment industry	Parisima Nassirnia & Masine Md. Tap	International Journal of Computer Science Issues (Scopus)	IJCSI Press	7(4) /2010/pp 41-48
96	Suppressing Friction-Induced Vibration Due To Negative Damping and Mode Coupling Effects in Brake Models Using Active Force Contro	S.M. Hashemi-Dehkordi, M. Mailah, A.R Abu Bakar	Journal of Basic and Applied Sciences (Scopus)	INSInet Publication	4(8)/2010/pp 3917-3933
97	Synthesis of nano-sized Ni particles by a bottom-up approach in the presence of an anionic surfactant and a non-ionic polymer	M. S. Hussain	Journal of Scientific Research (Scopus)	JSP Publications	2(2)/2010/pp313-321
98	The Analysis of Friction Effect in Automotive Wiper System Using Input Shaping Technique	M.A.Salim, A.Noordin, M.Z.Md Zain, A.R.Abu Bakar.	Proceedings of the World Congress on Engineering (Scopus)	International Association of Engineers	2/2010/pp 1487-1494
99	The blast resistance of a woven carbon fiber reinforced epoxy composite	M Y Yahya, W J Cantwell, G N Nurick and G S Langdon	Journal of Composite Materials (0.806)	SAGE Publications	2010
100	The Effect of Silicon Composition on Corrosion Behavior of Aluminum Die-Cast	Y. Prawoto, M. Zamree	International Review of Mechanical Engineering (Scopus)	Praiseworthyprize	4(5)/2010
101	The effect of tool surface roughness in cold work extrusion	N. A. C. Sidik and S. Samion	Journal of Applied Science (SCOPUS)	Science Alert	11(2)/2010/pp 367-372
102	The Effects of Alkali Treatment on the Interfacial Adhesion of Bamboo Fibres	Wong King Jye, B. F. Yousif, K.O. Low	Journal of Materials-Design And Applications (0.339)	SAGE Publications	224(3)/2010/pp 139-148
103	The response of honeycomb core sandwich panels, with aluminium and composite face sheets, to blast loading	G S Langdon, M Y Yahya, W J Cantwell and G N Nurick	Journal of Sandwich Structures and Materials (0.591)	SAGE Publications	2010
104	Theoretical notes on the mathematical modelling of gaseous detonation using Boltzmann equation	N. A. C. Sidik, Khalid Saqr and M. A. Wahid	Journal of Applied Sciences (SCOPUS)	Science Alert	10(14)/2010/pp 1476-1480
105	Thermal Analysis of a Disc Brake Model Considering a Real Brake Pad Surface and wear	Abd. Rahim Abu Bakar, Huajiang Ouyang, Lee Chiing Khaia, and Mohd Shahrulizam Abdullaha	International Journal of Vehicle Structures & Systems (Scopus)	MechAero Foundation for Technical Research & Education Excellence (MAFTREE)	2(1)/2010/pp 20-27

106	Transparent and Flexible Field Emission Displays Based on the Conical Nanocarbon Structures	Pradip Ghosh, M. Zamri Yusop, Syunsaku Satoh, Munisamy Subramanian, Akari Hayashi, Yasuhiko Hayashi and Masaki Tanemura	Journal of American Chemical Society (8.091)	ACS Publications	132(12)/2010
107	Unsteady Effect in a Nozzled Turbocharger Turbine	S.Rajoo and R.F.Martinez-Botas	Journal of Turbomachinery (0.391)	American Society of Mechanical Engineers	132(3)/2010/31001
108	User Friendly System for the Visually Impaired in Learning Al-Quran	F. Razaly, N. H. Ajizan, S. Mad Saad, M.S. Yaacob, M.Z. Md Zain, M.Hussein, M.Y. Abdullah, A.R. Musa	WSEAS Transactions on Circuits and Systems (Scopus)	WorldScientific AndEngineering Academy And Society	9(6)/2010/pp 659-668
109	Using Imperialist Competitive Algorithm to find the Optimum Shape Design of Internally Pressurized Torispherical Dome Ends based on Buckling Pressure	B Abdi, H Mozafari and A Ayob	International Journal of Engineering (Scopus)	CSC Journals	4(5)/2010/pp 387-398
110	Verification of Thermal Buckling Load in Plates Made of Functionally Graded Materials	H Mozafari, A Alias and A Ayob.	International Journal of Engineering (Scopus)	CSC Journals	4(5)/2010/pp 338-356
111	Virtual investigation of plume behaviour from a heated eccentric cylinder	N. A. C. Sidik, S. Samion	International Journal of Mechanical and Material Engineering (Scopus)	University of Malaya	5(2)/2010/pp 129-135
112	Virtual study of natural convection heat transfer in an inclined square cavity	Nor Azwadi, C.S., Mohd Fairus, M.Y., Syahrullail, S.	Journal of Applied Sciences (SCOPUS)	Asian Network for Scientific Information	10(4)/2010/pp 331-336
113	Wave-Induced Motions on a Laterally Drifting Ship	H. Yakasuwa, F.A Adnan, K. Nishi	Ship Technology Research Schiffstechnik (Scopus)	Universität Duisburg-Essen	57(1)/2010
114	X -ray chest image reconstruction by Radon transform simulation with fan-beam geometry	Li-Hong Juang	Measurement (0.761)	Elsevier	43(3)/2010/pp 447-453
Total Impact Factor					68.131

Articles in Non-Indexed Journals

No	Title of Article	Author	Journal	Publisher	Year/Vol/No.
1	A comprehensive approach in assessing the performance of an automobile closed-loop supply chain	Olugu, E.U., Wong, K.Y. and Shaharoun, A.M.	Sustainability	MDPI	2010/2(4)/ pp 871-889
2	Assessment of Lattice Boltzmann Simulation Scheme in Predicting Two-Phase (Solid-Fluid) Flow	Nor Azwadi Che Sidik, M.S.Nor Hamizan and N.M. Ammar	Jurnal Mekanikal	FKM	Dec 2010, No 31, 11-16, ISBN 0127-3396
3	Biomechanical Study and Analysis on Human Motion Using Piezoelectric Sensor for Scavenging Energy	Robiah Ahmad and Nurul Atailah Abd. Rahim	Jurnal Mekanikal	FKM	Dec 2010, No 31, 30-45, ISBN 0127-3396
4	Design and Development of a Hydrogen-Peroxide Rocket-Engine Facility	S.Krishnan, Ahn Sang-Hee and Lee Choong-Won	Jurnal Mekanikal	FKM	June 2010, No 30, 24-36, ISBN 0127-3396

5	Confirmatory Factor Analysis of TQM Practices in Malaysia and Thailand Automotive Industries	Zakuan, N., Yusof, S.M., Mat Saman, M.Z., Shaharoun, A.M.	International Journal of Business and Management	Canadian Center of Science and Education, Canada	2010/5(1)/pp 160-175
6	Development of Experimental Rig for Human Hand Tremor in Postural Condition	Azizan As'arry, Mohd, Zarhamdy Md. Zain, Musa Mailah, Mohamed Hussein, Mohd Yunus Abdullah, Suhail Kazi	International Journal of Human Factors Modelling and Simulation	Inderscience	2010/1 (3)/ 339-351
7	Do The Characteristics Of Technology Lead To University Patents Being Unexploited	Kamariah Ismail, Wan Zaidi Wan Omar and Izaidin Abdul Majid	Jurnal Teknologi	UTM Press	May 2010, No 52, 105-128
8	Dynamic Modelling of Twin Rotors Multi System in Horizontal Motion	Intan Zaurah Mat Darus	Jurnal Mekanikal	FKM	Dec 2010, No 31, 17-29, ISBN 0127-3396
9	Effect Of Soldier Bump Size On Interfacial Reactions During Soldering Between PB-Free Solder And Cu And Cu Ni/Pd/Au Surface Finishes	Nor Akmal Fadil, Ali Ourdjini, Azmah Hanim and Siti Rabiatul Aisha Idris	Jurnal Teknologi	UTM Press	April 2010, No 52 (F), 1-13
10	Experimental Investigation of the Drag Characteristics of Different Ship Hull Coating With Using Rotor Apparatus	M. Pauzi Abdul Ghani, Kaveh Milani and Khairul Izuan A.Karim	Jurnal Mekanikal	FKM	Dec 2010, No 31,92-102, ISBN 0127-3396
11	Microwave Pyrolysis of Oil Palm Fibres	Arshad Adam Salema and Farid Nasir Ani	Jurnal Mekanikal	FKM	June 2010, No 30, 77-86, ISBN 0127-3396
12	Risk Approach for Potential of Solar, Hydrogen and Convection Power Multi - Hybrid for Sustainable Marine Power System	O.Sulaiman, A.H.Saharuddin, Ab Saman Ab Kader and W.B. Wan Nik	Jurnal Mekanikal	FKM	Dec 2010, No 31, 78-91, ISBN 0127-3396
13	Simulation of mixed Convection Heat Transfer using Lattice Boltzmann Method	A.R.M. Rosdzimin, S.M. Zuhairi and N.A.C. Sidik	International Journal of Automotive & Mechanical Engineering	Universiti Malaysia Pahang	2010/2/pp 130-143
14	Simulation of rarefied gas flow in slip and transitional regimes by the lattice Boltzmann method	N. A. C. Sidik, N. C. Horng, M. Mussa and S. Abdullah	CFD Letters	ISSRES	2010/2(2)/pp 66-74
15	Strategic Guidance Model for Product Development in Relation with Recycling Aspects for Automotive Products	Muhamad Zameri, M. S., Feri, A., Norhayati, Z., Gordon, B., Jane, G.,Ray, J. and Ashraf, J.	Journal of Sustainable Development	Modern Applied Science	2010/3(1)
16	Synthesis of nano-aggregated nickel particles by a chemical process	M. S. Hussain	Materials Technology	Maney Publishing	2010/25(5)/ pp 289-291
17	Synthesis of nano-nickel by a wet chemical reduction method in the presence of surfactant (SDS) and a polymer (PVP)	M. S. Hussain	African Journal of Pure and Applied Chemistry	Academic Journals	2010/4(5)/ pp. 58-63,
18	The Development of a Survey Instrument for Measuring a relationship between statistical process control success factors and performance	Jafri Mohd Rohani, Sha'ri Mohd Yusof and Ismail Mohamad	Jurnal Mekanikal	FKM	June 2010, No 30,1-16, ISBN 0127-3396
19	The Experimental Evaluation Of RBD Palm Olien as Lubricant in Cold Temperature	S.Syahrullail, S.Kamitani and K.Nakanishi	Jurnal Mekanikal	FKM	Dec 2010, No 31, 1-10, ISBN 0127-3396
20	Ujian Pembakaran Propelan Roket Pepejal	Mohammad Nazri, W.Khairuddin W.Ali and Ahmad Saufi	Jurnal Teknologi	UTM Press	May 2010, No 52, 13-28

DEPARTMENT REPORT

DEPARTMENT OF APPLIED MECHANICS

DEPARTMENT OF THERMO-FLUIDS

DEPARTMENT OF DESIGN

DEPARTMENT OF MANUFACTURING AND INDUSTRIAL ENGINEERING

DEPARTMENT OF MATERIALS ENGINEERING

DEPARTMENT OF MARINE TECHNOLOGY

DEPARTMENT OF AERONAUTICAL ENGINEERING

DEPARTMENT OF AUTOMOTIVE ENGINEERING

DEPARTMENT OF EXTERNAL PROGRAMMES

DEPARTMENT OF POSTGRADUATE STUDIES

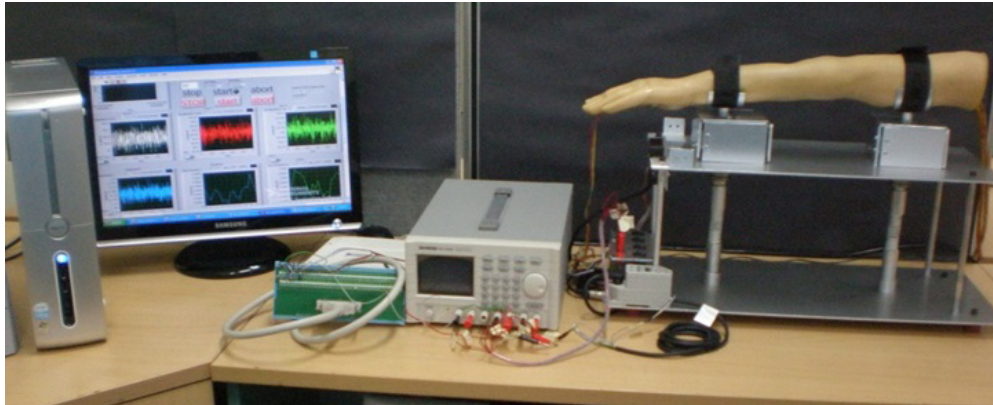


UTM
UNIVERSITI TEKNOLOGI MALAYSIA

RESEARCH UNIVERSITY

DEPARTMENT OF APPLIED MECHANICS

Professor Dr Musa Mailah
Head of Department



BACKGROUND

The Department of Applied Mechanics is the largest department in terms of academic staff. This department consists of the 3 main areas in the field of applied mechanics which are Mechanics of Materials and Structures; Mechanics of Machines; and Systems and Control.

There are sufficient facilities in the department to cater for both teaching and research activities at undergraduate as well as postgraduate levels. The laboratories within the department are also actively utilised for teaching, research and consultation activities. The followings are the facilities available:

- *Mechanics of Materials and Structures Laboratory*
Provides design, testing and development facilities, such as loading frames, strain gauging equipment and recording equipment.
- *Mechanics of Machines Laboratory*
Provides a comprehensive range of equipment for demonstrating the principles of dynamics and theory of machines.

The Department of Applied Mechanics consists of three panels related to areas of specializations, namely the Mechanics of Materials and Structures; Mechanics of Machines; and Systems and Control. In line with the vision of the university, the department is determined to offer world-class knowledge and technical expertise in the area of Mechanical Engineering.

- *Systems and Control Laboratory*
Provides facilities such as automation equipment including a complete CIM system and a range of industrial robots, instrumentation and data acquisition systems and various control equipment.
- *Computational Solid Mechanics Laboratory (CSMLab)*
Provides high performance computing facilities using various high-end softwares for specialised applications.
- *Vibration Laboratory*
Provides a number of vibration related measurement testing and analysis facilities.

QUALITY-DRIVEN STAFF

The department currently consists of 39 academic members comprising of 6 professors, 8 associate professors, 8 senior lecturers, 8 lecturers and 5 assistant lecturers/tutors.

2010 Staff Achievements

The highly committed and dedicated staff have been one of the important factors to the department's achievement in academic teaching, research, involvements, consultancies, and publications. Due to this, the department has been able to secure research grants from Intel, Science Fund and FRGS. Some of the research projects are used in the following tables.

Mechanics of Machines

No	Research Project
1	The Effect of Accelerometer Mass on Thin Plate Vibration
2	Impact Due to Roll-Over of Bus Frame
3	Impact Damper

Mechanics of Materials and Structures

No	Research Project
1	Evaluation of Fracture Mechanics-Based Model for Pb-free Solder Interconnects
2	A New Technique for Predicting Damage in Advanced Interconnected Materials for Microelectronics Applications
3	Performance Characterization of Advanced Alloys for High Temperature Recuperator Applications in Improved Efficiency Microturbines
4	Refined Numerical Simulation of the Mechanical Behavior of Hollow Sphere Structure

Systems and Control

No	Research Project
1	Modelling and Simulation of Human-Like Arm For Control Purpose
2	Development of An Intelligent Active Vibration Control of a Human-Like Arm
3	Development and Evaluation of An Intelligent Active Vibration Control
4	Flexible Structure Using Smart Material
5	Adaptive Soft Computing Algorithm for Active Vibration Control
6	Simulation of an Input Shaping Scheme Technique to Investigation of Unwanted Noise and Vibration in Wiper Blade

The year 2010 also witnessed several distinctive achievements of some Faculty members in this department. Prof. Dr Musa Mailah has been appointed as an expert in MQA panel for the preparation of 'Programme Standards for Engineering and Engineering Technology', and also in MQA

panel of evaluator for Advanced Diploma in Mechatronic Engineering of Kolej Tun Abdul Razak, Kuala Lumpur. Besides, Prof. Dr Nasir Tamin and Assoc. Prof. Ir. Dr Iberahin Jusoh have been assigned to be the external examiners of Bachelor Degree in Mechanical Engineering programme, UTEM Melaka, and also the panel evaluators of Bachelor Degree in Mechanical Engineering programme at UNIMAP, Perlis. In addition to these collaborative works, the department has produced 36 ISI-indexed journals, 8 non-ISI-indexed journals, 29 conference papers, as well as 2 patents and copyrights.

The department staff are active in various areas. Three department staff, namely, Prof. Dr Mohd Nasir Tamin, Dr Mohd Zarhamdy Md. Zain, and Dr Raja Ishak Raja Hamzah received the UTM Excellence in Service Awards for their outstanding contribution and services. Apart from being actively involved in research and publication, Applied Mechanics staff also contributed their knowledge to the industry. For this purpose, Dr Raja Ishak Raja Hamzah is currently doing his industrial attachment with Proton, Shah Alam from June 2009. The staff also gave services on consultation work. For example on October 2009, Prof. Dr Roslan Abd Rahman and Mohd Yunus Abdullah were involved in consultancy work on Ground Vibration Measurements at Batu Berendam airport.



Participating staff in the seminar of eBRAILLE testing

In the eventful year 2010, the department was also fortunate to host a prominent and distinguished visiting scholar, i.e., Assoc. Prof. Dr Li Hong Juang from Taiwan.

A number of academic-related activities have been conducted in Faculty, including the evaluation of the Bachelor of Engineering Programme curriculum, discussion on possible research collaboration and networking, and colloquium presentations.

WELL-ROUNDED STUDENTS

The department has worked together with the Department of Design and the Department of Thermo-Fluids in producing graduates of Mechanical Engineering for both undergraduate and postgraduate levels. In 2010, a total of 188 students graduated in Mechanical Engineering Programmes which included 151 Bachelor of Engineering (Mechanical), 30 Master of Engineering (Mechanical) and 7 Doctor of Philosophy (Mechanical Engineering) students.

The Mechanical Engineering students were educated and trained in various aspects such as academic theories and applications, engineering ethics, generic skills as well as research activities. Besides, the students took part in other activities such as students associations, social work, forums and design competitions. The department has also sent four groups of students who took part in the Robogamez Competition at UNITEN from 11 November 2010 until 14 November 2010. They were supervised by Dr Mohd Zarhamdy Md. Zain, Assoc. Prof. Mohamad Hussein, Dr Jamaludin Mohd Taib, and Mr Razali Sulaiman. This competition in Robotics was seen as a platform for the students to get maximum exposure to a competitive experience as well as to develop their soft skills.

