



Graduan pertama FKEE. Laporan lanjut di muka 8.

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**FKEE
KUKTEM**



TESLA

TEKNOLOGI SEIRING LANDASAN AGAMA

FKEE Terima Kunjungan Panel EAC

FKEE telah menerima satu kunjungan Panel Penilai *Engineering Accreditation Council* (EAC) ke Fakulti pada 17 hingga 18 Julai 2006. Tujuan lawatan tersebut adalah untuk menilai perjalanan program Ijazah Sarjana Muda Kejuruteraan Elektrik (Elektronik) – BEE. Panel yang hadir adalah terdiri daripada Prof. Ir. Dr. Ahmad Fadzil Mohamad Hani (UTP) selaku Ketua Panel Penilai, Prof. Ir. Dr. Shah Rizam Mohd Shah Baki (UiTM) dan Ir. Choo Beng Lye (Industri-Syarikat Nur Distributor (M) Sdn Bhd). Turut hadir adalah dua wakil daripada *Engineering Accreditation Unit* (EAU) iaitu Prof Ir. Dr. Wan Hamidon Wan Bada ruzaman (Pegarah EAU) dan Pn. Siti Maria m Daud (Sekretariat EAU).

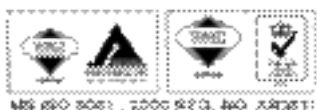
Program Lawatan Penilaian ini adalah kunjungan pertama daripada EAC selepas Fakulti berjaya mendapat pengiktirafan bagi program Diploma Kejuruteraan Elektrik (Elektronik Industri) daripada Jabatan Perkhidmatan Awam (JPA). Lawatan tersebut berlangsung selama dua hari. Hari pertama lawatan dimulakan dengan kata aluan oleh Dato' Rektor, disusuli oleh Taklimat Umum KUKTEM oleh Timbalan Rektor (Akademik dan Pengantarabangsaan) serta Taklimat

Fakulti oleh Dekan FKEE. Seterusnya, sesi penilaian diteruskan dengan sesi temubual bersama *associates* FKEE dan pelajar program BEE. Dalam sesi ini, seramai 12 *associates* dan 20 pelajar telah terlibat. Panel Penilai kemudiannya dibawa melawat ke beberapa tempat dan unit sokongan bagi proses pengajaran dan pembelajaran seperti perpustakaan, dewan kuliah dan *FKEE Skills Centre* di kompleks makmal KUKTEM.

Program pada hari kedua lebih tertumpu kepada audit dokumentasi dan pelaksanaan program BEE di Fakulti. Antara perkara yang dinilai ialah dokumen *Academic Curriculum, Student—Staff*

Ratio, Teaching Profile, Polisi dan Prosedur Jaminan Kualiti, Laporan Penilai Luar, Tahap Kesukaran Soalan Peperiksaan dan Laporan Projek Sarjana Muda Pelajar.

Lawatan penilaian EAC ini berakhir pada sebelah petang dengan Mesyuarat Penutup di antara Panel Penilai dan Pengurusan Fakulti. Turut hadir dalam mesyuarat tersebut adalah Timbalan Rektor (Akademik & Pengantarabangsaan), Timbalan Rektor (Penyelidikan & Inovasi) dan beberapa wakil *associates* FKEE.



From the Dean



In the Name of Allah, the Most Beneficent, the Most Merciful.

Firstly, I would like to express my gratefulness to Allah SWT for the successful publication of TESLA, FKEE's own bulletin. I would also like to thank the publication committee for their effort and hard work to make it happen. Contributing writings to TESLA can be used as a mechanism to enhance the research activities in the faculty, not just to fulfill the SKT requirements (two publications/ associate), and it can be used as a platform where ideas and information can be shared between associates. Another

reason for the publication is to promote our faculty to the related industry that have linkages with us, like other universities, panel of evaluators and others stake holders. By sending copies of TESLA to them, we hope to bring the industry closer to us. For that reason, all associates and students from all levels in FKEE should contribute relevant materials to be published in TESLA.

Finally, let us work together we make TESLA a success so as to achieve the vision of the faculty, that is: FKEE "A WORLD CLASS FACULTY FOR COMPETENCY-BASED TECHNICAL EDUCATION IN ELECTRICAL & ELECTRONICS ENGINEERING".

Mohd. Shafie Bakar



Sidang Redaksi

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En. Hamdan Daniyal

Buletin 'TESLA' diterbitkan tiga kali setahun. Namun begitu, berita yang dimuatkan dalam keluaran pertama ini meliputi isu dari bulan Januari hingga September 2006.

Hak Cipta Terpelihara. Mana-mana bahagian penerbitan ini tidak boleh dikeluarkan ulang, disimpan dalam sistem dapat kembali, atau disiarkan dalam apa-apa jua perkara sama ada secara elektronik, fotokopi, mekanik, rakaman atau lain-lain sebelum mendapat izin bertulis daripada Ketua Editor.

Sidang Redaksi berhak melakukan penyuntingan terhadap tulisan yang diterima untuk penyiaran selagi tidak mengubah isinya. Karya yang disiarkan tidak semestinya menggambarkan atau mencerminkan pendapat dan sikap Buletin 'TESLA'. Karya yang disiarkan tidak boleh diterbitkan semula tanpa kebenaran Ketua Editor.

Sidang Redaksi juga tidak bertanggungjawab di atas kehilangan tulisan atau karya yang dikirimkan secara pos.