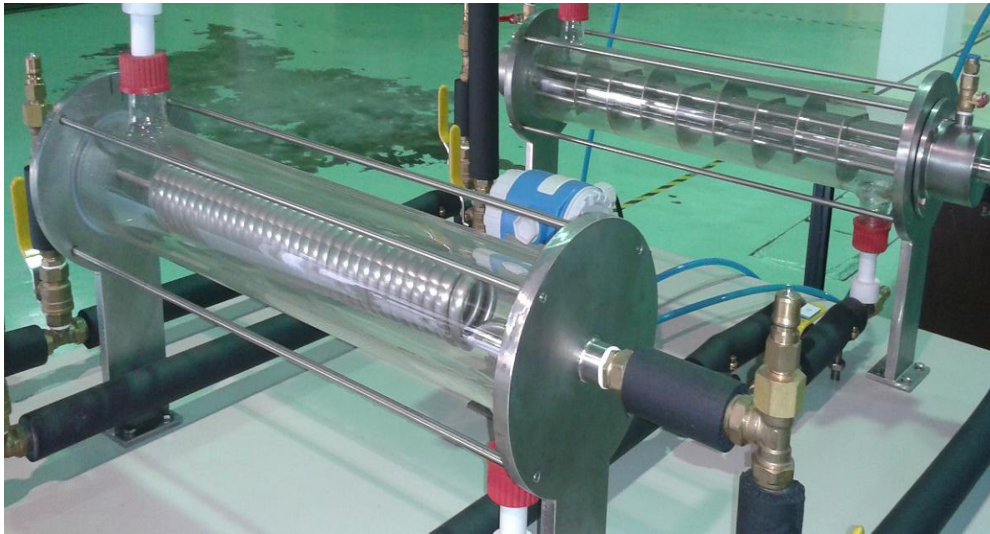
The Mechanical Engineering Students' Association known as PETERA also organised activities within and outside the campus such as career seminar and visits and participated in the Faculty's Open Day Programme annually.



eBRAILLE testing by handicapped children

DEPARTMENT OF THERMO - FLUIDS

Assoc Prof Dr Mazlan Abdul Wahid
Head of Department



BACKGROUND

The Department of Thermo-Fluids is well known as a department with strong commitment to the excellent service in teaching and providing necessary research skills by implementing various essential needs to academic programmes within the faculty. There are five major themes of research under Thermodynamics Panel: alternative fuel, combustion, heat transfer, refrigeration and air-conditioning, and sustainable energy. Under Fluid Mechanics Panel, there are also five major themes namely computational fluid dynamics, experimental and data acquisition system, fluid power, tribology and turbomachinery. Parallel with the UTM status as a research university, all staff are taking part actively in developing and contributing their various skills to ensure the accomplishment of the mission and vision of the department.

The Department of Thermo-Fluids is known as a department with strong commitment to the excellence in teaching and supervision by implementing essential needs to various academic programmes. This step is necessary to cope with the rapid changes in technological and social environment.

QUALITY-DRIVEN STAFF

The department consists of two course panels, namely Thermodynamics and Fluid Mechanics. For the year 2010, the strength of the department is shown by various contributions made by five professors, five associate professors, eight senior lecturers, one lecturer, one assistant lecturer and seven tutors. Six of them are now studying in local and overseas universities such as in France, Germany, United Kingdom and Malaysia. The department has contributed actively in various aspects of research by involving in several research groups, namely Computational Fluid Mechanics Research Group (CFM), High Speed Reacting Flow Research Group (HiREF), Refrigeration and Air-Conditioning (REFRAC), Sustainable and Renewable Energy (SURERG), and Computational Fluid Dynamics Research Group.

The department together with Universitas Indonesia and National University of Singapore has organized annual International Meeting of Advances in Thermo-Fluids (IMAT 2010). The 3rd meeting (IMAT 2010) was successfully hosted by the National University of Singapore on 30th November 2010 at Furama Hotel, Singapore. For the year 2010, IMAT attracted more than 50 researchers from three participating countries to share their expertise.

In the year 2010, the department has successfully secured RM 466,900 research funds for various projects approved under MOSTI and MOHE.

This is an indication of the continuous support by the departmental staff to strive for excellence through various projects at university, national and international levels. Besides, several department staff were also involved in collaborative relationship with KTH Heat and Power Technology Sweden in developing online learning unit platform.



IMAT 2010 at Furama Hotel, Singapore (30th November 2010)

In term of publications, the department has published almost 30 journal articles and many conference papers. Besides, several staff also contributed their expertise in writing book, book chapter and monograph. In the year 2010, several patents and copyrights have been filed and granted respectively. Prof. Dr Md Nor Musa and Assoc. Prof. Ir. Hayati Abdullah had successfully filed a patent on "A Control System and Methods of Maintaining Temperature Thereof". Department staffs also participated actively in various national and international competitions and exhibitions. Prof. Dr Md Nor Musa had been selected as champion of innovation by Ministry of Higher Education Malaysia in July 2010. Meanwhile, at Malaysia Technology Expo (MTE) 2010, Prof. Ir. Dr Farid Nasir Ani received silver medal for his work on "Continuous Microwave Induced Treatment of Solid and Liquid Organic Waste Materials".

Besides academic and research activities, several department staff also contributed in consultancy work. Assoc. Prof. Ir. Hayati Abdullah

was actively involved in consultancy for the project on "Development of Renewable Energy & Energy Efficiency" for Blueprint of Iskandar Malaysia. Besides, energy audit had been done at Buildings in Putrajaya (JPA & Ministry of Natural Resources).

Due to these outstanding contributions and exemplary services, several members of the department received various awards, such as the UTM Award of Excellence and Appreciation Ceremony or "Citra Karisma" which was held on 15th July 2010. Dr Syahrullail bin Samion received the Excellent Service Award for year 2009. Meanwhile, Dr Nazri Kamsah and Assoc. Prof. Dr Kahar bin Osman had been selected as finalist for the Intellect Property Award.

WELL-ROUNDED STUDENTS

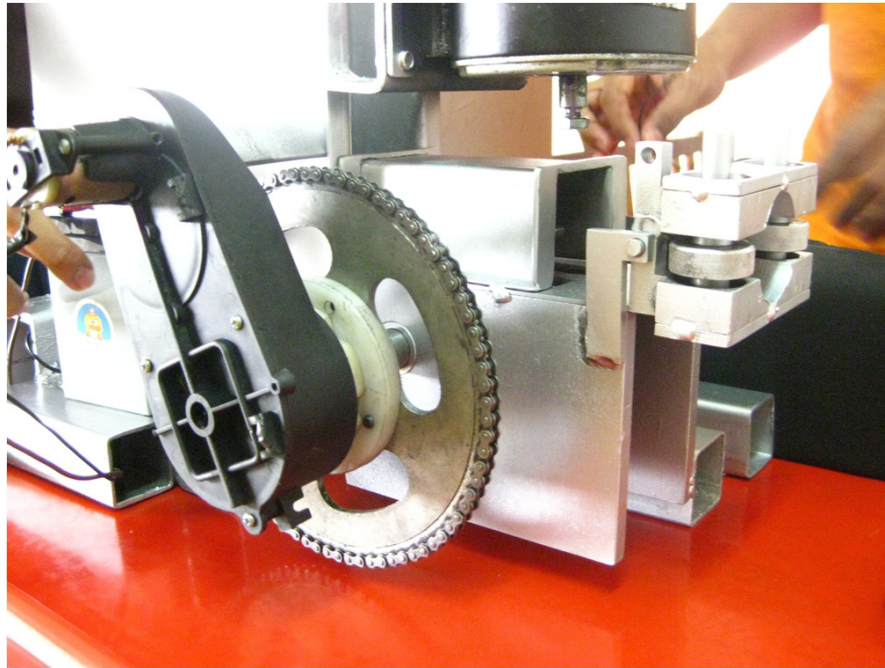
The student Society of Mechanical Engineering (PETERA) had organized visits to various exhibitions and industrial site to broaden the students' knowledge and skill in their field, such as visit to Malaysia Technology Expo 2010 (MTE 2010). Besides, many of postgraduate students had participated actively in International Meeting of Advances in Thermo-Fluids (IMAT 2010) which had been organized by the department to enhance their publications skill.



Recipients for Master of Engineering (Mech.) during the 44th Convocation Ceremony, 27th March 2010

DEPARTMENT OF DESIGN

Dr Muhamad Noor Harun
Head of Department



BACKGROUND

The Department of Design was formed in 1999 when the former Department of Applied Mechanics and Design was restructured into two departments. It undertakes the teaching of mechanical engineering foundation subjects in the area of engineering design which includes Engineering Drawing, Introduction to Design, Component Design, and Engineering System Design for the various mechanical engineering undergraduate programmes as well as providing advanced courses in Engineering Design/CAD for postgraduate programme at the Faculty.

The Department of Design undertakes the teaching of mechanical engineering foundation subjects in the area of engineering design which includes Engineering Drawing, Introduction to Design, Component Design, and Engineering System Design for the various mechanical engineering undergraduate programmes as well as providing advanced courses in Engineering Design/CAD for postgraduate programme at the Faculty.

QUALITY-DRIVEN STAFF

The department consists of 18 academic staff. The Engineering Design Panel is responsible for the Mechanical Engineering courses in the area of Engineering Design at both the undergraduate and postgraduate levels. The academic staff consists of 2 associate professors, 6 senior lecturers, 9 lecturers and 1 tutor. There are 7 PhD holders and 6 are currently enrolled in PhD programmes in various institutions either locally or abroad. It is expected that within 2 years, PhD holders will make up half of the department strength.

The department's research activities focus on several areas, such as virtual reality, CAD and its application, human bio-mechanics, reliability and optimization based design, as well as industrial and product design. One research paper from the department staff had been published in international journals and 3 papers presented in international conferences.

WELL-ROUNDED STUDENTS

A total of 67 students received their Bachelor of Mechanical of Industrial Design (ID) in conjunction with the university's 44th Convocation Ceremony in March 2010 and 45th Convocation Ceremony in August

2010. The department had produced more than 307 ID graduates. The ID graduates have been very successful after they left the university and are currently employed in various national and multinational companies.



Student visit to cocoa plantation



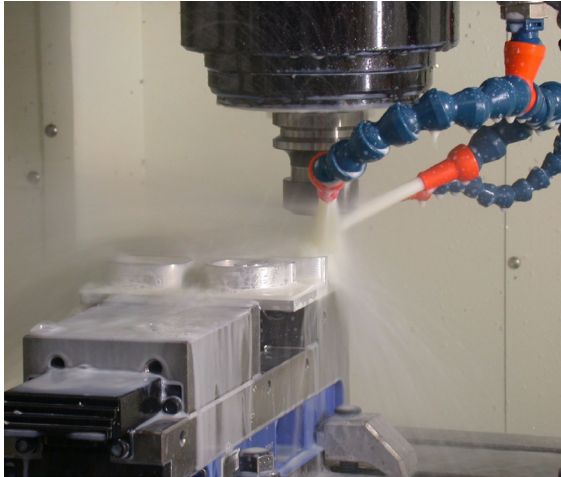
Initial prototype of cocoa seed separator machine



Cocoa seed cleaning mechanism

DEPARTMENT OF MANUFACTURING AND INDUSTRIAL ENGINEERING

Assoc Prof Dr Izman Sudin
Head of Department



BACKGROUND

The department is the first in Malaysia to offer degree programmes which combine Mechanical Engineering with Industrial Engineering and Mechanical Engineering with Manufacturing Engineering. In each programme, students are given sound mechanical engineering foundation before majoring in industrial engineering or manufacturing engineering. These provide students with the unique opportunity to be able to practice in the wider field of mechanical engineering as well as industrial and manufacturing engineering.

The two programmes are tailored towards enabling students to solve real industrial and manufacturing problems in their course work and final year projects and this is achieved through close rapport with industries. The 10-week industrial placement is also an important feature of these programmes. Industrial visits to companies such as Sharp Manufacturing, Fujitsu Components, JK Wire Harness, Sony and

The Department of Manufacturing and Industrial Engineering was established in the early 1980s to fulfill the needs of the manufacturing and service industries in Malaysia. These needs were not only concerned with providing the industries with capable engineers but also, through our graduates, bring about the innovative and state-of-the-art technology and knowledge to industries and contribute to making Malaysia an industrialized and modern nation.

Epson Precision are also regularly organized. This rapport provides the opportunity not just for the training of students but also the lecturers. With Global Outreach Program (GOP), 15 students from the department led by Mr. Jafri Rohani visited various universities, research centre and factories in Beijing, China.

The department staff had benefited from trainings organized by Bizit Systems (Minitab) and Design Expert Software training. At postgraduate levels, the department offers MEng and PhD programmes by research. The department also offers two master programmes by taught courses namely, MEng (Advanced Manufacturing Technology) and MEng (Industrial Engineering). The department had 345 undergraduate students and 140 postgraduate (Master Degree & PhD) students.

The department currently houses the Production Engineering Laboratory which has been designated as a Faculty centre of excellence. Some of the staff of the department are also coordinators of other laboratories such as metal casting, metrology, machine shop, fabrication, metal forming and industrial engineering laboratories. Some state-of-the-art softwares and hardwares are available in these laboratories for teaching, research and consultancy activities such as Unigraphics, Catia, Solidworks, CNC lathe, CNC milling, CNC wirecut, rapid prototyping, Witness, Minitab, Design Expert and S-Plus softwares.

QUALITY-DRIVEN STAFF

The department has 34 academic staff including six professors and ten associate professors. The academic staff of the department is committed to teaching, research and publication. The department staff disseminates their research findings at various national and international conferences. Members of the department also actively contributed as reviewers for local and international journals.

Due to an excellent contribution in the department, some of the staff had been promoted to various posts. Among them are Prof. Dr. Safian bin Sharif and Assoc. Prof. Dr. Mohd. Hasbullah Idris. The department had also received visiting professors throughout the year 2010.

Department members were also involved as LAN/MQA assessors to various private institutions of higher learning, as master and PhD theses examiners for USM, UPM, IIUM and others. Several senior staff had also been invited as speakers to GMI, FMM, Puspatri, NIOSH and SPACE-UTM Degree++ programmes. Several senior staff members were also involved in the supervision of BATC-Warwick postgraduate programmes (SEAL).

WELL-ROUNDED STUDENTS

The students of the department were also active in organising seminars and the highlight for the year 2010 was the successful organization of the Professional, Engineering, Leadership, Teamwork and Awareness Camp (PELTAC) 2010 by the Society of Manufacturing Engineers (SME) Student Chapter S227.

A total of 21 undergraduate students from the department graduated during the university's 44th convocation, with 1 student receiving First Class Honours and 10 with Second Class Honours (Upper Division). For the postgraduate programme, 9 students were awarded with the Master of Engineering (Mechanical-Advanced Manufacturing Technology) degree.

For the university's 45th convocation, 89 undergraduate students received their Bachelor of Engineering (Mechanical-Manufacturing and Mechanical-Industry). For the postgraduate programmes, 12 students were awarded with the Master of Engineering (Industrial Engineering) degree and 15 students were awarded with the Master of Engineering

(Mechanical – Advanced Manufacturing Technology) degree. Graduates of the department are currently employed at various national and multinational companies. Many also opted for further studies at Master and PhD levels.



SME Auto Fair Exhibition



Global Outreach Program to Beijing, China.

DEPARTMENT OF MATERIALS ENGINEERING

Assoc Prof Dr Ali Ourdjini
Head of Department



BACKGROUND

In 2010, the Department of Materials Engineering continued its mission in enhancing academic activities in the department. Continuous professional development is still a major focus within the department and members also participated actively in various educational programmes. The year 2010 also saw the successful organisation of various activities.

Initially, the students are exposed to the basic mechanical engineering courses. Then, they are guided in the learning of specialised courses of materials engineering: namely the physical metallurgy, mechanical properties of materials, materials characterization techniques, quality control, advanced materials, materials processing, corrosion and surface protection.

QUALITY-DRIVEN STAFF

The department consists of 14 academic members, comprising 2

The mission of the Department of Materials Engineering is to be a leader in education by providing engineering leadership through innovative learning and research, and be a centre that provides academic and industrial needs of the university. It also aspires to be a leading academic and innovative centre specializing in Metallurgy/Materials Engineering in Malaysia.

professors, 2 associate professors, 2 senior lecturers, 6 lecturers and 2 tutors. In line with the University's goal to ensure that more than 70% of the academic staff possess PhD by 2013, two members of this department are currently having their PhD study leaves.

The department is also dedicated to the continued development of research in the area of materials engineering. Throughout 2010, the department successfully secured research fundings from various sources. The department secured RM593,120 of research fundings from MOSTI, MOHE, INTEL and UTM/Short Term grants. This indicates strong commitment and dedication of the staff in this department to strive for excellence in various research projects.

On January 2010, the department received a visiting professor from Kagoshima University, Japan (Professor Kozo Obara).

WELL-ROUNDED STUDENTS

In the year 2010, 52 of the department's undergraduate students received the Bachelor of Engineering (Mechanical-Materials) degree. 7 students were awarded with First Class Honours, 26 with Second Class Honours (Upper Division) and 19 with Second Class Honours (Lower Division). Meanwhile, 4 students were awarded with Master of Engineering (Mechanical-Materials).

The career in the field of Mechanical and Materials engineering is wide, covering all public, statutory and private sectors. In moving towards an industrialised nation, the roles of materials engineers are considerably important, especially in the production of advanced materials.

In 2010, the Materials Club has actively organized and involved in several activities, like the meeting and the dinner to provide students with the advanced knowledge in Materials Engineering and others. The Annual General Meeting was held on 20th March 2010 to ensure that the club activities were smoothly implemented throughout the year. The club also organized industrial visit to Sime Darby on 25th February 2010 to give early exposure to the Materials students in real world job perspectives and roles as a materials engineer. To motivate newly enrolled undergraduate students in their studies, the department has organized "First Year Experience" on 14th August 2010. Global Outreach Program continued for the second consecutive year in which 12 students from the department (3rd Year students), led by Prof. Dr Esah Hamzah, have visited Ho Chi Minh University of Technology (Vietnam) from 12th – 18th December 2010.



The 12 SMB Students who participated in the Global Outreach Programme. The photo was taken in front of the main gate of the Ho Chi Minh University of Technology, Vietnam.



Professor Kozo Obara (left) from Kagoshima University, Japan visited Materials Science Laboratory on 29 January 2010.



Thu Vien or the library of Ho Chi Minh City University of Technology

DEPARTMENT OF MARINE TECHNOLOGY

Assoc Prof Dr Mohd Zamani Ahmad
Head of Department



BACKGROUND

The Department of Marine Technology at UTM was established in January 1999. However, Marine Technology Courses have been established much earlier in 1980 when two experts, Prof. J.B. Caldwell from University of Newcastle-upon-Tyne and Prof. Akhihiro Ogawa from Japan Ship Research Institute, submitted a report to the university authorities, proposing the establishment of both the Diploma and Bachelor degree programmes in Marine Technology. Until December 1998, the programmes were run by the Marine Technology Panel under the Department of Fluids and Thermodynamics, Faculty of Mechanical Engineering.

In 2010, the Department of Marine Technology has actively involved in the organization of seminars and workshops, as well as conducting research and consultancy projects in areas of design and construction of marine vehicles and structures. The department not only derives its strength from its coherent multi-disciplinary members but also receives

The Department of Marine Technology has been active in organising seminars and workshops, as well as conducting research and consultancy projects in the areas of design and construction of marine vehicles and structures. The department not only derives its strength from its coherent multi-disciplinary members but also receives strong support from other engineering and non-engineering disciplines within the university.

strong support from other engineering and non-engineering disciplines within the university.

Presently the department is offering Bachelor of Engineering (Mechanical-Marine Technology), Master in Engineering (Marine Technology) by Taught Course, Master by Research and PhD in marine technology field. The department is working hard to ensure that the developed human capital meets the industrial demands. As a consequent, the department has introduced a new course, i.e., Bachelor of Engineering – Naval Architecture and Offshore Engineering last year. The Ministry of Higher Learning of Malaysia has approved this new course, and it is going to be offered in July 2011. The courses of marine bachelor programmes cover the field of naval architecture, ship and offshore production technology, ship and offshore strength and vibration, ship resistance and propulsion, ship and offshore drawing and design, marine and offshore engineering system, hydrodynamics, dynamics of marine vehicles, marine transport and economics, computer-aided ship design and production, marine environment and safety, and riser and mooring dynamics.

Teaching is enhanced by the extensive research activities and close collaboration with industrial partners. The normal duration to complete the bachelor programme is 4 years or equivalent with 8 normal semesters. For postgraduate programme by research and master programme by

taught course, the duration of the research work and class is usually between 1.5 – 2 years for master level and 3 – 4 years for PhD. Students usually undertake research topics that are of interest to their respective supervisors.

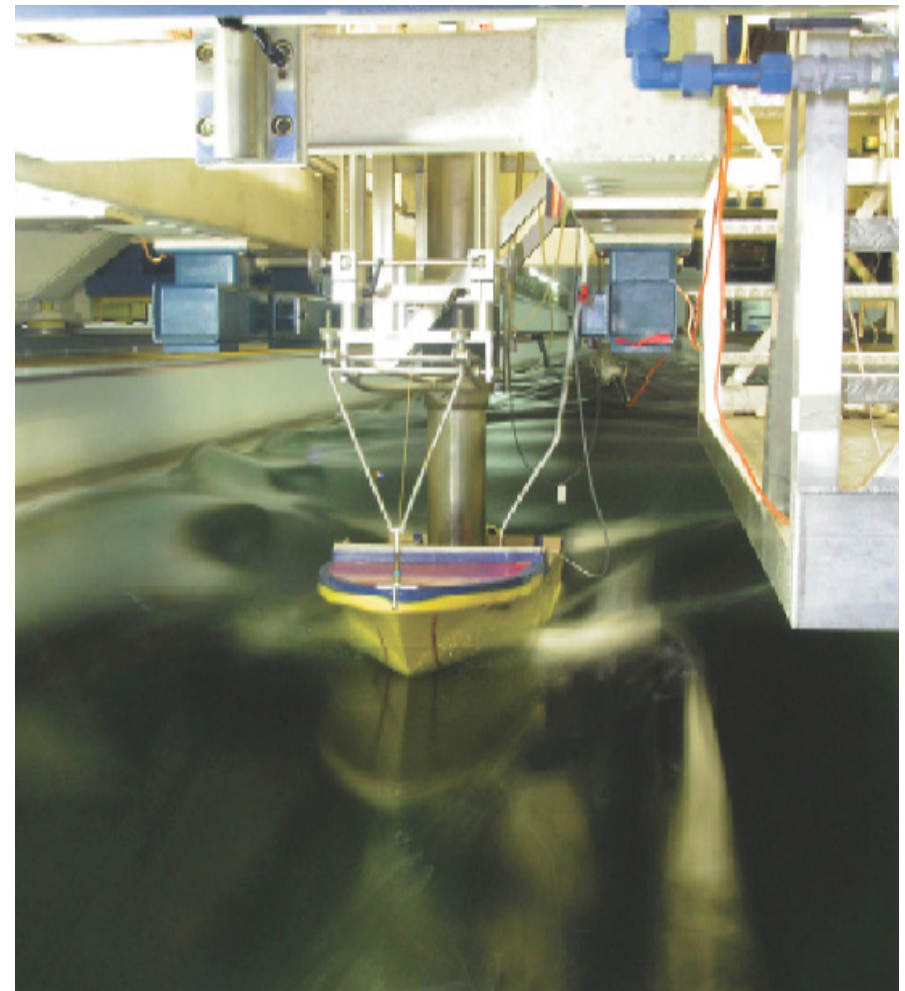
The department currently houses a specialised laboratory – Marine Technology Laboratory that is dedicated to both teaching and research activities. This is the largest university-based hydrodynamic laboratory in ASEAN. An impressive array of state-of-the-art research facilities are available in the marine technology laboratory such as towing tank, towing carriage, planar motion mechanism, wave making system, self-propulsion dynamometer, resistance and movement dynamometer, wave probe, wave generator, ship model milling machine, wake measurement apparatus, apparatus universal primary calibrator, data acquisition and analysis system, and six-component force measurement system.

The laboratory's capability is tailored to become the premier Marine Technology teaching, research and consultancy institution in the region. Being one of the centres of excellence in UTM, the Marine Technology Laboratory has significantly contributed to the growth of the maritime industry in Malaysia. To conduct research and development project in various fields of maritime technology, the laboratory is equipped with international standard facility of model making and model testing. With the present equipment, the types of teaching, research and services include the resistance/drag measurements, propulsion tests, fluid flow and body interaction, analysis of sea-keeping behaviour in waves, ocean and coastal engineering modelling, manoeuvring simulation, equipment calibration, lightship survey, inclining experiments, expert witness, stability assessment, design service, vibration monitoring and mitigation, full scale powering measurement, and full scale motion and monitoring.

QUALITY-DRIVEN STAFF

The academic staff of the department are committed to academic excellence. Currently, the department has 15 academic staff (one professor, four associate professors, five senior lecturers, three lecturers, and two tutors) who are actively engaged in teaching, research and consultancy. Overseeing the development of the courses, the department staff members organise themselves into several research interest groups, such as ASTRA (Advance Sustainable Transportation Research Alliance).

In research, the academic staff are actively involved in various exciting area, covering the advanced marine vehicles, such as high speed ships, hovercraft and SWATH, composite materials in shipbuilding, fishing boat design optimisation, ship fabrication methods, ship simulator development, stability in waves, structural design of ships and offshore structures, underwater vehicle development, application of techno-economic and ergonomic design, development of software and CAD/CAM applications in shipbuilding, inland waterways transport system, oceanographic database development and modelling, and alternative energy from the ocean. With the strong staff commitment, the



Fast patrol craft test



1st Year Experience Programme Conducted by the Department of Marine Technology

department is optimistic of greater development in the years to come.

The department had also conducted research collaborations with various institutions and companies in Malaysia such as Malaysia International Shipping Corporation Berhad (MISC), Sime Darby Berhad, Boustead Naval Shipyard (BNSy), Association of Marine Industries of Malaysia (AMIM), Malaysia Marine and Heavy Engineering (MMHE), Sabah Shell Petroleum Co., and Technip Malaysia. At the international level, the department had also established collaboration with the Royal Institution of Naval Architect (RINA), International Towing Tank Conference (ITTC) as well as the Marine Research Institutes of Netherlands (MARIN).

Department staff members were active in publication with 9 papers presented at international conferences and 22 papers presented at the national level in the year of 2010.

The department emphasises technology and knowledge sharing with industrial partners by conducting short courses. In 2010, the department organised numerous short courses for participants from the maritime industrial sectors. Assoc. Prof. Dr. Adi Maimum Abdul Malik, Assoc. Prof. Dr. Omar Yaakob, Dr. Ir. Mohamad Pauzi Abdul Ghani, Mr. Yahya Samian and Mr. Ahmad Fuaad Ahmad Sabki were among the academic staff who have been actively involved in conducting these intensive short courses, which include ship drawing, ship structure and strength, fibreglass boat

construction, ship stability, tonnage calculation, and small craft survey.

Visiting Professors in 2010

- Prof. Chengi Kuo (University of Strathclyde, Glasgow)
- Prof. Kirill V. Rozhdestvensky (Saint Petersburg State Marine Technical University Russia)
- Prof. Purnendu K. Das (University of Strathclyde, Glasgow)
- Prof. Incecik Atilla (University of Strathclyde, Glasgow)

WELL-ROUNDED STUDENTS

The broad spectrum of the Bachelor of Engineering (Mechanical – Marine Technology) programme prepares students for careers in various fields such as naval architecture, marine engineering, offshore engineering, ship production, marine transportation, and marine management. In 2010, 48 students were awarded with Bachelor of Engineering (Mechanical – Marine Technology) degree and 3 students were awarded with Master Degree in the 44th and 45th UTM Convocations.

All students of the department are entitled to become a member of the student society known as the TechnoMarin Club. They have actively involved in various activities such as conducting the research and technical seminars, career talk, industrial visit, workshop, forum, and exhibition. Teknomarin club also actively organised various activities to share knowledge, experience and success among the department staff and students. Among the activities conducted in 2010 are: Teknomarin New Logo Design Competition, GEMPAK Marin 2010 (Marin Open Day), Marinight 2010 (Malam Pragrduan), LIPUT 2010, Global Outreach Program to Bangladesh and Indonesia, Seafarer Talk and RINA Talk.

Graduates of the department are currently employed at various maritime industries (inclusive but not limited to ship building, ship repair, shipping, and oil and gas companies), such as MISC, MMHE, BHIC, Petronas, Shell, as well as marine related government agencies, i.e., Jabatan Laut and Jabatan Perikanan. Many of the graduates have also opted for further studies at Master level and PhD levels.

DEPARTMENT OF AERONAUTICAL ENGINEERING

Prof Dr Mohammad Nazri Mohd Jaafar
Head of Department



BACKGROUND

The department of Aeronautical Engineering was inaugurated on December 2007. It offers Aeronautical Engineering degree programme as a specialisation of Mechanical Engineering, covering five main areas: namely aerodynamics, aircraft structures, flight dynamics and control, propulsion, and aircraft design. Thus, graduates of this programme satisfy the requirements to graduate as a mechanical engineer specializing in the field of aeronautics.

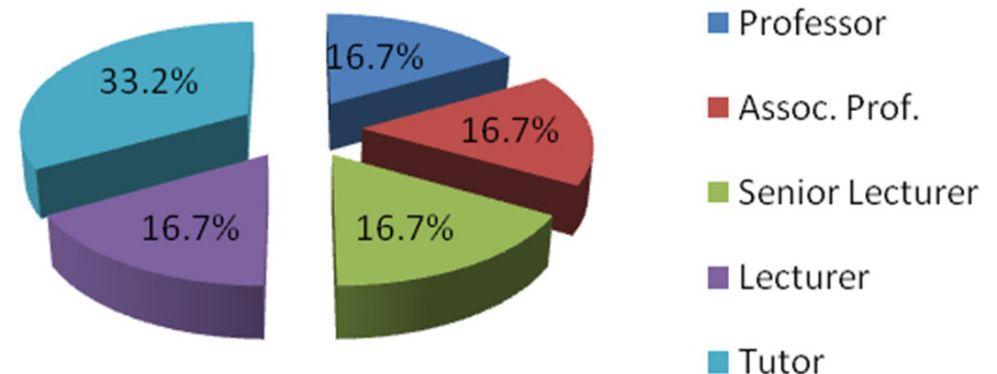
The curriculum for Bachelor of Engineering (Mechanical-Aeronautics) includes basic sciences and mathematics, common university courses such as humanities and entrepreneurship courses, engineering courses, which include basic engineering, mechanical core courses, and aeronautical engineering courses. A 10-week industrial placement during the semester break will be undertaken by the undergraduates in order to expose themselves to the industrial needs and experience. The

The department currently houses one of FME's laboratories of excellence, the Aeronautics Laboratory (Aerolab) which is dedicated to teaching, research and consultancy activities. The Aerolab is equipped with a Low Speed Wind Tunnel, the only one of its kind in the country and is a registered member of the worldwide Subsonic Aerodynamics Testing Association (SATA) since 2002.

normal duration to complete the programme is 4 years, or equivalent to 8 semesters. In addition, the department also offers M.Eng and Ph.D for its postgraduate programmes.

QUALITY-DRIVEN STAFF

In the year 2010, the department has 18 academic staff, including 3 professors, 3 associate professors, 3 senior lecturers, 3 lecturers, and 6 tutors. Ten of them are currently working towards their postgraduate qualifications (master and doctorate).



Percentage of Aeronautical Engineering staff designations

The departmental staff involved actively in various external organizations, like the Malaysian Industrial Defense Council, National Aerospace Council and Malaysian Association for Computational Mechanics, etc.

ACTIVITIES

Most of the departmental staff join the Transportation Research Alliance (TRA), which is comprised of the following research groups:

- Air Vehicle Design Research Group (AVDRG)
- Applied Aerodynamic Research Group (AARG)
- Aircraft Dynamics, Guidance & Control Research Group (ADGCRG)
- Vehicle Electronic & Control Research Group (VECRG)
- Rocketry Technology Research Group (RocTERG)
- Gas Turbine Combustion Research Group (GTCRG)
- Computational Solid Mechanics Research Group (CSMRG)

In 2010, numerous activities, including but not restricted to research, meeting, visit, and consultancy, have been successfully organized and implemented in the department. For instance, the Aeronautics Laboratory has successfully secured 12 consultancy services, amounting to approximately RM263k in its annual income (including the payment of wind tunnel model making).



Head of the department during a workshop in Melaka



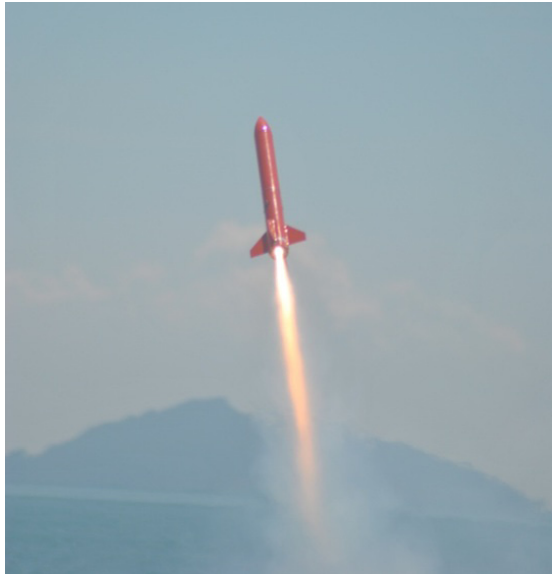
Astronautic Technologies Sdn Bhd (ATSB) Visit



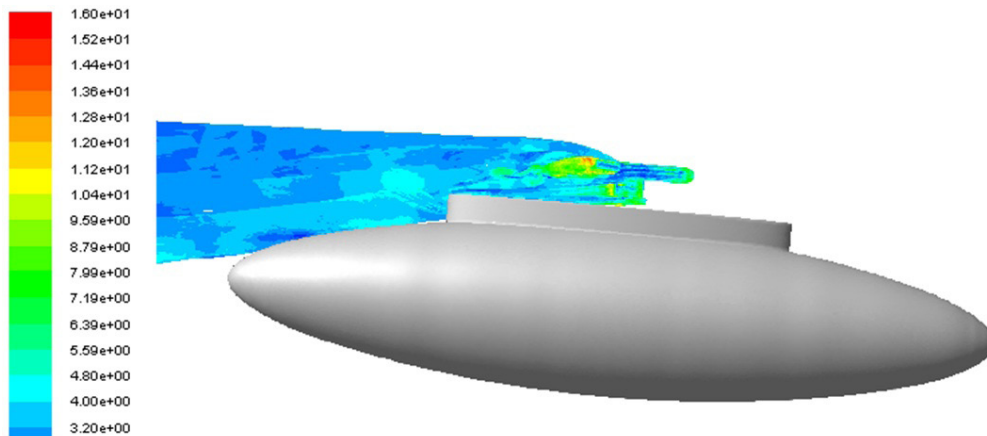
Aerospace Technology Review Board (ATRB) Meeting

List of other research projects that have been carried out in 2010:

- An investigation of helicopter tail shake phenomena.
- An investigation of transient aerodynamics effect on vehicle crosswind sensitivity.
- Development of wind turbine.
- Development of a database for biofuel combustion properties.
- Development of microstrip lines with special deformation.
- Research programme on rocket technology development with National Aerospace Council.



Fieldtest on rocket development in Mersing (Oct 2010)



Research on unsteady wake of rotor hub by LES Sliding Mesh

In 2010, the Global Outreach Programme (GOP) has been successfully conducted for the first time in this department. Assoc. Prof. Dr. Tholudin Mat Lazim led a group of Aeronautical Engineering students to Indian Institute of Technology Madras, and Institute of Science Bangalore, India.

WELL ROUNDED STUDENTS

The Bachelor of Engineering (Mechanical-Aeronautics) programme prepares students with the ability to acquire knowledge and understanding of science and engineering principles relevant to mechanical and aeronautical engineering. They are also trained with the ability to work as a team and to communicate effectively as an engineer.

Throughout the year of 2010, 31 new students have enrolled and 53 students have graduated.

Degree Honoured	Sem. II & III Session 2009/2010	Sem. I Session 2010/2011
1st Class	3	-
2nd Class Upper	38	5
2nd Class Lower	3	4

For decades, our graduates have been very successful and have been promoted to distinguished positions in the industry, government and academia. Graduates of the department are currently employed by various national and multinational companies, such as CTRM, AIROD, ALSTOM, Sime Darby, Malaysia Airlines, Schlumberger, etc. Many of our graduates also opted to pursue graduate studies at Master and Ph.D levels.

DEPARTMENT OF AUTOMOTIVE ENGINEERING

Assoc Prof Dr Kamarul Baharin Tawi
Head of Department



The Mechanical-Automotive Engineering programme was first introduced in 1999 under a combined Department of Aeronautics and Automotive Engineering, producing more than 400 Mechanical-Automotive engineers at both undergraduate and postgraduate levels. Realising the demands and increasing interest on the Mechanical - Automotive programme, the Department of Automotive Engineering was officially established in December 2007 with Assoc. Prof. Dr. Kamarul Baharin bin Tawi as its first Head of Department until today.

on automotive engineering. They should be able to identify and solve engineering problems systematically, critically, creatively and analytically.

BACKGROUND

The vision of the department is to be internationally recognised in automotive engineering education and research, while its mission is to lead the development of creative human resources and technology in automotive engineering. The main role of the department is to offer undergraduate and postgraduate studies leading to automotive engineering qualifications. The department is also working hand-in-hand with the Automotive Laboratory and the Automotive Development Centre (ADC) to support teaching, research and consultation activities.