Segala sumbangan yang dirimkan sama ada disiarkan atau tidak, tidak akan dikembalikan. Sumbangan karya boleh dihantar melalui email atau pos.

Dari tinta Ketua Editor




Assalamualaikum dan Salam Sejahtera.

Syukur ke hadrat Ilahi kerana dengan izin-NYA maka terhasillah buletin FKEE yang pertama, 'TESLA' yang membawa maksud Teknologi Seiring Landasan Agama. Diharap ia dapat dijadikan ruang untuk perkongsian ilmu di kalangan *associates* dan juga pelajar dan membantu dalam menyampaikan lebih banyak maklumat mengenai pelbagai aktiviti FKEE.

Akhir kata, sekalung budi dan ucapan penghargaan kepada semua pihak yang telah memberikan sumbangan dalam merealisasikan penerbitan buletin ini samaada secara langsung atau tidak langsung. Tidak lupa juga ucapan terima kasih kepada pihak Pengurusan FKEE di atas dorongan dan galakan yang diberikan.

Zainah Md. Zain



Faculty of Electrical & Electronics Engineering

Corporate Profile: Vision & Mission

VISION

TO BE A WORLD CLASS FACULTY FOR COMPETENCY-BASED TECHNICAL EDUCATION IN ELECTRICAL & ELECTRONICS ENGINEERING.

MISSION

TO PROVIDE THE HIGHEST QUALITY COMPETENCY-BASED TECHNICAL EDUCATION IN ELECTRICAL & ELECTRONICS ENGINEERING TO MEET NEEDS OF STAKEHOLDERS.

TO CONTINUALLY IMPROVE OUR BUSINESS THROUGH INNOVATION & TECHNOLOGY DEVELOPMENT BY PROVIDING INDUSTRIAL-BASED FACILITIES IN LINE WITH THE UNIVERSITY FOCUS AREAS.

TO DEVELOP OUR ASSOCIATES POTENTIAL THROUGH PARTICIPATIVE & TEAM INVOLVEMENT BY PROVIDING A CONDUCIVE ENVIRONMENT THAT ENCOURAGES CREATIVITY & INNOVATIVENESS TOWARDS BECOMING A LEARNING ORGANIZATION.

Mesyuarat dan Bengkel Penetapan PTP dalam Kurikulum Program

Mesyuarat dan Bengkel Penetapan Teras Program (PTP) telah diadakan pada 27 hingga 29 Januari 2006 di Summerset Colonial Hotel & Villas, Kuala Rompin, Pahang. Seramai 31 *associates* telah hadir.

Bengkel ini bertujuan untuk menentukan semula hala tuju program dan cadangan kursus teras program yang akan ditawarkan di Fakulti. Dalam bengkel tersebut, terdapat perbincangan dan pembentangan berkaitan hala tuju program, cadangan kursus dan silibus kursus oleh setiap *Expert Group* Fakulti.



Mesyuarat dan Bengkel Pelaksanaan Komponen OBE

Mesyuarat dan Bengkel Pelaksanaan Komponen *Outcome-Based Education* (OBE) dalam kursus telah diadakan pada 29 hingga 31 Januari 2006 di Summerset Colonial Hotel & Villas, Kuala Rompin Pahang. Seramai 31 *associates* telah hadir.

Bengkel ini yang juga penerusan daripada Bengkel PTP bertujuan untuk melatih *associates* menyediakan *Learning Outcomes*, *Matrix of CO & PO* dan *Matrix PO-PEO* mengikut bidang kepakaran Fakulti bagi memenuhi keperluan OBE dan EAC.

Majlis Pelancaran dan Pengujian Kereta Elektrik Fakulti

FKEE telah melancarkan satu prototaip kereta elektrik yang pertama, *Motorized Battery Operated Vehicles Proto-1* (MBOV-1) pada 21 Februari 2006. Majlis tersebut telah dirasmikan oleh Timbalan Rektor (Akademik & Pengantarabangsaan), Prof. Dr. Mortaza Mohamed. Majlis tersebut dihadiri oleh barisan Pengurusan Universiti, *associates* FKEE dan pelajar. Turut hadir ialah wakil industri, En. Zulfadli Haron dari Zull Design Autotronics.

Prof. Dr. Mortaza Mohamed dalam ucapannya berkata, dalam menangani masalah dunia yang kesuntukan bahan api fosil, penghasilan MBOV-1 adalah langkah permulaan yang baik untuk Fakulti, seiring dengan perkembangan teknologi ke arah penggunaan kereta elektrik, *hybrid* dan *fuel cell*. Menurut En. Zulfadli pula dalam ucapannya, FKEE akan bersaing dengan tenaga saintis seluruh dunia yang masih mencari penyelesaian ke atas permasalahan merealisasikan teknologi kereta elektrik ke pasaran seluruh dunia.



Mohamed, En. Mohamad Azlan Mat Hussin, En. Muhammad Sharfi Najib, En. Md. Rizal Othman dan En. Bakri Hassan. Kerja-kerja fabrikasi pula turut dibantu oleh *associates* FKEE yang lain, terdiri daripada Pensyarah, Pegawai Latihan Vokasional dan Penolong Pegawai Latihan Vokasional. Zull Design Autotronics pula bertindak sebagai perunding projek.

Walaupun MBOV-1 masih di peringkat awal penyelidikan, namun MBOV-1 mampu mencecah kelajuan 30km/j untuk perjalanan selama dua jam. Ia mempunyai dua tempat duduk, mampu bergerak dengan kelajuan berbeza dan dalam arah berlawanan. Selain litar-litar asas, MBOV-1 juga dilengkapi dengan *On-board Battery Charger*. Pada masa ini, MBOV-1 diletakkan di FKEE Skills Centre.

Penghasilan MBOV-1 ini diharapkan akan menjadi pencetus budaya R&D secara kreatif kepada tenaga pengajar FKEE dan seterusnya mampu menyampaikan pengajaran dengan lebih berkualiti.



MBOV-1 telah direalisasikan hasil usaha gigih semua ahli yang terlibat selama seminggu. Seramai lima *associates* telah terlibat dalam proses penghasilan dan pengujian kereta tersebut ialah En. Mohd. Ruslim

Kursus Pendawaian Domestik dan Industri

Kursus Pendawaian Domestik dan Industri telah dijalankan selama lima hari iaitu dari 19 Jun 2006 hingga 23 Jun 2006, bertempat di *Wirring Bay*, FKEE. Seramai 18 *associates* FKEE telah menyertai kursus ini. Kursus ini adalah untuk memberi pendedahan kepada pensyarah dan *associates* teknikal FKEE dalam kerja-kerja berkaitan pendawaian elektrik domestik dan industri. Matlamat kursus ini adalah melahirkan *associates* yang mempunyai

pengetahuan dan kemahiran yang kukuh melalui aktiviti pengajaran dan pembelajaran secara 'hands-on'. Dengan ini, mereka akan dapat mengajar dengan lebih yakin. Kursus ini disampaikan oleh dua pakar pendawaian dari Maktab Teknik Cheras yang berpengalaman sebagai pengadil Johan Kemahiran Malaysia peringkat Kebangsaan dan Asia.



MOU dengan FESTO

Tanggal 1 April 2006, FKEE dan FESTO Sdn. Bhd. telah menandatangani Memorandum Persefahaman (MoU) yang disaksikan oleh Menteri Pengajian Tinggi, Dato' Mustafa Mohamed. FKEE diwakili oleh Dato' Rektor KUKTEM manakala FESTO Sdn. Bhd. diwakili oleh Pengarah Bahagian Latihan. Antara kandungan MoU adalah menjurus kepada perkongsian pendidikan di antara FKEE dan FESTO yang merangkumi latihan bersama, pembinaan modul latihan, perkongsian maklumat bidang berkaitan dan sebagainya.

FKEE mengambil langkah menjalinan kerjasama ini demi menyahut hasrat Kementerian Pengajian Tinggi dan KUKTEM dalam mewujudkan kerjasama erat di antara Universiti dan Industri. Dengan termeterainya MoU ini, ia bakal merangsang perkembangan yang positif ke arah

mencapai visi dan misi KUKTEM. FESTO merupakan produk automasi dari negara Jerman di mana pemilihan FESTO adalah berdasarkan kepakarannya dalam bidang automasi. Pelbagai produk FESTO digunakan di industri-industri terkecuali dalam dan luar negara.

FKEE amat berterima kasih kepada FESTO kerana dalam majlis yang sama juga, FESTO dengan berbesar hati mendermakan sistem konveyor yang bernilai RM30 ribu bagi kegunaan pengajaran dan pembelajaran pelajar-pelajar FKEE. Sistem konveyor tersebut disampaikan sendiri oleh Pengarah Bahagian Latihan FESTO kepada Dato' Rektor KUKTEM. Diharap MoU ini memberi impak yang positif kepada FKEE dalam rangka menjalinan hubungan yang positif dengan industri.

Penyewaan Makmal oleh OUM

Pada 11 hingga 12 Mac 2006 Fakulti Kejuruteraan & Pengajian Teknikal Open Universiti Malaysia (OUM) telah menjalankan aktiviti makmal pelajar kejuruteraan di bawah program kerjasama antara OUM dan Kementerian Pelajaran Malaysia (KPM). Seramai hampir 50 pelajar OUM telah terlibat dalam menjalankan eksperimen di Makmal FKEE di mana ianya diselenggarakan oleh tenaga pengajar dan pensyarah FKEE.

Di antara makmal yang terlibat dalam program ini adalah Makmal Analog I, Makmal Digit I, Makmal CBL dan Makmal Motor & Drives. Program penyewaan makmal ini merupakan program pertama yang dikendalikan oleh FKEE dalam rangka memaksimumkan penggunaan makmal dan menjurus kepada menjana pendapatan Fakulti melalui penyewaan makmal. Walau bagaimanapun, penyewaan ini bukanlah tujuan utama diadakan program ini tetapi ianya lebih kepada menjalin hubungan dua hala antara KUKTEM dan OUM. Diharap program penyewaan makmal ini akan dapat diteruskan dan dirangka juga program-program lain yang dapat mengukuhkan hubungan di antara OUM dan KUKTEM. Terima kasih diucapkan kepada pensyarah, jurutera pengajar dan penolong jurutera pengajar yang terlibat secara langsung dalam pengendalian makmal pada kali ini.