Currently, the department is offering the Bachelor of Engineering (Mechanical-Automotive) programme as a specialisation of Mechanical Engineering, covering several main areas including Vehicle Dynamics, Automotive Structures, Automotive Powertrain, Automotive Electronics & Instrumentation, and Automotive Production. Mechanical-Automotive graduates are trained to apply their knowledge and skills to design, analyse and evaluate mechanical engineering systems with emphasis

QUALITY-DRIVEN STAFF

The department has 14 academic staff with 1 Professor, 4 Associate Professors, 2 senior lecturers, 4 lecturers (1 on study leave) and 3 tutors (all on study leave). Among these 14 academic staff, 64.3% of them have obtained PhD qualification, while the rest are currently pursuing their PhDs. To date, 2 members of the academic staff are PEng, all of them are registered with BEM while only 2 with IEM. 4 are members of SAE, 1 with JSAE and 1 with ASME. About 30% of the academic staff have served more than 10 years, 30% more than 5 years, and the rest less than 5 years. One of our staff is currently being seconded to PROTON as a PROTON Professor.

The academic staff's specialisations are quite broad. Just to name a few, Assoc. Prof. Dr. Kamarul Baharin Tawi specialises in automotive drivetrain (especially the continuously variable transmission (CVT) gearbox) and has filed 3 patents in the field, Assoc. Prof. Dr. Pakharuddin Mohd. Samin specialises in vehicle dynamics and has led the UTM solar cycle team to be 3-time champion in 1997 (Solar Cycle Challenge - 2-wheeler

category), 2001 (Solar Cycle Challenge – 3-wheeler category) and 2002 (Solar Bike Race – 3-wheeler category), while Dr. Abdul Rahim Abu Bakar specialises in brake squeal and has recently published a book chapter in the field. Other specialisations include the internal combustion engine (ICE), turbochargers, engine tribology, automotive structures, hybrid power-train, turbomachinery, etc.

WELL-ROUNDED STUDENTS

The current number of Mechanical-Automotive undergraduate students is 202. The students are automatically enrolled as members of the Automotive Technology Society (AUTECH), and at the same time they are encouraged to participate in the SAE Student Chapter activities. Both societies are very active and have involved in many activities throughout the year. For example, AUTECH took part in Perodua Eco-Challenge (PEC) 2010 competition in Melaka International Motorsports Circuit (MIMC), Ayer Keroh. The students also took home RM10,000 and a pewter trophy for winning the Shell Eco-Marathon Asia 2010 competition. They have participated in other competitions also, such as the Formula SAE.



Perodua Eco-Challenge 2010

In 2010, 2 graduates were awarded with the Bachelor of Engineering (Mechanical-Automotive) degree in the 44th convocation, while 47 were awarded the degree with 9 first class graduates in the 45th convocation ceremony. Our graduates have been very successful and obtained distinguished positions in the industry, government and academia. Graduates of the department are currently employed in various national

and multinational companies, such as Proton, Perodua, Modenas, HICOM, and many others. Many of our graduates also opted to further their studies in Masters and PhDs. Overall, the Mechanical-Automotive graduates have wide career opportunities as they are well-trained to become competent engineers and managers especially in the field of automotive engineering.



Formula SAE 2010



UTM-Shell

DEPARTMENT OF EXTERNAL PROGRAMMES

Prof Dr Safian Sharif
Head of Department



The Department of External Programmes was set up in January 2001 in line with the University's effort to promote continuous and life-long education.

ACTIVITIES

The Department of External Programmes, FME carries the responsibility of coordinating and conducting the Bachelor of Engineering (Mechanical) programme for the working candidates under the part time mode. The courses are delivered by experienced academic staff of the Faculty during weekends at various learning centres. Currently the part time programme is offered at five learning centres, which are located at strategic locations including Johor, Kuala Lumpur, Kuantan, Ipoh, and Penang.

This office is led by the Head of Department of External Programmes and assisted by 9 coordinators, comprising of FME's academic staff, in order to ensure smooth implementation of the part time programme. One or two coordinators have been assigned to each learning centre, and one of their main roles is to be an academic advisor of the students. Other roles include supervising and monitoring the process of academic registration and advising students on academic matters.

In year 2010, a total of 70 academic staff have participated in the programmes, and a total of 1516 students have enrolled in the part-time study of Bachelor of Engineering (Mechanical) at various learning centres, as shown in Table below.



BACKGROUND

Malaysia is moving towards Vision 2020, with the resolution that the country will become an industrialised nation by the year 2020. To achieve this aspiration, the requirement for higher human capital quality, in terms of education and training are essential. For this purpose, in July 1993, the university has established UTMSPACE, in collaboration with the Department of External Programmes of various faculties, to offer quality Part-Time and Professional Education Programmes. Education is a life-long learning process. Thus, the university is confident that those who aspire and strive to develop themselves can be educated, regardless of age and history of one's academic achievement.

Learning Centre	No. of Students	
	Semester II Session 2009/2010	Semester I Session 2010/2011
Johor Bahru	153	141
Penang	91	92
Kuala Lumpur	456	475
Kuantan	35	33
Ipoh	20	20
Total	755	761

As an appreciation to excellent performance, the respective graduates received their awards from UTMSPACE during the Medals Award Ceremony in conjunction with the University's Convocation Ceremony. Recipients of the awards are shown in the figure below.



Recipients of UTMSPACE awards

DEPARTMENT OF POSTGRADUATE STUDIES

Dr Nor Azwadi Che Sidik
Head of Department



BACKGROUND

The FME postgraduate experience teaches the skills and know-how to approach engineering problems or advanced research challenges with confidence and creativity. In addition to the undergraduate degrees, the Faculty also offers graduate programmes leading to the degree of Master of Engineering (M.Eng) and Doctor of Philosophy (Ph.D) in various fields of mechanical engineering. The Faculty's state-of-the-art facilities and instrumentation provide the support tools for comprehensive educational and research activities. These are supplemented by specialized university research facility. FME has received numerous national awards for both research and teaching achievements. Our graduates have been very successful and have risen to distinguished positions in the industry,

The FME postgraduate experience teaches the skills and know how to approach engineering problems or advanced research challenges with confidence and creativity.

government and academia. The Faculty participates yearly in numerous research awards.

STUDENTS REGISTRATION

For the year of 2010, a total number of 565 students registered for the programmes as follow:

No	Programme	No. of Students
1	Doctorate degree (mechanical)	169
2	Master of Engineering (mechanical)	193
3	Master of Engineering (Advanced Manufacturing Technology)	55
4	Master of Engineering (Materials Engineering)	27
5	Master of Engineering (Industrial Engineering)	80
6	Maser of Engineering (Marine Technology)	41

GRADUATION 2010

A total of 149 students graduated from the doctorate degree and master programmes in the year 2010. The distribution of the graduates according to programmes is shown in the following table.

Distribution of Graduates According to Programmes

Programme	No. of Graduates	
	44 th Convocation	45 th Convocation
Doctor of Engineering	2	6
Master of Engineering	66	75



UTM hovercraft research activities



Postgraduate project presentation



Poster presentation by FME postgraduate students

STUDENT SOCIETIES



STUDENT SOCIETIES

Various student organizations, societies, and clubs are available for students to gain experience in management, leadership, governance, and social activities. These societies act as platforms to prepare them to become future engineers and leaders. At present there are 11 student societies as listed below:

No	Society	Composition of Membership
1	Institution of Engineer, Malaysia (IEM) Student Chapter – Southern Branch	All FME Students
2	Student Society of Mechanical Engineering (PETERA)	SMM
3	Society of Manufacturing Engineers Student Chapter S227 (SME)	SMP
4	Industrial Engineering Club (IEC)	SMI
5	Materials Club (Kelab Bahan)	SMB
6	Aero Club	SMT
7	TeknoMarin Club	SMK
8	Automotive Engineering Club (AUTECH)	SMV
9	Society of Automotive Engineers (SAE)	SMV
10	Industrial Design Club (IDC)	SRI
11	Post Graduate Student Society (PGSS-FME)	FME Postgraduate Students

All undergraduate students from the Faculty are encouraged to join one of these societies according to their majoring. Various academic and non-academic activities are conducted including technical talks, industrial visits, short courses, trainings, workshops, exhibitions and recruitment drives. Besides boosting the interest and providing opportunities to gain broader insight into the engineering profession, activities conducted are also aimed to bridge the gap between lecturers and students.

A Postgraduate Students Society (PGSS-FME) has also been established at the Faculty which serves the interests of postgraduate students in FME and acts as a bridge between FME's administration and postgraduate students in the Faculty.

Date	Activity	Venue	Organizer
9 January 2010	1-Day Workshop on Solidworks 3D Modelling	Computer Laboratory, FME, UTM	SME
13 January 2010	Industrial Visit	Sharp Manufacturing Corp. (M) Sdn. Bhd., Batu Pahat	SME
29 January 2010	Industrial Visit	Proton Shah Alam	SAE
30 January 2010	Visit to Petro Sciences, Skybridge and Aquaria	KLCC	SAE
3 February 2010	Workshop on Flight Simulator,	C24-411, FME Computer Lab	AERO CLUB
22 February 2010	Annual General Meeting (AGM)	UTM	PETERA
25 February 2010	Industrial Visit to Sime Darby Engineering Sdn. Bhd.	SIME DARBY ENGINEERING SDN BHD	MATERIALS CLUB
27 & 28 February 2010	SME Sports Day	Sport Complex UTM	SME
20 March 2010	Final Year Sharing Experience Forum	Lecture Hall 2, FME, UTM	MATERIALS CLUB
27 March 2010	Aero Family Day	KDSE Recreational Field	AERO CLUB
24 April 2010	BBQ Night	KDSE Recreational Field	TEKNOMARIN CLUB
8 July 2010	Recruitment Drive	Outside FME Office	TEKNOMARIN CLUB
22 to 28 JULY 2010	Membership Drive	Dewan Sultan Iskandar (DSI)	SME
26 – 27 July 2010	Recruitment Drive	Outside FME Office	SAE
30 July 2010	SME Night	Dinner Hall Management Building, UTM	SME
30 July 2010	Ordinary General Meeting and Welcoming Night	DSI	SAE
31 July 2010	Water Rocket Competition	College 9 Recreational Field	SAE
7 August 2010	Welcoming Day	College 9 Recreational Field	SME
14 August 2010	First Year Experience Meeting	FME, UTM	MATERIALS CLUB
24 – 25 August 2010	SME Auto Fair Exhibition	DSI	SME
21 September 2010	Career Path	DSI	IEM – Southern Branch
29 September 2010	Industrial Visit to JK WIRE HARNESS	Tebrau, Johor Bahru	SME
2 October 2010	BBQ Night	Balai Cerapan UTM	MATERIALS CLUB
12 – 17 December 2010	Professional Engineering Leadership Teamwork Awareness Camp	DSI	SME
30 November to 3 Desember 2010	Exhibition of International Conference on Sustainable Mobility 2010	Best Western Premier Seri Pacific Kuala Lumpur Hotel	SAE





TECHNICAL SUPPORT & SERVICES REPORT

CENTRES OF EXCELLENCE

- I CENTRE FOR COMPOSITES (PUSKOM)
- II INSTITUTE OF NOISE AND VIBRATION
- III AUTOMOTIVE DEVELOPMENT CENTRE (ADC)
- IV MARINE TECHNOLOGY CENTRE (MTC)

LABORATORIES OF EXCELLENCE

- I MATERIALS SCIENCE LABORATORY
- II PRODUCTION LABORATORY
- III AERONAUTICS LABORATORY
- IV AUTOMOTIVE LABORATORY
- V COMPUTATIONAL FLUID MECHANICS LABORATORY (CFM)
- VI COMPUTATIONAL SOLID MECHANICS LABORATORY (CSMLab)

TEACHING LABORATORIES

ENGINEERING COMPUTING LABORATORY (ECL)



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

UNIVERSITY

CENTRE FOR COMPOSITES (PUSKOM)



BACKGROUND

The Centre for Composites (PUSKOM) was established on 10 June 1994. Members of the PUSKOM are academic staff with interest in the composites field from various faculties such as the Faculty of Mechanical Engineering, Faculty of Civil Engineering and Faculty of Chemical and Natural Resources Engineering. The aim of PUSKOM is to establish itself as a resource centre in the field of composites, with the following objectives:

- To promote understanding and the use of composite materials and structures.
- To provide a synergistic environment for teaching, research and service.
- To facilitate the advancement in core disciplines such as composite fracture mechanics, impact mechanics, micro-mechanics and design optimisation.

Researchers listed with PUSKOM

- Prof. Ir. Dr Ab. Saman b. Abd Kader
- Prof. Dr Mohd. Nasir bin Tamin
- Prof. Dr Azman bin Hassan (FKKSA)
- Prof. Dr Jamaliah binti Idris
- Assoc. Prof. Ir. Dr Amran bin Ayob
- Assoc. Prof. Dr Amran bin Alias
- Assoc. Prof. Ainullotfi bin Abd Latif
- Assoc. Prof. Dr Wan Aizan bt Wan Abdul Rahman (FKKSA)
- Assoc. Prof. Dr Abdul Razak bin Rahmat (FKKSA)
- Assoc. Prof. Dr Mat Uzir bin Wahit (FKKSA)
- Assoc. Prof. Dr Abdul Rahman bin Mad Sam (FKA)
- Assoc. Prof. Dr Jamalludin bin Mohd Yatim (FKA)
- Dr Mohamed Ruslan bin Abdullah
- Dr Nazri bin Kamsah
- Dr Mohd Yazid bin Yahya

- Dr Yob Saed bin Ismail
- Dr Mohamed Azlan Suhot (Razak School)
- Dr Norhayati Ahmad
- En Wong King Jye
- En Mohd Yunus Ishak (FKA)

FACILITIES

PUSKOM has access to various facilities for processing, characterisation, and simulation works as follows:

- Press machine for cold compaction
- Compression moulding machine
- Filament winding machine
- Servo-hydraulic universal testing machine
- Experimental rigs for impact test
- Strain gauging facilities
- SEM
- Optical microscope and imaging
- Sintering furnace
- Abaqus finite element analysis software

ACTIVITIES

The activities of the centre for the year 2010 included:

- Research and development
- Short courses
- Social services

Research and Development

The main activities of PUSKOM focused on research in composites material such as glass fibre-reinforced plastics (GFRP), carbon fibre-reinforced plastics (CFRP), and others. The following were some of the research projects associated with Cfc in 2010:

No	Project Title	Head Project	Sponsor	Budget Approved	Sponsor Category
1	Biomechanical analysis and implant development for total arthroplasty of the shoulder and elbow joint	Dr Mohd Yazid Yahya	MOSTI	15,000	Private
2	Development of Polyetheretherketone-Hydroxapatite (PEEK-HA) Bioactive for Load Bearing Bone Analogue	Dr Mohamed Ruslan Abdullah	MOSTI	192,600	Government
3	Terminal expansion model	Prof. Ab Saman Abd Kader	RMC	34,400	Government
4	Hydrogen assistant fuel saver	Prof. Ab Saman Abd Kader	BIP	44,000	Government

Short Courses

Courses at various levels are designed and tailored to meet the needs of industries focusing on exposure, skill and specialisations in the field of composites. Courses offered by PUSKOM are listed as follows:

- GRP application for boat building, 12-13th August 2010, Ships Classification Malaysia (SCM), Shah Alam.
- Fibre reinforced polymer composites FRPC'10, 13-15 December 2010, Cfc, UTM (Total earnings = RM 5,070.00).

Social Services

No	Date	Activity	Place
1	8-10 Mac 2010	Penyelidikan dan inovasi produk smart cooler and warmer	Centre for Composites, UTM

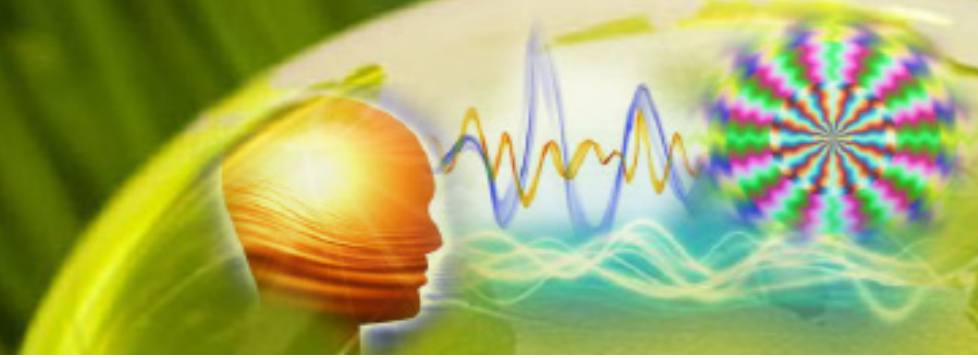
2	Jun 2010	Program kem pendidikan & khidmat masyarakat (bengkel fiberglass)	Centre for composites, UTM & Teluk Intan Perak
---	----------	--	--

Research Collaborations

MoU signed between PUSKOM and industrial/academic collaborators include:

- Advanced Materials Research centre (AMREC), SIRIM, Kulim
- Composites Technology Research Malaysia Sdn Bhd (CTRM), Melaka
- Everise Crimson Sdn. Bhd – Kenaf Industry (Natural Fibre)
- Alyeen Engineering (M) Sdn. Bhd – Composite Lighting Pole
- Dian Kreatif Sdn Bhd – Yacht and Dome
- Material Engineering, USM
- Protection and Sustainability Research Unit, UPNM
- Pesaka Astana (M) Sdn bhd, Shah Alam

INSTITUTE OF NOISE AND VIBRATION



BACKGROUND

The Institute of Noise & Vibration is a centre of excellence of Universiti Teknologi Malaysia (UTM) established in 1990 for the study and research & development of noise and vibration. The Institute undertakes contract research, consultancy and testing services, postgraduate studies, and technology dissemination of vibration, noise and acoustics. It is recognised as a referral centre by the industry and government agencies (Dept. of Environment, Dept. of Occupational Safety and Health, and Malaysian Highway Authority) for noise & vibration in the country.

Director of Institute

Prof. Ir. Dr Mohd. Salman Leong

Deputy Director

Prof. Dr Roslan Abdul Rahman

Academic Staff

Mr Mohd. Shahid Abdul Malek

Mr Che Abas Che Ismail

Mr Mohd. Yunus Abdullah

Research Officers

Mr Wong Yi Kang

Mr Guai Yeu Kae

Mr Mohd Azrieasrie Mohd Aziman

Technician

Mr Mohd. Ali Hussin

FACILITIES

The Institute has a comprehensive inventory of acoustics, noise and vibration measurement instruments for laboratory and field measurements, and state-of-the-art analytical and computing facilities. Softwares include environmental and building acoustics modelling, finite element analysis, and vibro-acoustics analysis using boundary element analysis. Facilities available for consulting services for analysis, computational and testing equipments include the following:

Measurement Instrumentations:

- IMC 2 x 8 Channel Data Loggers
- Hewlett Packard Portable 4 Channel Dynamic Signal Analyser (Model 3569A)
- Rion SA 27 One Third/ One Octave Real Time Signal Analyser
- Rion NA 27 One Third/ One Octave Real Time Signal Analyser
- Rion SA 29-E One Octave Signal Real Time Analyser
- SKF Microlog CMVA 10 Vibration Analyser
- Bruel & Kjaer Mid-Size Vibration Exciter System

Softwares:

- FAMOS On-Line and Off-Line Signal Processing Software
- MEScope Modal Analysis
- TNOISE Traffic Noise Modelling Software
- INM Ver 7.0 Integrated Noise Model FAA Aircraft Noise Modelling Software
- SYSNOISE Boundary Element Analysis Software for Vibro-Acoustics
- CADNA-A Ver 3.7 Environmental Noise Modelling Software
- In-house developed Environmental Acoustics Modelling Software (EEMUA Noise Procedure Specification Publication 140).

ACTIVITIES

The activities of the Institute for the year 2010 covered:

- Research and Development
- Consultancy Services
- Short Courses

Research and Development

Research focus of the Institute is in the areas of:

- Machinery vibrations
- Structural vibrations
- Maintenance technology and condition monitoring
- Environmental noise

Current research interests are in blade diagnosis and fault detections in gas turbines, and structural damage assessment using vibration analysis. The institute's facilities were being utilised for research projects in the year 2010 as follows:

No	Project Title	Source / Fund
1	Virtual Industrial Plant Simulation for Energy Efficiency and Optimisation	ScienceFund RM 176,000.00
2	Development of On Line Permanent Monitoring of Polymerisation Reactor RC Structure	Polyethylene Malaysia Sdn Bhd RM 400,000.00

Consultancy Services

Consulting specialisations of the Institute are in:

- Machinery vibrations
- Structural vibrations
- Environmental noise
- Building acoustics

The Institute had been active in industry-based consulting. Details of the consultation projects are shown in the following table.

Consultancy Projects in 2010

No	Client	Project	Total Earning (RM)
1	Ekovest Construction Sdn Bhd	Duta-Ulu Kelang Expressway (DUKE)	53,500.00
2	Ere Consulting Group	Supplement EIA For Proposed Development Of New Low Cost Carrier Terminal (LCCT) and Associated Works At KL International Airport	30,000.00
3	Ekovest Construction Sdn Bhd	Consultancy For Acoustic & Audio Visual Engineering (UTHM-Library)	9,521.00
4	Ekovest Construction Sdn Bhd	Consultancy For Acoustic & Audio Visual Engineering (UTHM-Library)	14,354.00
5	Sunway Construction Bhd	Proposed New Low Cost LCCT At KLIA Acoustic Consultancy Services	25,000.00
6	Ere Consulting Group	Supplement EIA For Proposed Development Of New Low Cost Carrier Terminal (LCCT) and Associated Work At KL International Airport	30,000.00
7	Ekovest Construction Sdn Bhd	Consultancy Fees For Acoustic & Audio Visual Engineering (UTHM-Library)	2,483.00
8	Maju Expressway Sdn Bhd	Noise Issue at Sri Petaling	4,000.00
9	Ekovest Construction Sdn Bhd	Consultancy For Acoustic & Audio Visual Engineering (UTHM-Faculty)	9,570.00
10	GSB Sentral Sdn Bhd	Building Vibration Monitoring and Investigation Services	47,450.00
11	Kiara Sempurna Sdn Bhd	Proposed Residential Development on Lot 3449-3453, 3469, 56116, 56117 & 56120, Rezab Tanah Melayu, Sg Penchala, Mukim Kuala Lumpur (Serene Kiara 2), Traffic Noise Measurements, assessment And Control	40,000.00
12	NSZ Affi Group Sdn Bhd	Acoustic Testing of Dewan Semai Bakti, Felda Sungai Tiang, 06750 Pendang, Kedah	3,500.00

13	MRCB Prasarana Sdn Bhd	Privatisation of Eastern Dispersal Link, Expressway Johor Bahru, Johor - Detail Noise Study and Barrier Design	63,000.00
14	Petrolaim Nasional Berhad	Vibration Measurement and Analysis for PASB K3-1204 A/B	100,000.00
15	Technip Geoproduction (M) Sdn Bhd	Ningxia Hanas LNG Project – Noise Study	60,000.00
16	Ekovest Construction Sdn Bhd	Consultancy For Acoustic & Audio Visual Engineering (UTHM – Library)	743.00
17	Ekovest Construction Sdn Bhd	Consultancy For Acoustic & Audio Visual Engineering (UTHM – Faculty)	4,785.00
18	Chemsain Konsultant Sdn Bhd	Noise Barrier Detailed Design Works for Section 1B of The South Klang Valley Expressway (SKVE)	43,500.00
19	Chemsain Konsultant Sdn Bhd	Noise Barrier Detailed Design Works for Section 1B of The South Klang Valley Expressway (SKVE)	24,000.00
20	GTP Consultant Sdn Bhd	Vibration Consultancy Services	21,000.00
21	Accom Malaysia Sdn Bhd	KL0904.01 Hijau Gasoil Solution Impac Assessment - Noise & Vibration Modeling & Assessment	41,500.00
22	Supertech Tech Ceil Sdn Bhd	Acoustic Testing of Hall	2,500.00
23	Mudajaya Corporation Berhad	KL-Kuala Selangor Expressway (KLSE)	20,000.00
24	Kapar Energy Venture Sdn Bhd	Vibration Measurements, Data Reduction Odos Analysis, including Strain Gauge Measurement Option & Expenses	200,000.00
25	Ere Consulting Group	EIA For Mass Rail Transit (MRT)	20,500.00
26	Ere Consulting Group	Supplement EIA For Proposed Development of New Low Cost Carrier Terminal (LCCT) and Associated Work At KL International Airport	30,000.00
27	Ekovest Construction Sdn Bhd	Consultancy For Acoustic & Audio Visual Engineering (UTHM – Library)	731.00
28	Ekovest Construction Sdn Bhd	Consultancy For Acoustic & Audio Visual Engineering (UTHM – Faculty)	9,569.00

29	Technip Consultant (M) Sdn Bhd	E11P-B Design Services – Noise Survey and Noise Abatement Study	153,638.00
30	Ekovest Construction Sdn Bhd	Consultancy For Acoustic & Audio Visual Engineering (UTHM – Faculty)	9,570.00
31	Digister Holding Sdn Bhd	Universiti Tun Hussein Malaysia (UTHM) Bangunan Perpustakaan (Library) Audio Visual System Tender	5,000.00
32	Edaran Tan Chong Motor Sdn Bhd	Acoustics Consultancy Services	7,500.00

AUTOMOTIVE DEVELOPMENT CENTRE (ADC)



BACKGROUND

Automotive Development Centre (ADC) is one of the centres of excellence in UTM for the promotion of automotive engineering R&D. ADC was established in 1995 and in April 1998 it was approved by the Ministry of Education. The establishment of ADC is to lead the automotive engineering R&D in Malaysia by providing facilities and conducive environment to undertake research and development projects in many sub-areas. Its other role is to foster collaboration with industries and other research institutions for the advancement of automotive engineering in UTM.

OBJECTIVES

The aim of ADC is to establish itself as a resource centre in the field of automotive engineering, with the following objectives:

- To promote research and development activities
- To provide facilities and expert advice for research and development
- To assist local industries in the wake of global competition

ADC has a pool of engineers, technologists and technicians from various disciplines, who assist in the various academic, research and consultation works. The organization of the centre is:

Director

Prof. Ir. Dr. Azhar bin Abdul Aziz

Research Consultant

Mr Zulkarnain bin Abdul Latiff

Research Officer

Mr Mohd Rozi bin Mohd Perang

Technical Staff

Mr Hishammudin bin Mohd Jamil

Mr Mohd Nazri bin Misseri



FACILITIES

- Eddy Current Dynamometer small engine Test Bed (30 kW and 70 kW).
- Fuel Consumption measurement equipment.
- Data Acquisition System (Dewetron 5000).
- 4 axis-CNC Vertical Milling (Victor VC70 with 21-i Fanuc Controller).
- 4 axis-CNC Lathe machine (Victor VT Plus-15 with OI-TC Fanuc Controller).
- Gas Chromatography (Perkin Elmer Model Clarus 500).
- M-Test 4.0 Software.
- Smoke Meter for Diesel and soot formation measurement.

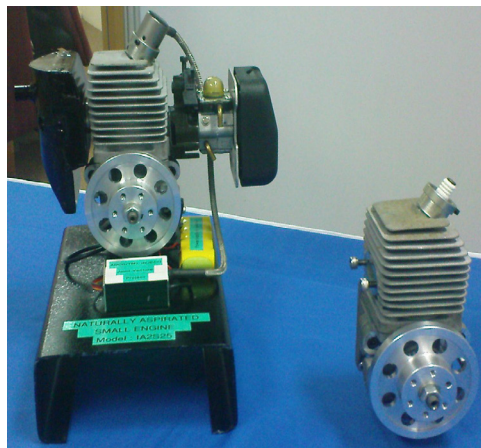
ACTIVITIES

ADC concentrates on research activities involving:

- Internal combustion engines and their sub-systems
- Alternative fuel and power plants
- Emissions characteristic
- Powertrain (engine & transmission)
- Engine turbocharger
- Vehicle dynamics
- Body structure
- Noise, vibration & harshness
- Electronics and instrumentation
- Material development
- Ventilation and air-conditioning
- Combustion simulation and modelling

National Collaborations

- Portland Energy Sdn Bhd
- SIRIM Berhad
- Acomoyo Sdn Bhd
- Malaysia Automotive Institute (MAI)
- Bahagian Udara Jabatan Bomba dan Penyelamat Malaysia
- Automotive Manufacturer Industry National (AMIN Corporation Sdn Bhd)
- Mimizu Agrotek Sdn. Bhd



Naturally aspirated small engine



Stepped piston engine

International Collaborations

- Institute De Technologie De Saint-Malo, France

Memorandum of Understanding (MOU)

- Portland Energy Sdn Bhd
- AMIN Corporation Sdn Bhd
- Mimizu Agrotek Sdn. Bhd

Promotions

No	Date	Activity	Place
1	16 th January	Exhibition : "Pecah Tanah" ceremony	UTM, MTDC
2	22-24 th January	Exhibition : My 1 Malaysia Exposition	Putra World Trade Centre, Kuala Lumpur
3	16-18 th March	Career Fair	Dewan Sultan Iskandar, UTM
4	20-27 th June	MISTI Exhibition	Persada, Johor Bahru

Consultancy Services

In the year 2010, ADC provided consultancy services as follows:

No	Industry	Consultation and Service	Date	RM
1	Sirim QAS International Sdn Bhd	The effect of engine oil treatment on gasoline engine performance, emissions, brake specific fuel consumption, and brake thermal efficiency	July	7,500
2	Sirim QAS International Sdn Bhd	Measurement of thrust produced by modified engine (Honda GX390) converted to outboard engine	August	7,500
3	PSM Student, FKKKSA: Siti Fatimah binti Mohamed Razak (Supervisor: Prof. Dr Nor Aishah Saidina Amin)	The effect of biodiesel fuel on diesel engine performance, emissions, and specific fuel consumption (5 samples of fuel)	September	1,200

4	Sirim QAS International Sdn Bhd	Evaluation of diesel engine performance, emissions, brake specific fuel consumption, and brake thermal efficiency using Decarbonization Model ER5	August-October	7,500
5	Centre For Instructor And Advanced Skill Training (CIAST)	Clean diesel technology course: diesel engine performance, emissions, and fuel consumption testing by using difference fuel	27th-28th October	5,000
6	Melabakti Sdn Bhd	Evaluation of diesel engine performance using biodiesel fuel	October-November	7,500
7	Melabakti Sdn Bhd	Bomb calorimeter testing: calorific value measurement	October	300
8	Fuel Tronic Sdn Bhd	Evaluation of Waja 1.6 (M) performance, emissions, brake specific fuel consumption, and brake thermal efficiency using fuel tronic fuel saver device on the chassis dynamometer	November	10,500
9	Melabakti Sdn Bhd	Bomb calorimeter testing: calorific value measurement	November	1,000

2	1D gas dynamic modeling of twin entry and variable geometry turbine for automotive turbochargers	Dr Srithar Rajoo	MOHE	44,000
3	Advance control for semi active suspension system using non-linear model predictive control	Assoc. Prof. Dr Pakharuddin Mohd Samin	MOHE	44,000
4	Performance characterization of a modified diesel engine using biofuel	Mazlan bin Said	MOHE	40,000
5	Feasibility study for the development of electric assisted turbocharger	Dr Srithar Rajoo	UTM/Short Term Grant	20,000
6	The investigation of centrifugal pump for cooling engine system in automotive	Dato Prof. Ir. Dr Alias bin Mohd Noor	UTM/Short Term Grant	20,000
7	Model predictive control in controlling magnetorheological semi-active suspension system	Assoc. Prof. Dr Pakharuddin Mohd Samin	UTM/Short Term Grant	20,000
8	Small unmanned aerial vehicle (SUAV)	Prof. Ir. Dr Azhar bin Abdul Aziz.	Cradle Fund	150,000
9	Cabin comfort control (CCC)	Prof. Ir. Dr Azhar bin Abdul Aziz	Proton	70,000
10	Kajian halatuju bidang kejuruteraan automotif	Prof. Ir. Dr Azhar bin Abdul Aziz	MOHE	74,000

Seminars and Short Course

No	Seminar / Course	Date	Venue
1	SEA-EU-NET, Framework Programme Sevent (FP7)-" Sharing of Information"	26 th August	PICC, Kuala Lumpur
2	Dynamometer service and calibration course	28-29th September	ADC, UTM
3	Seminar Pematuhan Akta Sistem Pengukuran Kebangsaan 2007 Dalam Penyelidikan dan Pendidikan	26 th October	DK 7, N24
4	Integration of Fuel Cells in Technical Application and Renewable Energy	24 th November	Research Management Centre, UTM

Research Grant

No	Project Title	Head of Project	Sponsor	Budget Approved
1	Air cushion vehicle: 2-seater hovercraft	Assoc. Prof. Dr Pakharuddin Mohd Samin	Soyotech (M) Sdn Bhd	15,000

MARINE TECHNOLOGY CENTRE (MTC)



BACKGROUND

The Marine Technology Laboratory was established in 1996 and officially opened by the 4th Prime Minister, Tun Dr Mahathir bin Mohamad in 1999 and was upgraded to Marine Technology Center by the Ministry of Higher Education Malaysia (MOHE) in 2003. It is the only hydrodynamic laboratory in the country and fulfils the following functions:

- Provides teaching facilities for Marine Technology undergraduate students.
- Facilitate R & D work for academic staff and post-graduate students.
- Serves the marine technology industry needs by providing ship model testing and associated services.

The MTC is a member of the International Towing Tank Conference (ITTC) since 1998.

Head of Marine Technology Laboratory
Ir Dr Mohamad Pauzi bin Abdul Ghani

Engineer
Mr Mohd Nazmi bin Ismail

Research Officer
Mr Mohd Rajali bin Jalal

Administrative Assistant (Secretary)
Ms Noor A'syikin binti Ahmad Ariffian

Technical Staff
Mr Mohd Hazri bin Ishak (Assistant Engineer)
Mr Zakaria bin Baharom (Senior Technician)
Mr Mohamed Azlan bin Arip (Senior Technician)
Mr Mohd Razef bin Tarimin (Technician)

Mr Ismail bin Abdul Shukor (Technician)
Mr Mohd Sharizan bin Abu Bakar (Technician)
Mr Ali bin Amat (Technician)
Mr Mohd Haidi bin Samsuri (Technician)
Mr Yahaya bin Abdul Ghani (Office Assistant)

FACILITIES

- | | |
|--|--|
| <ul style="list-style-type: none">• Basin• Wave probe• Wave absorber• Wave generator• Wake measurement apparatus• Towing carriage• Pitot tube current meter• Planar motion mechanism• Ship model milling machine | <ul style="list-style-type: none">• Universal primary calibrator• Self-propulsion dynamometer• Data acquisition and analysis system• Resistance and movement dynamometer• Apparatus for ship model inertia moment• Six-component force measurement system |
|--|--|

ACTIVITIES

The activities of MTC for the year 2010 covered:

- Academic Teaching and Supervision
- Research and Development
- Short Courses

Academic Teaching and Supervision

The facilities of MTC were used to conduct module experiments for undergraduate students. The facilities were also utilised by research students attached to the laboratory.

Research Students

Programme	No. of Students
PhD	4
Master	4

Research and Development

The facilities in MTC were also utilised by academic staff in their research projects.