Hari 5'S FKEE di Makmal



Program 5S FKEE telah berjaya dilaksanakan pada tarikh 5 Julai 2006 dengan penyertaan daripada pensyarah dan pelajar latihan industri di Makmal

FKEE. Program ini telah berjaya dilaksanakan dengan jayanya dengan kerjasama *associates* FKEE. Hasil program 5S ini telah memberi kesan positif terhadap susun atur peralatan makmal dan kekemasan ruang makmal. Program ini akan dijadikan salah satu program utama pada setiap semester hingga menjadi budaya di kalangan *associates* dan pelajar.

Objektif:

- Melaksanakan 5S di 6 makmal utama.
- Mewujudkan budaya 5S di kalangan *associates* FKEE.
- Mewujudkan rasa tanggungjawab di kalangan *associates* FKEE tentang keperluan melaksanakan 5S dalam pengurusan makmal dan kerja.

Bengkel Pembentukan Polisi

Satu Bengkel Pembentukan Polisi FKEE telah diadakan pada 16 hingga 20 Mei 2006 di Swiss Garden Resort & Spa, Balok Beach, Kuantan. Bengkel tersebut yang telah dihadiri oleh seramai 38 *associates* FKEE bertujuan untuk menghasilkan polisi FKEE supaya aliran proses kerja di Fakulti berjalan lebih lancar, kemas dan teratur serta memenuhi keperluan badan profesional di samping mewujudkan suasana harmoni dan kondusif di kalangan *associates*. Turut membantu melicinkan perjalanan bengkel ialah Timbalan Rektor (Akademik & Pengantarabangsaan), Prof. Dr. Mortaza Mohamed, Pn. Nor Hashimah Mohamad Zain, Pn. Wan Maizurina Wan Othman, En. Wan Nazrul Helmy Wan Mohd Zain, En. Hazmin Aris, En. Baharudin dan En. Saiful Adlizai Ramli.

Bengkel Pembentukan Polisi FKEE ini telah berjaya menepati sasaran Pengurusan Fakulti dan juga Jawatankuasa Pelaksana di mana kesemua sasaran 12 Polisi Utama yang perlu diselesaikan telah berjaya diselesaikan dengan jayanya. Polisi ini telah dibahagikan kepada beberapa kumpulan tindakan kecil mengikut turutan keutamaan Polisi. Di antara polisi-polisi yang dibentuk adalah polisi Pengajaran dan pembelajaran, Penilaian dan pengukuran, Projek Sarjana Muda, Latihan Industri, Penyelaras Subjek dan Penasihat Akademik, Penyusunan Jadual Waktu, *Research & Development* dan Penerbitan, Sambung Belajar dan Penebuduga, Jawatankuasa Alumni, Pejabat dan Makmal, serta Pergerakan *Associates* dan Lantikan Baru.



Mesyuarat dan Lawatan Panel Badan Penasihat Industri bersama FKEE

Sejajar dengan persediaan Fakulti terhadap Lawatan Panel Penilai EAC, satu mesyuarat antara FKEE bersama Badan Penasihat Industri telah diadakan pada 27 Mei 2006 bertempat di Bilik Mesyuarat FKEE.

Mesyuarat dimulakan dengan taklimat ringkas daripada pihak Fakulti dan seterusnya panel tersebut dibawa melawat ke *FKEE Skills Centre*. Mesyuarat disambung kembali dengan sesi maklum balas daripada panel. Majlis berakhir setelah lima jam lawatan.

Mesyuarat tersebut telah dihadiri oleh empat wakil daripada FKEE dan panel yang terdiri daripada lima industri yang berbeza di sekitar Negeri Pahang termasuklah BASF Petronas Chemicals Sdn. Bhd., BI Technologies Corp. Sdn. Bhd, Alps Electric (M) Sdn. Bhd. dan Vacuumschemeltz (M) Sdn. Bhd. Mesyuarat tersebut telah dipengerusikan oleh Dekan FKEE, En. Mohd. Shafie Bakar. Isu-isu yang dibincangkan adalah berkaitan dengan kurikulum program BEE, kemudahan makmal dan keperluan pihak industri terhadap siswazah.

Secara keseluruhannya, para panel berpuas hati dengan peralatan yang terdapat di makmal FKEE dan mencadangkan agar dibuat penambahan peralatan-peralatan yang biasa digunakan di industri sebagai pendedahan kepada pelajar. Mereka juga berpendapat siswazah yang berjaya dalam akademik tidak akan menghadapi masalah untuk mendapatkan pekerjaan sejurus selepas menamatkan pengajian.

Ukhuwah semakin erat di Hari Keluarga FKEE

Pada 27 Ogos 2006 yang lalu, FKEE menerusi Unit Kebajikan telah mengadakan program Hari Keluarga di Pusat Rekreasi Pantai Balok, Kuantan. Seramai 37 *associates* FKEE telah hadir.

diteruskan dengan ucapan aluan oleh Dekan, seterusnya merasmikan Hari Keluarga FKEE. Program diteruskan dengan acara sukaneka yang melibatkan *associates* dan ahli keluarga mereka. Acara kemuncak sukaneka adalah pertandingan tarik tali.

Program yang dipengerusikan oleh En Razali Muda bermula dengan bacaan doa yang disampaikan oleh En Hamka. Program



FKEE Expert Groups

R&D activities in FKEE are focused into several main areas; each area is supported by an expert group. The expert groups formed are Power Electronics, Drive & Alternative Energy (PDAE), Electronics Intelligent System (ELIS), Control and Instrumentation (COINS), and Computer System Engineering (CSE). The expert groups are in charge of the development of human capital in specific areas to help the advancement of KUKTEM focus areas, namely Automotive & Manufacturing and Industrial Biotechnology. These thrust areas have been approved by the Malaysian Government.