Manoeuvrability testing of Semi-SWATH prototype

Research Projects

No	Project Title	Principal Researcher
1	Development of unmanned surface vehicle (USV)	Assoc. Prof. Dr Omar bin Yaakob
2	An ICT-based engineering, science, technology & quality awareness model to harness Malaysian fishing industry workforce	Nasrudin bin Ismail
3	A new numerical solution on banking effects for manoeuvrability of large vessel in restricted waters.	Assoc. Prof. Dr Adi Maimun bin Abdul Malik
4	Terminal expansion model for container ports developing country.	Prof. Ir Dr Ab Saman bin Abd Kader

5	Modeling of propulsion and rudder induced forces acting on deep drafted vessels in restricted.	Dr Agoes Priyanto
---	--	-------------------



USV prototype testing

Consultancy Services

MTC offers consultancy works to the maritime and maritime-related industry. Below are the companies that have sought the consultation services from the MTC expertise in 2010:

- SIRIM Sdn Bhd
- Akademi Laut Malaysia (ALAM)
- Universiti Teknologi Petronas
- Boustead Naval Shipyard

No	Project	Customer	Earning
1	Resistance Model Tests on 18M Cathedral Hull Vessel	GLOBAL Marine Design Pty. Ltd, Australia	35,000.00
2	Resistance Model Tests for 10,000 DWT and 15,000 DWT Deck Cargo Ships	Holotan – Blue Marine Design Pte. Ltd	115,500.00
3	Sewa kemudahan & peralatan menjalankan ujikaji seakeeping untuk pelajar UNIKL MIMET di Makmal Teknologi Marin	Universiti Kuala Lumpur	7,500.00

4	Resistance Model Tests on 20M Catamaran Hull Vessel	Global Marine Design Pty. Ltd. Australia	33,000.00
5	Model Testing of Gemusut Kakap Semisubmersible FPS- Upon Award of Contract	MISC Berhad	465,000.00
6	Commercial Proposal for A Single Column Model Tests	Technip (M) Sdn Bhd	20,000.00

Short Courses

No	Module	Date	No. of Participants	Earning (RM)
1	MT 011 Contract Management For Engineers	4th – 7th January	5	5020.00
2	MT 014 Small Boats Design and Survey	22nd -26th February	22	17250.00
3	MT 005 Freeboard and Tonnage Calculation	10th – 13th May	5	7908.55
4	MT 010 Ship Construction Process & Project Management	16th – 18th July	20	10,500.00

Visitors

As a centre of excellence of the university, the MTC had attracted many visitors from various organisations with a total of 54 groups of visitors in 2010. Visitors are from various industries and higher learning institution (local and foreign) and schools. Among the visitors of MTC are:

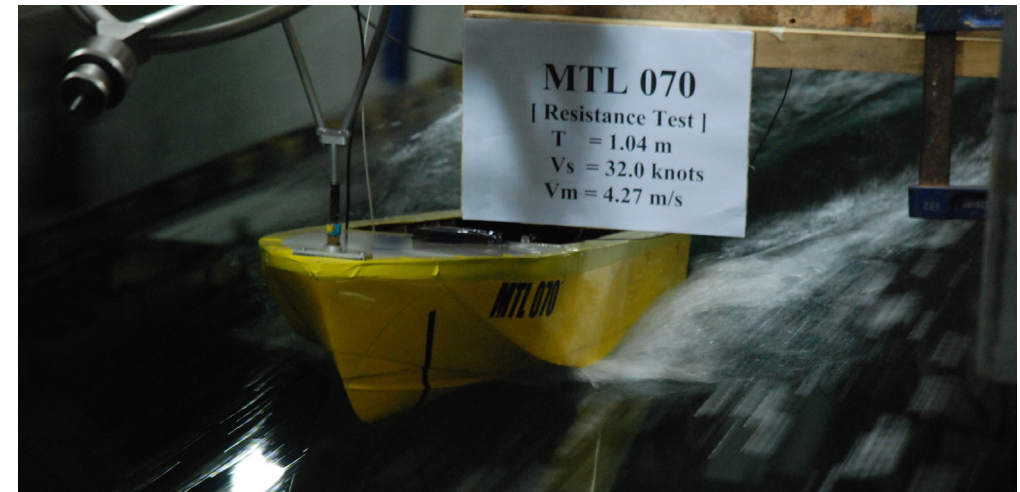
No	Organisation
1	University of Hiroshima, Japan
2	Taibah University Madinah, Saudi Arabia
3	University of Khartoum, Sudan
4	Kobe University, Japan
5	Embassy of Iran
6	Sekolah Menengah Agama 10 Padang, West Sumatera, Indonesia
7	University Madinah Munawwarah, Saudi Arabia
8	IOCS ASIA Pte Ltd
9	Cameron International
10	Universiti Indonesia

11	Ngee Ann Polytechnic, Singapore
----	---------------------------------

Exhibition, Promotion and Conference

The MTC has participated in a few major exhibitions throughout the year 2010. The purpose of participating these exhibitions includes: sharing of expertise, services and research products, as well as promoting the laboratory's services to the local and international maritime industries.

No	Exhibition / Conference	Date
1	Malacca River Festival	4th – 6th June
2	MISTI Exhibition 2010	22nd – 27th June
3	World Maritime Day 2010 Festival	17th – 18th October
4	Asia Pacific Offshore Conference (APOC) 2010, Berjaya Time Square Hotel and Conference Centre, KL	13th – 14th December



Ship model testing

MATERIALS SCIENCE LABORATORY



BACKGROUND

The Materials Science Laboratory has established itself as one of the major teaching and research laboratories in the Faculty of Mechanical Engineering (FME). It provides elemental analysis, characterisation, and testing of material samples not only for students and researchers within the faculty and university but also to the industry. It supports the needs of local industries through research collaboration, consultancy work and manpower training.

Head of Laboratory
Dr Jasmi Hashim

Technical Staff
 Mr Zainalabidin bin Abbas (Senior Technician)
 Mr Ayub bin Abu (Senior Technician)
 Mr Jefri bin Samin (Technician)
 Mr Mohd. Azri bin Saiman (Technician)
 Mr Adnan bin Ali (Technician)
 Mr Zam Zam bin Wahid (Laboratory Assistant)

FACILITIES



Metallurgical microscopes



XRD2 Equipment

Equipment Available at Materials Science Laboratory

Area	Equipment
Sample preparation	Linear precision cutting machine Hot mounting presses Grinding & polishing machines Electropolishing & electroetching
Material characterisation	Field emission scanning electron microscope (FESEM) Scanning electron microscope (SEM/EDX) X-ray diffractometer (XRD) X-ray fluorescence (XRF) Glow discharge spectrometer (GDS) Image analyzer system Metallurgical microscopes Stereo microscope
Mechanical testing	Impact testing machine High temperature creep test machine Low temperature creep test machine Digital Vickers hardness tester Micro hardness tester Hardness tester for polymer
Corrosion testing	Electrochemical corrosion measurement Cyclic salt spray cabinet Oxidation furnace
Powder metallurgy	Ball mill Sieve shaker Cold isostatic press machine Sintering furnace
Others	Foundry & heat treatment apparatus Pyrometer (density measurement) Microbalance Coat sputter Electroless plating equipment

ACTIVITIES

The activities of the Laboratory for the year 2010 covered:

- Academic teaching and supervision
- Research and development
- Consultancy services
- Short courses

Academic teaching and Supervision

The facilities in this laboratory were employed to conduct module experiments (SME 1902, title : specimen preparation) for undergraduate students. The facilities were also utilised by postgraduate students attached to this laboratory.

Research Projects

No.	Research Area	Principal Researcher
1	The bonding interface morphology of nanocrystalline diamond deposited on tungsten carbide using hot filament chemical vapour deposition technique	Professor Dr Esah Hamzah
2	Lost foam casting of aluminium alloys	Assoc. Prof. Dr Ali Ourdjini
3	Investigation of the effect of Ag and Cu contents and doping elements in lead-free solders on intermetallics formed on ENBIG and immersion tin (ImSn) finishes	Assoc. Prof. Dr Ali Ourdjini
4	The effect of shell mould parameters and granular size on heat transfer rate of in-situ melted magnesium investment casting	Assoc. Prof. Dr Ali Ourdjini
5	Direct nanocrystalline nickel coating of Al surfaces by electrodeposition	Assoc. Prof. Dr Mohammad Sakhawat Hussain
6	Direct nanocrystalline nickel plating on difficult to plate metals by high speed electroforming	Assoc. Prof. Dr Mohammad Sakhawat Hussain
7	Nanoscale microstructural characterization Of Cu-Al-Ti metallic Multilayer coatings on alumina substrate using PVD method	Dr Muhamad Azizi Mat Yajid
8	Study on the appropriate TiO ₂ layer for the coating of Hydroxyapatite on titanium alloys by high velocity oxy-fuel (HVOF) spray proces	Dr Raden Dadan Ramdan
9	Nanocrystalline diamond (NCD) deposited on titanium alloy for bio-medical applications	Dr Raden Dadan Ramdan

Consultancy Services

The Materials Science Laboratory provides various consultancy services to the following organisations:

No	Client	Project	Earning (RM)
1	INTEL Technology Sdn Bhd		6,000.00
2	Antara Steel Mills Sdn Bhd	Analysis of Corrosion	800.00
3	AMTECH Chemical Sdn Bhd BBU	XRD Analysis	600.00
4	SHIMANO Components Sdn Bhd	FESEM & EDAX	1,100.00
5	TAIKO Electronics (M) Sdn Bhd	FESEM & EDAX	500.00
6	SHIMANO Components Sdn Bhd	SEM Analysis	3,000.00
7	SHIMANO Components Sdn Bhd	EDX & SEM Analyis	450.00
8	Perusahaan Sadur Timah Malaysia Bhd (PERSTIMA BHD)	EDX & SEM Analyis	850.00
9	THOSCO TREATECH Sdn Bhd	Hardness Testing	950.00
10	Perusahaan Sadur Timah Malaysia (PERSTIMA BHD)	EDX & SEM Analyis	400.00
11	TESTLAB Service and Supplies BBU		600.00
12	Pengkalan Offshore Sdn Bhd		

Short Course

The Materials Science Laboratory organised a short course on "Destructive and Non-Destructive Testing" for Polytechnic staff, 9-12 Nov. 2010.



Sample preparation

PRODUCTION LABORATORY

BACKGROUND

The Production Laboratory was established to assist the Faculty in the process of teaching and research in the area of manufacturing. It provides CAD/CAM/CNC/CAE services to students and researchers within the Faculty and University as well as to the industries. The Production Laboratory was being listed as worldwide research centre in the latest Wohlers Report: Additive Manufacturing State of the Industry in year 2010.

Head of Laboratory

Assoc. Prof. Hamidon bin Musa
Mr Rozaimi bin Saad

Technical Staff

Mr Sazali bin Ngadiman (Senior Technician)
Mr Aidid bin Hussin (Senior Technician)
Mr Azizi bin Safar (Technician)
Mr Ali bin Duki (Technician)
Mr Sukari bin Mamat (Laboratory Instructor)
Mr Maizan bin Sulaiman (Laboratory Instructor)
Mr Roslin bin Yasak (Laboratory Instructor)
Ms Siti Norbiha binti A.Aziz (Laboratory Instructor)

FACILITIES

The following equipment has been procured in 2010:

- CNC 3-axis Vertical Milling Machine (manufacturer: DMG)
- CNC Coordinates Measuring Machine (manufacturer: Ziess)

Facilities available at the Production Laboratory are as follows:

- Coordinate measuring machine
- 5-axis CNC milling machine

- 3-axis CNC milling machine
- CNC turning machine
- Die sink CNC EDM
- Wire-cut CNC EDM
- CNC grinder
- Computer integrated manufacturing system
- CNC injection moulding machine
- Rapid-prototyping machine (FDM)
- Conventional ultrasonic machine
- Microscopes & imaging software KS300 & Video Test 4
- Unigraphics NX3 software
- CATIA software
- CNC simulator MTS software
- MOLDEX software
- Chemical vapour deposition facility
- Ultra precision turning and grinding machine
- Surface roughness machine



Computer integrated manufacturing (CIM) facility

- Temperature device
- Fine scraped plate
- Pure water system
- Benson ultrasonic cleaner

ACTIVITIES

The following training/courses have been conducted for FME staff:

- Auto Desk Mould Flow
- CAD IT (DEFORM)
- Unigraphics NX 7 Software (CAD/CAM/CAE Software and System)
- Finite Element Course
- Training related to receipt of new computers for CAD/CAM studio

The following training/courses have been conducted by the Production Laboratory staff:

- Polytechnique students training
- Students practical training on CNC Turning, CNC Milling and Uni-graphic
- Laboratory Module SMR 4932
- Laboratory Module SME 1902

Additionally, most of the Production Laboratory staff have been involved in MGGU & Technology Exhibition organized by MOSTE.

Research and Development

Apart from various final year undergraduate projects, the Production Laboratory is involved in the following postgraduate research projects:

Research Projects

No	Research Area	Researcher
1	Tool Wear and Surface Roughness (CNC Milling)	PhD
2	Diamond Coating on Tungsten Carbide (HFCVD)	PhD
3	Diamond Coating on Titanium	PhD
4	Performance Evaluation in Drilling of Inconel 718	PhD
5	Machining Investigation of Medium Density Fibre Board (MBF)	PhD
6	Tool Wear and Surface Roughness (CNC Turning)	Master
7	Design and Development of Grinding Head for Ultra Precision Machining	Master



Rapid prototyping of human face



Various product prototypes

Consultancy Services

The following consultancy projects have been undertaken:

- Engineering Workshop Training on CMM for Universiti Kuala Lumpur.
- Course Lecture and Facilitator for Mechanical Training Solution Sdn Bhd.
- Surface Flatness of components using CMM for Epcos Sdn Bhd.
- CMM measurements of Pncur models for Texchem-Pack (Johor) Sdn Bhd.

AERONAUTICS LABORATORY



Engineer

Mr Abd. Basid Abd. Rahman

Technical Staff

Mr Azman Salam

Mr Johari Haron

Mr Mohd. Mahathir Mohmad

Mr Akmal Hisyam Mohamad

Mr Sallahuddin Jema'in

Mr Zurueng Ajim

Clerk

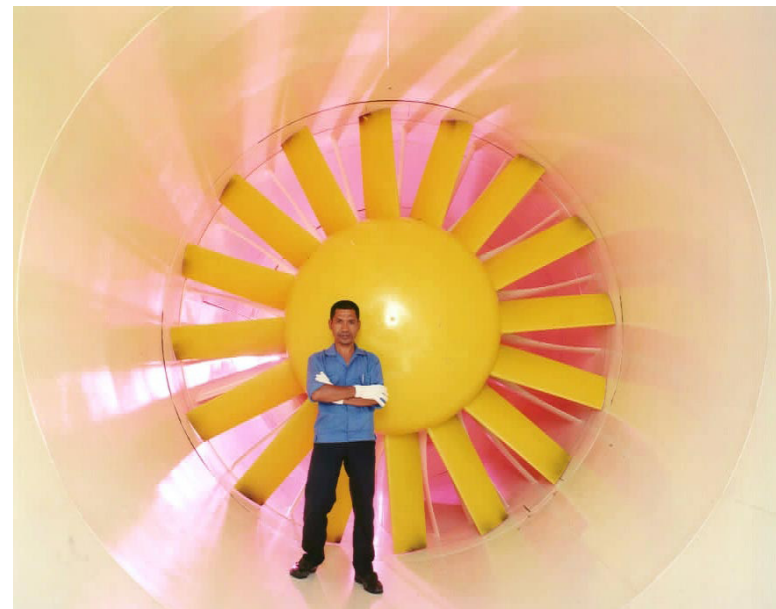
Mr Hamidah Ab.Hamid

BACKGROUND

The Aeronautics Laboratory (Aerolab), as one of the FME's laboratories of excellence, is well-established of its state of the art "Universiti Teknologi Malaysia – Low Speed Tunnel" (UTM-LST), the only one of its kind in the country. This facility became operational in June 2001 and was officially inaugurated on 4th July 2005 by the present Prime Minister of Malaysia, YAB Dato' Seri Mohd Najib Tun Abdul Razak. Aerolab is a registered member of the worldwide Subsonic Aerodynamic Testing Association (SATA), since 2002. The laboratory aims to be the focal point and centre of excellence in wind tunnel testing in Malaysia and the Asia-Pacific region.

Head of Laboratory

Assoc. Prof. Ir. Dr. Shuhaimi Mansor



Fan of Universiti Teknologi Malaysia–Low Speed Tunnel (UTM-LST)



Aerolab technicians

FACILITIES

The main laboratory facility is the low speed wind tunnel (UTM-LST) with excellent flow quality. Other facilities under this laboratory include the Rocket Propulsion Laboratory – complete with a blast-proof room for static rocket motor testing, the Avionics Laboratory, the Gas Turbine Minilab, machine shop facilities and the Computer Laboratory.

The testing capability comprises:

- Aircraft Aerodynamics
- Ground Vehicle Aerodynamics
- Wind Engineering & Industrial Aerodynamics

ACTIVITIES

In year 2010, vast amount of activities have been carried out within the Aerolab, including researches, meetings, visits, and consultancy services, with a total of approximately 70 activities have been recorded.

Research Projects

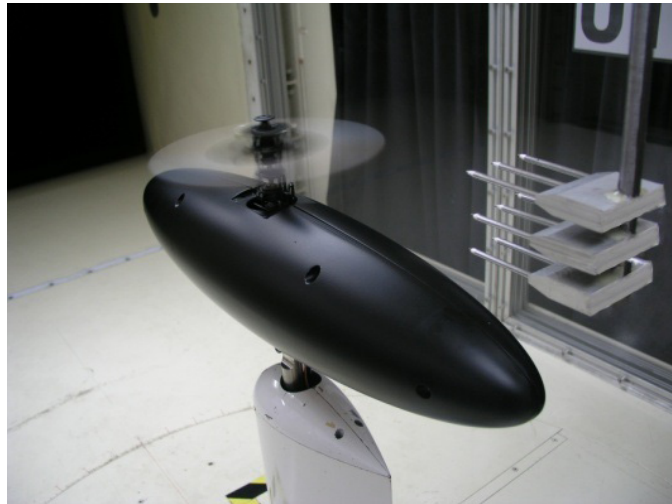
No	Research Title	Sponsor
1	An Investigation of Helicopter Tail Shake Phenomena	ScienceFund
2	Development of Wind Turbine	UTM-IR
3	Development of A Database for Biofuel Combustion Properties	ScienceFund
4	Development of Microstrip Lines with Special Deformation	ScienceFund
5	An Investigation of Transient Aerodynamics Effect on Vehicle Crosswind Sensitivity	FRGS



Group members of ScienceFund project on aerodynamic research

Consultancy Services

In 2010, the laboratory has successfully secured 12 consultancy services, amounting to approximately RM263k (inclusive of the payment for wind tunnel model making).



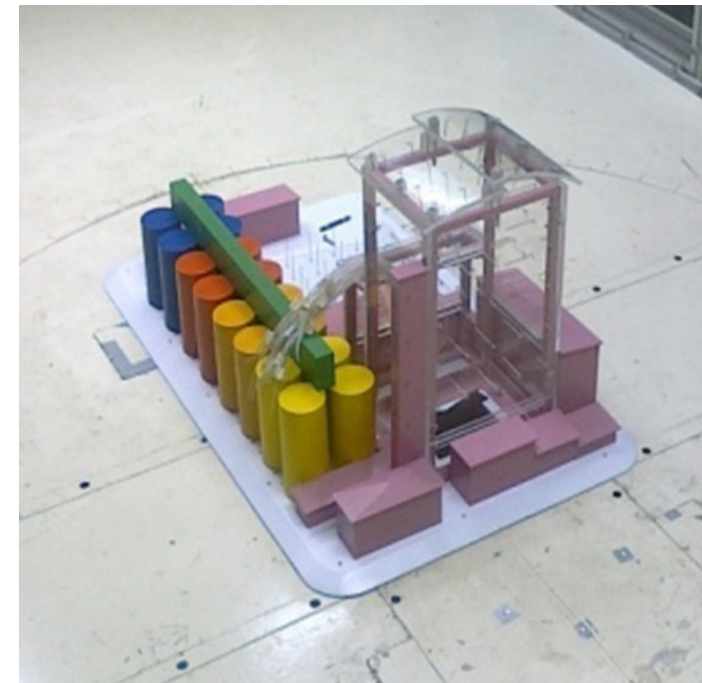
Research on unsteady wake



Consultancy service on a semisubmersible offshore platform

Aeronautics Laboratory Consultation Projects 2010

No	Client	Description	Earning (RM)
1	Universiti Malaya	Wind Turbine Aerodynamics Testing	2,000.00
2	ASL Electronic Sdn Bhd	Street Lantern Wind Tunnel Testing	4,000.00
3	Universiti Malaya	Lifting Body Aerodynamics Testing	2,000.00
4	Ecobuilt (M) Sdn Bhd	Green Shop Building Wind Tunnel Test	21,120.00
5	Vestas Technology R&D Technology Pte. Ltd.	2D Airfoils Wind Tunnel Test (Part I)	23,903.80
6	Unmanned Systems Technology Sdn Bhd	Unmanned Aerial Vehicle (UAV) Aerodynamics Testing	20,000.00
7	Nexus Solid-State Lighting Sdn Bhd	Street Lantern Wind Tunnel Testing	5,000.00
8	Salutary Avenue Mfg. Svc. Sdn Bhd	Gas Turbine Filter Performance Test	3,050.00
9	CTRM Aero Composites	CFD Simulation for Autoclave Optimization	6,000.00
10	MISC Berhad	Semi-Submersible FPS (Off-shore Platform) Wind Tunnel Test	152,900.00
11	Unmanned Systems Technology Sdn Bhd	Unmanned Aerial Vehicle (UAV) Aerodynamics Testing	20,000.00
12	Nexus Solid-State Lighting Sdn Bhd	Street Lantern Wind Tunnel Testing	3,500.00



Pressure distribution measurements on Green Shop building



Consultancy service on Unmanned-Aerial-Vehicle

Short Courses

Aeronautics Laboratory also involved actively in short course offer, and a total of 3 courses had been successfully conducted last year, generating a total income of RM 2900.