Power Electronics, Drive & Alternative Energy (PDAE)

This group is focus in the areas of machine & drives, real-time monitoring systems, electric vehicles, renewable energy, power quality and energy efficiency.

Amongst the successful and on-going projects, but not limited to, are:

- Motorized battery operated vehicle
- Electric vehicle
- Inverter design
- Energy saving
- High end monitoring system using power line carrier
- Wireless load profiling & monitoring system

Control and Instrumentation (COINS)

COINS is focused on control systems and instrumentation for industries in the fields of manufacturing, petrochemical and biotechnology. It is also capable in give expert support in biotech

industries especially in the identification of appropriate instrument for specific purpose and also designing an effective control system. Overall, COINS is much related to electronics engineering.

Electronics Intelligent System (ELIS)

The group is focused to the fields of electronic engineering. In addition, the expertise of the members is relevant to areas in microelectronic engineering & quality control, IC design and analog communication.

Currently, ELIS has proposed a project under FRGS grant, titled "Development of a Security System using RFID for KUKTEM's Security Unit". Moreover, ELIS is also in the early stage of a collaboration project with Faculty of Chemical Engineering and Natural Resources (FKKSA) in the development of bioprocess control system for food industry sector.

Computer System Engineering (CSE)

CSE is focused on computer engineering field, which is increasingly becoming more popular with the industry. Some of the CSE fields of interest are:

- Design and development of embedded systems in several applications, such as power systems & electronics, security systems, telephony systems, smart card and multi-type motor drives interface.
- Modeling and simulation of electronics communication systems such as data communication, network switching, communication engineering and wireless communication systems.

Research by expert group

Development of a Security System using RFID for KUKTEM's Security Unit

Posted by : Norizam Sulaiman, ELIS

Project's Abstract: Currently, there is no monitoring system for the security guards at KUKTEM. All monitoring functions and surveillances are done through manual procedure, eg. each guard has to sign-in at every check point located around the university compound. The disadvantages of this procedure are that it is open to cheating, manipulation, and dishonesty among the security guards. This fact can be seen from the amount of losses that the university has encountered during the past years when the university's property such as LCD displays, computers are stolen. FKEE under Electronics Intelligent Systems expert group of ELIS (has come out with a proposal to develop an RFID (Radio Frequency Identification) for security system at KUKTEM. The idea is that every guard will be equipped with a transmitter device that transmits an RFID signal to the centralized monitoring receiver within the specified radius (between 500 meters to 1 kilometer radius). With this system, the control center can monitor and track whereabouts of each security guard.

Switching Simulation of Si-GTO, SiC-GTO and Power MOSFET

Posted by : Muhamad Zahim Sujod, PDAE

Project's Abstract: Recent development in power electronics has made power semiconductor devices larger and more complicated, and device simulation is necessary to predict their characteristics. From the fundamental equations of semiconductor devices, potential distribution and carrier concentrations can be solved using the Finite Element Method (FEM). Silicon Carbide (SiC) material has been utilized for power devices, in order to achieve fast switching time and low switching loss. In this study, we use our FEM Device Simulator and compare the switching waveforms of usual silicon Gate Turn Off Thyristor (Si-GTO) and new SiC-GTO. Results show that turn off time of SiC-GTO is decreased extremely. The merits of devices simulation are not only to predict switching characteristics but also to observe inner phenomena of semiconductor device. In this study, we also analyzed switching characteristics of Power Metal Oxide Semiconductor Field Effect Transistor (MOSFET) and make discussions on the inner phenomena of this device.

Power Line Carrier Power Data Logger

Posted by : Mohammad Fadhil Abas, CSE

Project's Abstract: The power line carrier power data logger is a data logger which has the capability to logged three-phase voltage and current including the return line. Besides that, the logger could be communicated via computer which is not directly connected to it. This is done using the power line thus it is called the power line carrier power data logger. The specification of the data logger which has been agreed by FKKEE and EAM (MOA pending) are as stated below:-

1. A standalone three-phase data acquisition system with power line carrier (PLC) capability.
2. Capable of logging up to the 50th harmonics.
3. Capable of logging PF (power factor) of fundamental power.
4. Capable of logging V & I of fundamental frequency up to the 50th harmonics.
5. Capable of logging at specific range of duration given by the user.
6. Capable of storing in a memory device preferably an SD card.
7. Must use PIC base system (Spec from company).

Research and Development of High Precision Universal 3D Stretch Bending Machine

Posted by : Muhammad Sharfi Najib, COINS

Project's Abstract: Universal 3D Stretch Bending Machine (USBN) is a highly complex machine used in three dimensionally bending of materials to form a precise and absolutely crease-less bending result. Most of the applications of USBN are in automotive industry where the precision and appearance is very critical.

In view of that R&D activities under NAP, COINS, together with Ingress, are planning to embark on the R&D of Ingress Universal 3D Stretch Bending Machine. This will enable COINS and Ingress to find a solution to cut cost on new machine, as well as (and the most important) to enable Malaysian to develop its own bending jigs in the future. As for now, local development of new bending jig is not possible since we don't have any spare SBN unit to test the jig.

Apart from specific Ingress's case, the project can also be commercialized to for cater many other automotive and non-automotive applications. The technology derived from the project can also be used for other development of simpler machine such as CNC tube bending machine and various other robotic and mechatronics applications.

Latest Publications

Nor Maniha Ghani, Yahaya Md. Sam and Adizul Ahmad (2006). Active Steering for Vehicle System Using Sliding Mode Control, *4th Student Conference on Research and Development (SCORED 2006)*, 27-28 June, Shah Alam, Selangor, Malaysia, pg. 256-261.

Zainah Md. Zain, Nor Rul Hasma Abdullah & Abdul Halim Mohd Hanafi (2006). Microcontroller-Based Energy Saving Control for Air-Conditioning System Using Fuzzy Logic Approaching: An Overview. *4th Student Conference on Research and Development (SCORED 2006)*, 27-28 June, 2006, Shah Alam, Selangor, Malaysia, 246-249.

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What they say?

"The concept of emphasized the practical / lab than tutorial class (theory) for technical subjects is a great approach. It will allow the student to immediate apply the theory on actual application."

Mohd. Sidek Halim, Technical Manager, BI Technologies Sdn. Bhd.

Program Khidmat Siswa—Kuala Pahang II

Khidmat Siswa – Kuala Pahang II adalah program anjuran Kelab Kejuruteraan Elektrik & Elektronik KUKTEM dengan kerjasama Pejabat Hal Ehwal Pelajar & Alumni (HEPA) dan Majlis Perwakilan Pelajar (MPP) sesi 2005/2006. Program ini telah dijalankan bermula dari 13 Mei sehingga 16 Mei 2006 di Kampung Kuala Pahang, Pekan.



Upacara Perasmian disempurnakan oleh Tn Hj. Sa'udi bin Hj Ahmad, Pendaftar KUKTEM pada 15 Mei 2006 bertempat di Dewan Serbaguna, Sekolah Kebangsaan

Indera Shahbandar (SKIS), Kuala Pahang. Dalam ucapannya, beliau berharap program kali ini dapat membantu meningkatkan peratusan kelulusan pelajar UPSR SKIS sebagaimana meningkatnya kelulusan pelajar UPSR dari 47% kelulusan kepada 58% kelulusan pada tahun lepas.

Seramai 36 pelajar FKEE menyertai program ini yang dijalankan selama empat hari tiga malam. Para pelajar didedahkan dengan aktiviti “Mengenali Industri Desa”, “Membaikpulih Kemudahan Asas Surau” dan menganjurkan ceramah “Rezeki Secupak Takkan Jadi Segantang” untuk penduduk kampung dan program motivasi “Celik Minda” untuk pelajar UPSR SKIS. Pelbagai lagi aktiviti menarik dianjurkan dengan bertemakan “Memasyarakatkan Mahasiswa” untuk mengeratkan silaturrahim antara mahasiswa dan penduduk Kampung Kuala Pahang.

Antara objektif yang berjaya dicapai adalah melahirkan mahasiswa yang peka terhadap pembangunan intelektual dan spiritual masyarakat serta menyedarkan masyarakat luar bandar tentang kepentingan



gan pendidikan dan ilmu sebagai kaedah untuk mengubah nasib mereka. Bersempena tarikh keramat 16 Mei 2006, mahasiswa berpeluang menyambut Hari Guru bersama-sama warga SKIS.

Oleh : Nurulafiah Mohd Sofian (3 BEN)

Graduan Sulung FKEE

Seramai 18 graduan sulung FKEE menerima diploma masing-masing sempena dengan Istiadat Pemasyhuran Canselor dan Majlis Konvokesyen Pertama KUKTEM di Dewan Jubli Perak Sultan Haji Ahmad Shah, Kuantan pada 12 Ogos 2006. Anugerah disempurnakan oleh Canselor KUKTEM, Duli Yang Teramat Mulia Tengku Mahkota Pahang Tengku Abdullah Ibnu Sultan Haji Ahmad Shah Al Musta'in Billah.



Dalam majlis tersebut, Siti Rohayu Zahar, graduan Diploma Kejuruteraan Elektrik (Elektronik Industri) telah dianugerahkan Pemenang Hadiah Akademik Fakulti. Anugerah ini diberikan kepada graduan yang cemerlang dalam akademik dan sahsiah.

Anuar Mohd Ariff
 Che Roslee Che Remlee
 Elham Faeiz Samsi
 Gilbert Sebastian George Sebastian
 Khairul Asraf Zaaba
 Khairuldin Qalam Daud
 Mior Mohammad Hafizh Abd Rani
 Mohamad Johan Bakti
 Mohd Aizat Zaini
 Mohd Baihaqi Mohd Adenan
 Mohd Khairul Khittwan Ali
 Mohd Khudzairi Daud
 Mohd Shahrur Radzy Arjan
 Mohd Saiful Nizam Mohd Nasir
 Nur Aliya Nasruddin
 Nurul Ashikin Mohamad
 Shaun Gregory
 Siti Rohayu Zahar



What they say?

“In general, the implementation of hands-on activities on FKEE students has met the needs of the industry, but it can be enhanced further by improving the competency levels of the students.”

Ir Ismail Abdullah,
 Senior Manager (Electrical & Instrumentation),
 BASF Petronas Chemicals Sdn. Bhd. Kuantan, Pahang.

What they say?

“In my opinion, the *Sarjana Muda Kejuruteraan Elektrik (Elektronik)* program has successfully balanced the requirements of the EAC and fulfilling the University aspirations.”