No	Date	Course Name	No. of Participants	Earning (RM)
1	23 – 24 Jan	Introduction to Fluent (CFD)	15 UTM students	750.00
2	20 & 21 March	Introduction to Fluent (CFD)	15 UTeM students	750.00
3	9 - 10 Oct	Introduction to CFD - ANSYS Fluent	14 UTeM students	1,400.00

Industrial Collaboration and Networking

No	Focus Area	Industry
1	Aerospace System & Flight Simulation	<ul style="list-style-type: none"> Ikramatic System Sdn Bhd Akriz Sdn Bhd

2	Vehicle Aerodynamics	<ul style="list-style-type: none"> Proton Bhd Lotus Racing
3	Rocket Technology	<ul style="list-style-type: none"> Agensi Angkasa Negara
4	Industrial Aerodynamics	<ul style="list-style-type: none"> MISC Berhad Vestas Technology R&D Nexus Solid State Lighting Sdn Bhd Ecobuilt (M) Sdn Bhd Salutary Avenue Mfg. Sdn Bhd
5	Aircraft Design	<ul style="list-style-type: none"> Unmanned System Technology Sdn Bhd (UST) Hiyoh Aircraft Mfg Co. Ltd. Aremeca Sdn Bhd Strand Aerospace (M) Sdn Bhd Spirit Aerosystem (M) Sdn Bhd CTRM Aero Composite Sdn Bhd

Visitors

As a centre of attraction, Aerolab received more than 30 visits in 2010. Among the visitors were: delegations from international universities, organisations, government officers and school students.



AKRiZ Visit to Aerolab

AUTOMOTIVE LABORATORY



BACKGROUND

The Automotive Laboratory is one of the key learning and research centres under the roof of the Faculty of Mechanical Engineering (FME), University Teknologi Malaysia (UTM). The Automotive Laboratory, more commonly known in UTM as AUTOLab, is an integral part of the Department of Automotive Engineering (DAE), which was officially established in December 2007. AUTOLab is equipped with facilities to assist in the teaching and learning activities of undergraduates, as well as the research projects of postgraduates. The range of facilities encompasses comprehensive engine & vehicle testing, vehicle dynamic testing, transmission system testing, braking system testing, suspension system, primary and alternative fuel testing and structural testing.

AUTOLab works hand-in-hand with the Automotive Development Centre (ADC), which is the commercial arm under the FME, to provide consultancy and testing services to both local and international industries. AUTOLab, together with DAE, has established good relationship with local and international institutions, spanning from education to car makers. All in all, AUTOLab is positioned to contribute positively towards the development of knowledge and human capital, especially those that are related to Automotive Engineering.

Head of Laboratory
Dr Srithar Rajoo

Technical Staffs
Mr Shamsuri Ehsan (Senior Technician)
Mr Subki Shamsudin (Senior Technician)*
Mr Mohammad Abdul Sadid Sidik (Technician)
Mr Husaini Mohamad Maskak (Technician)
Ms Noor Aniza (Lab Tutor)

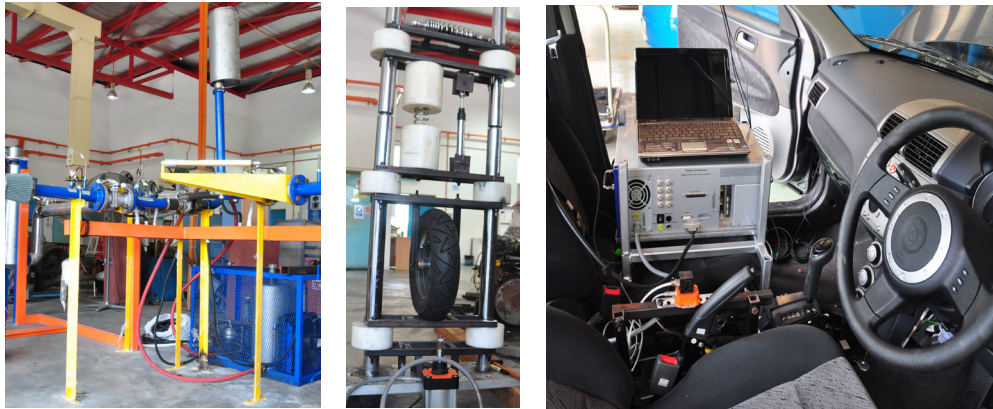
*Mr Subki Shamsudin has won UTM excellent service award in 2010.



The staff of AUTOLab

FACILITIES

- Engine dynamometer
- Non-contact speedometer
- Chassis dynamometer for cars and motorcycles
- Smoke and torque meters
- Gas chromatography equipment
- Emission analyser
- Super-flow bench
- Engine diagnostic scanner
- Vehicle dynamics testing equipment
- CNC milling machine
- Turbocharger Test-Rig
- Transmission Test-Rig
- Vehicle Dynamics Telemetric Instruments
- Chassis Engine Dynamometer



(a)

(b)

(c)

Some of the AUTOLab facilities: (a) turbocharger test rig; (b) quarter car suspension system; (c) vehicle dynamics testing equipment

ACTIVITIES

Research and Development

The laboratory facilities are utilised for staffs' research projects, such as:

No	Project title	Principal Researcher
1	CVT and transmissions	Assoc. Prof. Dr Kamarul Baharin Tawi
2	Vehicle Dynamics	Assoc. Prof. Dr Pakharuddin Mohd Samin
3	Braking system	Dr Abdul Rahim Abu Bakar
4	BioDiesel	Dr Wira Jazair
5	Turbocharger Flow Modelling, Electric Turbo Development	Dr Srithar Rajoo

Training and Short Courses

A number of workshops and short courses were organised by the laboratory for members of the Faculty as well as external organisations.

Trainings/Workshops

- Lab Module IV : engine testing, suspension system , braking system and bio-diesel.
- Workshop for SMV students : Engine & Transmission overhaul

Short Courses

- Braking System
- Clean Diesel Technologies

Other Activities

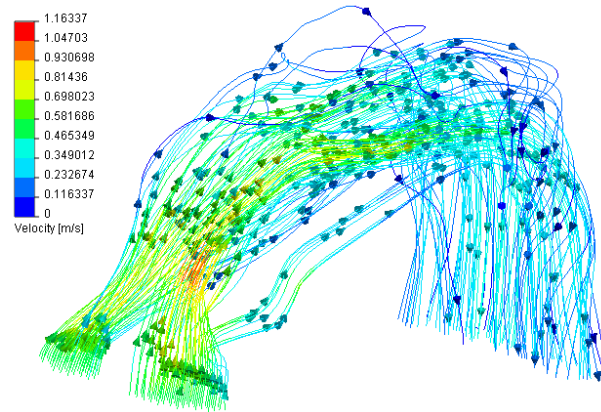
The laboratory staff also carried out various other activities throughout the year 2010 including:

- Academic teaching and project supervision
- Formula SAE car building by students
- Perodua Eco-Challenge: Car modifications
- Postgraduate activities: test equipment development, testing and modeling
- 4W drive vehicle development & upgrading – collaborate with TRA
- In-house facility development: Boosted vehicle, vehicle suspension and braking System
- Industrial visit to United States of America (USA) – for facility development in collaboration with TRA
- Student attachment from ISAT France



Turbocharged car in AUTOLab

COMPUTATIONAL FLUID MECHANICS LABORATORY



BACKGROUND

Computational Fluid Mechanics (CFM) group gathers the expertise of Computational Fluid Dynamics Researchers under one roof covering areas of biomedics, tribology, energy, lubrication, combustion, heat transfer, turbo machinery and other computational fluid mechanics associated subjects. The CFM laboratory functions as a research facility rather than a teaching laboratory. The group activities are funded by the researchers' grants and various government agencies such as MOSTI and MIMOS. With the computing facilities operated officially since February 2009, the group is working to cultivate their capabilities to lead the interdisciplinary evolutions beyond the conventional research paradigm.

Vision

To be the leading national centre in computational fluid mechanics.

Mission

Integrating mathematics, applied sciences and computing for engineers to experience the sense of simulated reality of fluid flow phenomena.

Head of CFM Group

Assoc. Prof. Dr Kahar Osman

Academic Staff

Assoc. Prof. Dr Normah Mohd. Ghazali (Microchannel Heat Transfer and Thermoacoustics)

Assoc. Prof. Dr Abu Hasan Abdullah (Turbomachinery)

Dr Jamaluddin Md Sheriff (Piv/Multiphase)

Dr Nor Azwadi Che Sidik (CFD)

Dr Syahrullail Samion (Tribology)

Dr Mohd Foad Abdul Hamid (Heat Transfer)

Mr Mohd Zubil Bahak (Lubrication)

FACILITIES

The CFM research group has established a laboratory at E05, Faculty of Mechanical Engineering in Johor Bahru Campus. The laboratory is used mainly for the workspace of research activities, and as a conducive space for group meetings and presentations.

Research equipment in CFM include 12 high-performance computers, which are essential for the exhaustive computation activities in fluid flow simulations. In 2010, the group managed to secure eight new computers with high end specifications to accommodate the extensive computation requirements of the newly acquired research projects. Besides, the construction of computing cluster with a local server was also initiated in 2010, and is currently under the supervision of Assoc. Prof. Dr Abu Hassan Abdullah.

The research works are also supported by the licensed softwares, including the computational software (like Matlab, FLUENT, and EFD), the engineering drawing software (i.e., Solidworks), and the biomedical modelling software (MIMICS). These softwares greatly facilitate the research group in the modelling of fluid flow and the development of computing algorithm.

ACTIVITIES

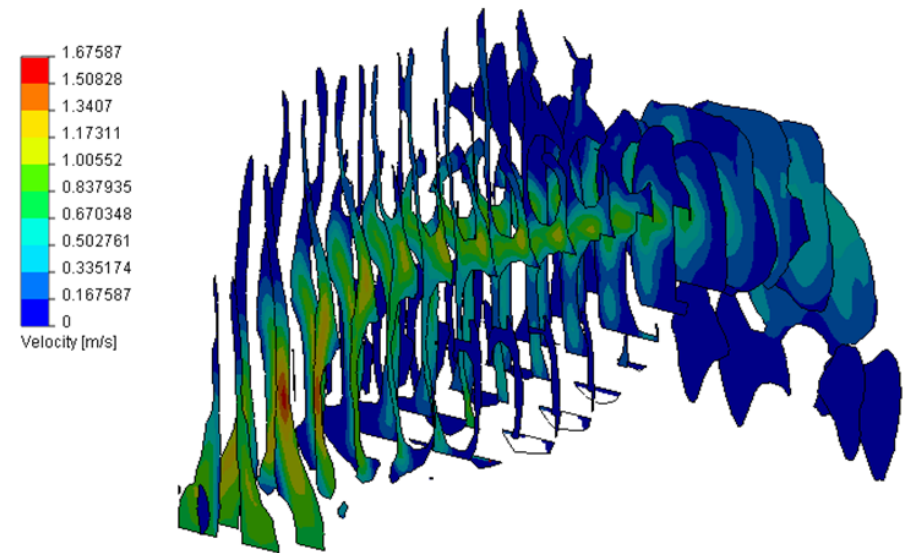
Research and Development

CFM concentrates on a number of research areas of interests:

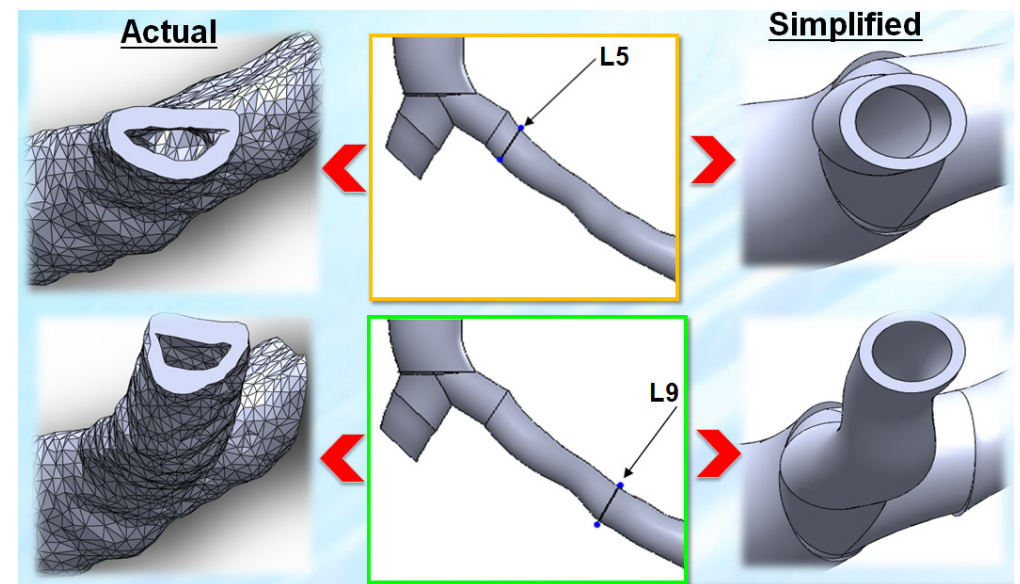
- Biomechanics
- FSI analysis
- Lubrication
- CFD Software Development

A number of existing research projects were actively ongoing while new project grants have been approved in year 2010, with substantial increase in number of student group members joining to carry out the projects. These grants made up a total of RM 842,200. Some of the projects were established in collaboration with or outsourced from other local research groups such as Mediteg, and with other institutions (HUSM, HUKM, UIAM) mainly in biomechanics. The project grants approved during the year were:

No	Project	Amount of Funding (RM)
1	Development of Three Dimensional Modeling and Analysis of the Cerebrospinal Fluid Flow in the Brain	190,800.00
2	Three Dimensional Reconstruction and Fluid Flow Simulation for Pre- and Post- Functional Endoscopic Sinus Surgery	258,200.00
3	Analysis of Bio-based Lubricant Behavior for Elastohydrodynamics Lubrication	128,500.00
4	Development of Novel Implant with Micropatterns to Improve Wear Resistance in Load Bearing Joint of the Hip and Knee	190,000.00
5	Fluid Structure Interaction Method For Detection of Structural Vibration Due to Fluid Flow	34,400.00
6	Controlling Sliding Friction Force by Micro-pattern Tool Surface in Cold Work Extrusion	40,000.00

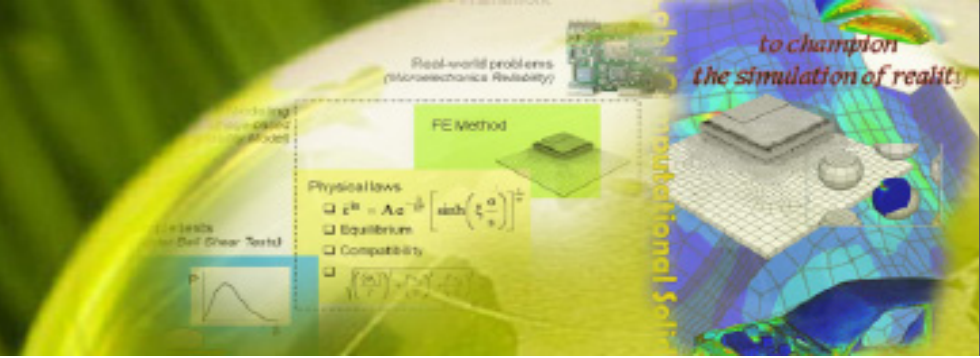


CFM modelling for FESS



Cross-sectional view on actual and simplified trachea model

COMPUTATIONAL SOLID MECHANICS LABORATORY



BACKGROUND

The Computational Solid Mechanics Laboratory (CSMLab) was initiated based on industry requests to rigorously address reliability issues using Finite Element Method (FEM). Initial and continuous financial supports are awarded by Intel Technology, Penang through Intel Research and Fellowship Grants since 2003. Since then, the interest in computational solid mechanics drastically increases as reflected in numerous finite element projects solved using FEM on different topics. The research and design (R&D) activities at CSMLab were launched on 23rd March 2006 by Prof. Dr Md. Nor Musa, Dean of Faculty of Mechanical Engineering, UTM. Prof. Dr Mohd Nasir Tamin is currently the Head of CSMLab.

FACILITIES

- 9 seats of Abaqus FE Software
- 7 seats of Hyperworks Software
- 3 seats of LS-DYNA Software
- 15 high-end desktop computers with LAN
- Access to Abaqus FE Software and Hyperworks at KnowledgeGrid Malaysia, MIMOS Bhd.
- Access to Abaqus FE Software and Hyperworks at High Performance Computer (HPC), CICT, UTM
- Access to facilities at the Mechanics of Materials Laboratory, and Materials Science Laboratory, UTM

ACTIVITIES

The activities of CSMLab for the year 2010 cover:

- Academic teaching and supervision
- Research and development

Academic Teaching and Supervision

- 6 Ph.D. candidates
- 8 M.Eng. candidates
- 6 B.Eng. students (Final Year Project)
- 6 academic staff
- 1 Lab Manager

Research and Development

1. A joint venture project between UTM-PROTON-other institutions to develop a new concept car with fuel optimization
2. Springback Of Thin Walled Plates Due To High Forming Rates
3. Unified Constitutive Material Model For Deformation Of Thin-Walled Structures Under High Straining Rates
4. Anisotropy Effects On Drawability Of Deep Drawing Autobody Sheet Metal Parts
5. Fatigue Life Prediction Of Automotive Spring House
6. Analysis On The Deformation And Damage Of Spot-Welded Sheet Metals
7. Damage Mechanics Strain-Based Methodology For Structural Component Under Dynamic Loading
8. Design And Application Of Multiphase Steel Materials For Components Subjected To Fatigue Loading
9. Creep-Rupture Behaviour Of Austenitic Stainless Steel Foils At High Homologous Temperature Levels
10. Progressive Damage In Sn-4ag-0.5cu Solder Joints During Flexural Fatigue Of A Bga Package
11. Coarsening Effect Of IMC Particle On Mechanical Behaviour Of Sac405 Solder Interconnects
12. Dynamic Fracture Of Solder Joints During Board Level Drop Test
13. Moisture And Hygro-Swelling Strain Distribution In PCB
14. Damage In Laminated Composite Under Low Velocity Impact
15. Damage Mechanics Of Fibre Reinforced Polymer (FRP) Laminated Composites

TEACHING LABORATORIES



BACKGROUND

The teaching laboratories are well-equipped to address the demands of teaching in Mechanical Engineering and related fields and complemented with a total staff of 44 technical assistants, instructors and technicians.