Prof. Dr. Mohd Alauddin Mohd Ali (UKM)
 External Examiner for FKEE



Temubual bersama pelajar tahun akhir

17 Julai 2006 – Sempena Lawatan Panel Penilai EAC ke FKEE, seramai empat pelajar tahun akhir BEE yang menjalani Latihan Industri telah ditemubual. Sepanjang temubual berlangsung, mereka menceritakan pengalaman di industri masing-masing. Menurut mereka, segala kemahiran dan ilmu yang diperoleh sepanjang belajar di KUKTEM sangat membantu mereka. Konsep ilmu berorientasikan praktikal yang diamalkan di Universiti ini memberi kelebihan kepada mereka dalam mengendalikan peralatan. Mereka kini mampu tersenyum bangga kerana memperoleh ilmu bukan sahaja dari segi teori malah dari segi praktikal juga. Diucapkan syabas dan semoga maju jaya kepada para pelajar tersebut.



Anugerah Dekan Sem II 2006

BEA - KEJ. ELEKTRIK (AUTOMASI INDUSTRI)

KIM CHIN SEONG
LEE KOK CHUN

BEE - KEJ. ELEKTRIK (ELEKTRONIK)

AHMAD NA'IM USOH @ YUSOFF
MOHD HASDY YUFAAIS MAT SIDI
AZRIL NIZAM MUHAMAD
HAZRINA JOHARI
SAFLIDA MOHD NOR
KHAWARIZMI ABDULLAH
RATINAH JAAFAR
CHE KU MOHD FAIZUL CHE KU MOHD SALLEH
NORAZILA JAALAM
SYARIFAH NUR HAMIZAH SYD AMRA
MOHD SYUKRI MOHD OMAR
THAMAYANTHI A/P THANGAVELU
CHEAH SIEW HOON
SYED MOHAMAD HAMZAH AL- JUNID SYED ABD. RAHMAN
CHEONG KEE LOAN
CHIN SHEE YAN

BEN - KEJ. ELEKTRIK (SISTEM KOMPUTER & RANGKAIAN)

AW KAR CHYUN
EMI RAHAYU MAT NOOR
SULIANA AB GHANI
LAU LEE HUANG
LOW CAY LING
TEOH PEI YEE
KONG SET YIN
KHOR JING HUEY

BEP - KEJURUTERAAN ELEKTRIK (SISTEM KUASA)

SAIFUL ANUAR ALWI
NURIPAIZAIL AHMAD
MOHD SHAHIDAN MAHDIN
MOHD AZZUAN ABD AZIZ

DEE - DIPLOMA ELEKTRIK (ELEKTRONIK)

MOHD AMIR FIKRI AWANG
MOHD ADZLIZAM CHE AZMI
MOHD HASNAN NORDIN
NURULHUDA NGASIMAN
MUHAMMAD SYAFFI ALI
MOHD AZMI AMAT MANIS
NURASHIKIN MAMAT
NUR AZLIZA ALI
MOHD NURFAJREN MAT ISA
SITI HAWA KADAM
MOHD FUAD ISMAIL
AMIRUL AFIQ AMINUDDIN
NORAZLINA AB RAHMAN
ABU MUSA MOHD ADID
AWANG ANAK LANGAI
MOHD AZUARI MUSTAPHA
MOHD KHARUL HADI ISMAIL
AHMAD MUSTAFA MOHD LUBIS
AHMAD SYAFIQ DERAMAN
DAYANG AISHAH AWANG BUJANG
MOHD ZULHILMI MOHD SAPEIN
RAJA SARAVANA KUMAR A/L SELVAKUMAR
AZLAN BERO
NURUL JULIANA SHAHRUDIN
SHUHAIRIE MOHAMMAD
MUHAMMAD HUSNI ABU TALIP

Galeri Projek Sarjana Muda



What they say?

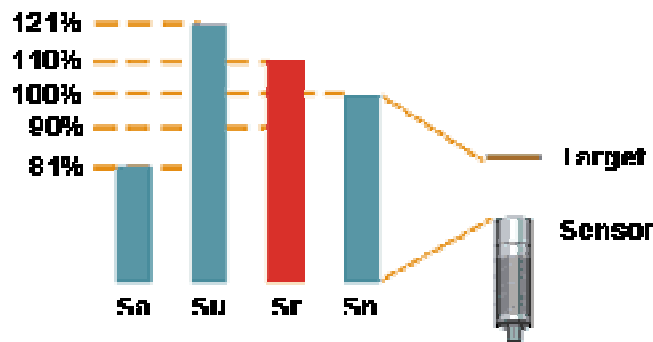


“Overall the curriculum fulfills the criteria for a standard Bachelor degree program in engineering and if the university makes improvements as suggested in this report, the degree awarded should be on par with the other local universities.”

Prof. Ir. Dr. Abdul Halim Bin Mohamed Yati m (UTM)
External Examiner for FKEE

Effective Operating Distance

The effective operating distance (S_r) is measured at nominal supply voltage at an ambient temperature of $23^\circ\text{C} \pm 5^\circ$. The effective operating distance varies $\pm 10\%$ of the rated operating distance. In other words, the target will be sensed between 0 and 90% of the rated sensing distance. Some devices, however, sense target as far out as 110% of the rated sensing distance.