There are 17 teaching laboratories and they are under the responsibility of a laboratory manager. An academic coordinator is also appointed for each laboratory to act as a liaison between the laboratory management and the academic staff.

Laboratory Manager

Assoc. Prof. Dr Muhamad Zameri b. Mat Saman

Laboratory Manager's Office

Mrs Rohana Sarip (Assistant Engineer)

Ms Faezah Zianal Abiden (Technician)

Mrs Noor Izan Abd. Ghani (Administrative Assistant)

FACILITIES

No	Laboratory	Coordinator	Technician
1	Experimental Techniques	Assoc. Prof. Dr Intan Zaurah Mat Darus	Hamidah Hasan
2	Fluid Mechanics	Dr Syahrullail Samion	Sahlan Sadiron, NurulJannah Alias and Muhammad Zaki Ismail
3	Combustion	Zulkarnain Abd. Latiff	Rosli Ismail and Mohd Zarimi Ibrahim

4	Thermodynamics	Zulkarnain Abd. Latiff	Suhaimi Ishak, Abdul Halim Abd. Rahman, Mohamad Hanafi Long, Mohd Shukri Ramli, Md Rosli Jumaat and Sukri Hj. Osman
5	Mechanics of Machine	Abd. Rahman Musa	Zulkefli Adnan, Siti Farawahida Md. Nor and Dorani Chik
6	Mechanics of Material and Structure	Ahmad Zafri Zainuddin	Abd. Malik Husin, Mohd Zakaria Awang and Mohd Hidir Hashim
7	Noise and Vibration	Prof. Dr Roslan Abdul Rahman	Elfandy Jamaluddin and Mohd Nurfairuz Azman
8	System and Control	Dr Tang Howe Hing	Abdul Rahim Mohamad, Darulhildi Darsani and Muhammad Zharif Muhamad
9	Metal Fabrication	Assoc. Prof. Zainal Abidin Ahmad	Othman Kadam and Mohd Iskandar Jemain
10	Industrial Engineering	Assoc. Prof. Dr Wong Kuan Yew	Kamarulzaman Adam and Zakaria Abd. Talip
11	Metrology	Assoc. Prof. Dr Mat Rebi Abd. Rani	Khalid Sukhairi and Mohd Fairus Said
12	Metal Forming	Mohd Faridh Ahmad Zaharuddin	Khairulnisan Azmil, Syarizam Abdul Rahman and Mohd Khir Mohd Noordin
13	Foundry	Assoc. Prof. Dr Mohd. Hasbullah Idris	Wan Mazian Wan Abdullah, Abdul Saleem H. Kunyoo and Mohd Zul Azali Zulkefli
14	Design Studio	Badri Abd Ghani	Mohd Mazlin Mohd Mansur
15	Central Store	-	Abd. Rased Majid and Samsudin Bahrin

16	Maintenance Room	-	Mohd Faisz Yang Ahmad and Ahmad Faizal Harun
17	Shop Machine	Zulkepli Hj. Muhamad	Jaafar Rusmin, Mohd Sallehuddin Shaharum, Mohd Salim Salleh, Norazwan Abdul Rahman and Norzaidatul Akmal Mat Yasin

ACTIVITIES

The activities of the laboratory for the year 2010 covered:

- Academic teaching and supervision.
- Staff development.
- Consultancy services.

Academic Teaching and Supervision

Teaching laboratories are places where the undergraduates are introduced to hands-on experience in Mechanical Engineering theory and practice. This experience is obtained through the laboratory-based courses and through experimental modules in their senior year. In the experimental modules, students are encouraged to pursue their own ideas in solving engineering problems at hand and the laboratories are set up to act as a flexible framework, holding student workgroups to help them bring their ideas to reality.

The teaching laboratories were also used for the industrial training of students from various local higher institutions as follows:

- Politeknik Kota Melaka, Melaka
- Politeknik Johor Bahru, Johor
- Politeknik Port Dickson, Negeri Sembilan

The duration of the training varied from 1 to 6 months and the laboratories involved were machine shop, production laboratory, metal fabrication laboratory and metal forming laboratory. The students were assisted by the technicians and were under the supervision of the laboratory manager. Certificates were awarded to those students who have completed their industrial training programmes successfully.

Staff Development

Staff from the teaching laboratories also attended various courses throughout the year 2010, which have been organised by the following agencies and organizations:

- CTRM Automotive Sdn Bhd
- Puspatri, Pasir Gudang
- QT Instrument Malaysia
- Fluke South East Asia Pte Ltd
- Setianas Sdn Bhd
- Dewetron and Listler
- i-Gentech Sdn Bhd
- F.I.T Centre Sdn Bhd

Consultancy Services

No	Client	Project / Laboratory	Earning (RM)
1	EPCOS Sdn Bhd	Measurement on Electronic Components/Mak. Metrologi	300.00
2	EPCOS Sdn Bhd	Makmal Metrologi	400.00
3	Universiti Kuala Lumpur MITEC	Makmal Metrologi	13,000.00
4	EPCOS Sdn Bhd	Measurement on Electronic Components/Mak. Metrologi	200.00
5	Mizuho Precision Engineering (M) Sdn Bhd	Tensile Test	1,050.00
6	Mizuho Precision Engineering (M) Sdn Bhd	Tensile Test	750.00
7	Syarikat Meranti Gemilang Sdn. Bhd.	Strength of Materials	15,000.00

Teaching Laboratories Visitors

No	Organisation	Date
1	UNIKL Pasir Gudang	27 January 2010
2	Taibah University Madina	2 August 2010
3	SIRIM Training Services	16 August 2010

ENGINEERING COMPUTING LABORATORY



BACKGROUND

The Engineering Computing Laboratory (ECL) provides academic computing services for the Faculty of Mechanical Engineering (FME).

IT Manager

Dr Istas Fahrurrazi bin Nusyirwan
 Asst. Vocational Training (J36)
 Mr Md Fabilah bin Mat Esa
 Asst. Information Technology (F29)
 Mrs Rafidah binti Mohamad

Technicians (J17)

Mr Mohd Shah bin Sahri
 Mr Mohamed Hafis bin Samsualdin
 Ms Halimah binti A. Razak

Office Assistant (N4)

Mr Azmi bin Mat Zin



Interior view of the Computer Laboratory

FACILITIES

ECL provides support to both coursework and research activities in the Faculty. ECL has an extensive software library for Mechanical Engineering applications, word processing, graphics/plotting, and programming. ECL is split along the Windows/Linux "OS-divide" into four laboratory rooms and two remote computing servers. To cope with emerging sophisticated engineering softwares, the laboratory had made huge provision focusing on CAD and CAE applications.

Windows and Linux Environment

Room	Workstation	Operating System (OS)	Softwares
C24-411 Facilities - Scanner - Network Printing - Binding - LCD Projector - Internet	55 seats for OS Win XP Pro	Windows Environment	AutoCAD 2007, Microsoft Office 2007, Minitab, Solidworks 2007, S-Plus 6 For Education 2005, Witness 2004 R2
C24-410 Facilities - Scanner - Network Printing - Binding - LCD Projector - Internet	55 seats for OS Win XP Pro	Windows Environment	AutoCAD 2008, ADAMS 2005 R2, Alias Studio Tools 12, Autodesk Inventor Professional 2008, Dytran 2007 R1, Eon Studio 9 For Education, LS Dyna, MARC 2005 R3, Matlab Version 7.0 with Simulink, Microsoft Office 2007, MSC Nastran 2005 R2, MSC Patran 2005, Python 2.2, Rhino3D.
C24-409 Facilities - Network Printing - LCD Projector - Internet	55 seats for OS Win XP Pro	Windows Environment/ Linux Environment	Fluent 6.3.26, openOffice 2.3.0, OpenSource Software, Matlab Version 7.0 with Simulink for Linux.

C24-408 Facilities - Network Printing - LCD Projector - Internet - Photo copy	55 seats for OS Win XP Pro	Windows Environment	OpenSource software, Microsoft Office 2007, AutoCAD 2007
--	----------------------------	---------------------	--

Remote Computing

There are two application servers to run many CAE applications remotely through secure channel.

Servers

Server	User
Hijrah	Staff
Siswa	Student

Computers at Other Places

There are also computers available to students on the "need-to-use" basis at several locations:

- Computational Solid Mechanics Laboratory (E04)
- Marine Technology Laboratory (P19)
- Aeronautics Laboratory (P20)
- Production Engineering Laboratory (E01)
- Materials Science Laboratory (P23)

Internet

Having a computer account at ECL allows students to access many computing resources such as terminal access for class computing, Internet browsing, e-mail, printing, and many others.

Collaboration with CICT

FME ECL plays a major role in providing High Performance Computing (HPC) services in UTM. We are part of the technical team that provides the necessary software for use by postgraduate and undergraduate students. The utilisation of the HPC system is increasing from time to time. Users are coming from various faculties such as Civil Engineering and Built

Environment. Until recently, the total computing time accumulated is about 10 years, showing good utilization by the users. It is worthy to note that the HPC is only operational in less than two years.

ACTIVITIES

Courses

There are many regular courses conducted by the eight departments in the Faculty. These are courses offered to students as part of their undergraduate and postgraduate programmes. Special courses are conducted during the long vacations or weekends, and the really short ones are done over an evening or two, especially during Wednesday afternoons.

Regular Courses

No.	Course	Software Used
1.	SME 1013 Programming For Engineers	Fortran, MATLAB
2.	SME 1503 Engineering Drawing	AutoCAD, SolidWork
3.	SME 3023 Applied Numerical Methods	Fortran, MATLAB
4.	SME 3033 Finite Element Method	Nastran, Patran, Abaqus
5.	SME 3233 Control Engineering	MATLAB, Simulink, Control System Toolbox
6.	SME 4353 Introduction to Computational Fluid Dynamics	Fluent
7.	MMJ 1113 Computational Methods For Engineers	Fortran, Nastran, MATLAB
8.	MMJ 1333 Computational Fluid Dynamics	Fluent, Dolfyn, Fortran, MATLAB

Special Course

No.	Course	Software Used
1.	SME 1902	Win Xp, Ms Office 2007

Other Activities

Several courses were also conducted for Faculty staff, students, and outside participants:

No.	Course	Date
1.	Ceramah Teknikal (Solid Work) Society of Manufacturing Engineers Student Chapter S227 (SME)	9 Jan 2010
2.	Assessment of CTB (Computer Based Training)	13 Jan 2010
3.	PSM	5-6 April 2010
4.	Rockwell Arena Software	9-10 Jun 2010
5.	Kursus OBE	24 April 2010
6.	CRR Online	29 April 2010
7.	Bengkel SME 1902	3 Mei 2010
8.	Pameran Misti Persada, Johor Tapak Pameran "Flight Simulator"	22-27 Jun 2010
9.	Catia short course	19-23 Julai 2010
10.	Kursus Solidwors (PGSS Club)	31 Julai 2010 - 1 Ogos 2010
11.	Kursus Fluent	2-6 Ogos 2010
12.	Kursus Solidwors (PGSS Club)	7 Ogos 2010 - 8 Ogos 2010
13.	Festival Integrasi Kolej Perdana	7 - 8 Ogos 2010
14.	Festival Integrasi Kolej Perdana	14 - 15 Ogos 2010
15.	My3S-Kajian Skala Kemahiran Insaniah Pelajar Tahun 1 (IPTA)	12 -15 Oktober 2010
16.	Pra pendaftaran	19 - 28 Oktober 2010
17.	Altair Training	1-4 November 2010
18.	Showcase OSS MyGoscon 2010 (PICC KL)	1-4 November 2010
19.	PSM	8-10 November 2010
20.	Lawatan UM ke FKM	30 November 2010
21.	OBE Online Short Course	3 Disember 2010
22.	Lawatan IT SPS ke Unit IT FKM	13 Disember 2010
23.	Penilaian Prestasi staf secara Dalam Talian (Online)	16 Disember 2010
24.	Hari Keluarga IT FKM	18 Disember 2010
25.	Penilaian Prestasi staf secara Dalam Talian (Online)	21 Disember 2010

Gift on 2 September 2010

LCD TV Samsung 40 " From IT department to Pejabat Akademik
*Gift from vendor:

Sovereign Multimedia resources Sdn Bhd (711582-A)
(A Member of Johor Corporation Group of Companies)
Customer Care Centre : 07-2192747
Email: helpdesk@sov.com.my
Website:www.sovereignmultimedia.com.my



Mr Abdullah Suhaimi, Dr Istas Fahrurrazi Nusyirwan and Abdul Rahman bin Ahmad (Vendor Sovereign Multimedia resources Sdn Bhd).



A show of "Flight Simulator" on 22-27 June 2010 in "Pameran Misti Persada", Johor



Short Course of CATIA on 19-23 July 2010



Online assessment of staff performance on 16 December 2010

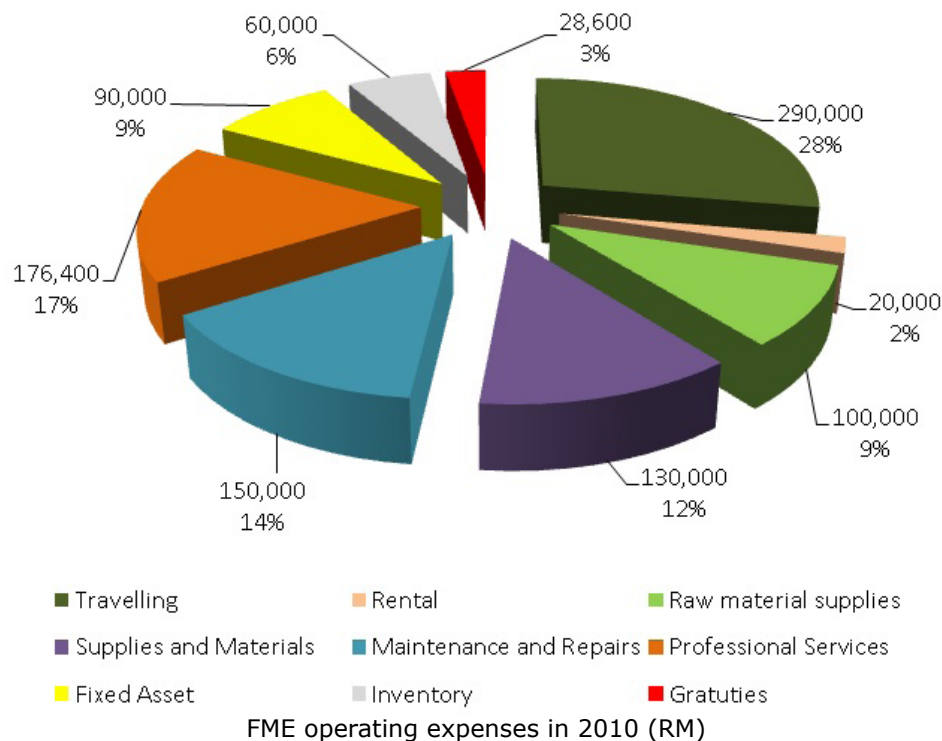


Visitation of IT SPS to Unit IT FKM on 13 December 2010

FINANCIAL PERFORMANCE

OPERATING EXPENSES

As an academic body, the financial focus of the Faculty is mainly on operation. FME received a total allocation of RM 21,500,000 from the university for the year 2010 and of this RM 1,045,000 or 5% of the total allocation was spent for its main operating expenses. The utilisation of the allocation is listed as follows:



CONSULTANCY EARNINGS

The Faculty generated revenues from consultancy services provided by various laboratories and centres of excellence. Revenues were also generated from consultancy projects carried out by several members of the Faculty which were managed through BIP. The total amount of revenues generated for the University from the numerous consultancy projects was approximately RM2.20 million. The breakdown of the earnings are given in the following table and figures.

Distribution of Earnings by Various Center of Excellences and Laboratories

No	Earning by Centre / Laboratory	Amount (RM)
1	Marine Technology Laboratory	716,678.55
2	Aeronautics Laboratory	266,373.80
3	PUSKOM	5,070.00
4	Teaching Laboratories	30,700.00
5	Materials Laboratory	15,250.00
6	Automotive Development Centre	48,000.00
7	Institute of Noise & Vibration	1,086,914.00
8	Others	35,000.00
Total		2,203,986.35

DIARY OF ACTIVITIES



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

RESEARCH UNIVERSITY



2010 FKM Dean List awards



Final year project presentations



Workshop on new curriculum



Sea trial of semi-swath prototype



Visit by University of Indonesia



Visit by postgraduate students from Arab Saudi



Visit by King Mongkut's University



MoU signing with Kobe University, Japan



Visit by UTM Vice Chancellor



Student election



Visit by the panel of Vice Chancellor Quality Award



Celebration of 2010 Hari Raya Aidilfitri at FKM

THE WAY FORWARD

I look forward with great expectation on how the academic and non-academic staff of this Faculty rally around the challenges and goals set by our stakeholders in years to come. There are many talented people within the 300 strong team, who will assist in making the goals into reality. The general consensus within the Faculty is that the graduates must provide solutions in meeting the needs of nation building especially for the improvement in quality of life and wealth creation, while maintaining the balance between physical development and environmental sustainability. The Faculty itself must be seen to be the hub to produce new and innovative technologies. In view of these needs we inspire to:

- Develop highly productive human capital through new knowledge, innovative technologies and techniques, and respond to the environmental pressures brought about by global challenges;
- Engage in regional and international collaborations around our critical knowledge and competencies;
- Work in conjunction with emerging areas such as bio and nano technologies, to provide solutions in such diverse fields as materials, energy, water management, the environment and agriculture management, and
- Create engineering solutions for the needs of the poor or less fortunate.

The visions will draw upon our collective talents, thoughts, ideas, resources and contributions of the staff and students alike. We fully understand that graduates must be able to adapt and change in order to become globally competitive engineers that will contribute to the growing needs of the profession over the next two decades.

We at FME should continue to accept change and embrace new ideas to assist in formulating answers and solutions to achieve the visions together. We can meet these grand challenges by building new networks of engineering communities at home and abroad.