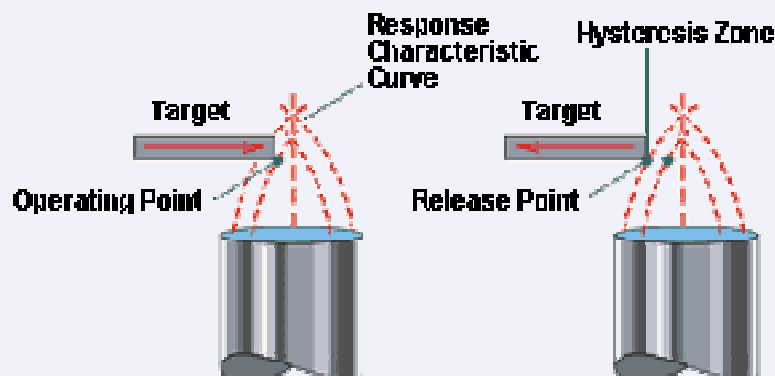
Assured operating sensing distance, (S_a) : $0 \leq S_a \leq 0.81 \times S_n$

Effective operating sensing distance (S_r) : $0.9 \times S_n \leq S_r \leq 1.1 \times S_n$ (ambient temperature; 293K (~20°C))

Usable operating distance, S_u : $0.9 \times S_r \leq S_u \leq 1.1 S_r$

Response Characteristic

Proximity switches respond to an object only when it is in a defined area in front of the switch's sensing face. The point at which the proximity switch recognizes an incoming target is the operating point. The point which an outgoing target causes the device to switch back to its normal state is called the release point. The area between these two points is called the hysteresis zone.



- contactless
- detect all electrically conducting objects
- do not require any mechanical sensing mechanism

Posted by:
 Ahmad Amli Ghani,
 Senior Engineer, QA-FMEA Department,
 VACUUMSCHMELZE (M) SDN. BHD.,
 Pekan Division.

What they say?

"From my point of view if the student follow current curriculum and make every effort to understand the subject ,easily they can get a job after graduate."

Mohd. Norazizi Bin Zakaria,
 Alps Electric (M) Sdn Bhd, Lot 3 Industrial Estate Phase II,
 Bandar Jengka 26400,PAHANG.

What they say?

"From my point of view, I do believe that the Electric & Electronic Faculty course arrangement already on the right track to hit the target and at the same time able to accomplish the university mission."

Ahmad Amli Ghani,
 Senior Engineer, QA-FMEA Department,
 VACUUMSCHMELZE (M) SDN. BHD., Pekan Division.

What Engineers Do?

Failure Analysis Engineer By Hazizulden Abdul Aziz

Upon graduation I worked as a Failure Analysis Engineer in an OEM electronic components factory. As a Failure Analysis (FA) Engineer my main responsibility is to determine the cause or causes of product failure. Failed products may come from the production line, customer returns or even prototype testing.

For each fail unit, I need to identify where the failure is and what cause the failure. It seems so easy. All I have to do is retest the failed unit and then pinpoint where the failure is and what it causes are. However, once the 'where' and the 'what' have been taken care of, the next question will be why the failure occurs? This is the challenging part. Most of the times the answers to that why question leads to another why question and, the answer to that second why leads to another why question. My challenge is to find answer which will not lead to another why question. That final answer is the root cause of the failure.

Sometimes, finding the root cause is a straight-forward activity but, most of the time, finding the root cause requires detail probing and analysis of the failure and its possible causes. All possibilities which may contribute to the failure must be considered. Causes of failures attributed to parts tolerances, intermittent condition during the manufacturing process and deterioration of the critical parameters over time are the most difficult to determine. It becomes more complicated if the failed unit is returned by the customer as there is a need to answer the inevitable question of why the factory testing cannot screen-out the failed unit.

Once all potential causes have been explored, corrective and preventive measures need to be discussed and put in place. Of course, this is done by a team of engineers. Being a Failure Analysis Engineer, I am expected to initiate and lead this activity and, if required, to report the outcome of the preventive measures to the upper management. For failure occurs at customer ends, I'm also expected to report the factory findings and measures to the customer's representative.

In short, as an FA Engineer, I need to critically analyze all potential causes of failure such that effective preventive measures can be taken. I also need to organize failure analysis activities by accessing the criticality of failure occurrences and prioritizing resources. When failed units come in large quantity, I need to determine the sampling process such that the samples analyzed are good representation of failed unit population.

Those are the challenges faced by a Failure Analysis Engineer. The job requires very good analytical problem solving and critical thinking skills. It is an interesting path where fundamental and broad knowledge of EE discipline being applied. Anybody interested to be a Failure Analysis Engineer?

Al-Khazini - Merv's Physicist

The greatest of all scholars to come from Merv was al-Khazini. Al-Khazini flourished ca. 1115-ca 1130 at Merv. He was a slave boy to whom his master gave the best education in mathematical and philosophical subjects. He became a mathematical practitioner under the patronage of the Seljuk court. Of his life not much is known except for a few details. He was very much ascetic, refusing rewards and handed back 1000 Dinars sent to him by the wife of an Emir. He lived on 3 dinars a year. His accomplishments in astronomy can be summed up with his description of his construction of a 24 h water clock designed for astronomical purposes and for his treatise Al-Zij al-Mutabar al-Sinjari, (The esteemed Sinjari tables), giving the positions of the stars for the year 1115/16, at the latitude of Merv. Al-Khazini is, however, better known for his book, Kitab Mizan al-Hikma (the book of the Balance of Wisdom, was completed in 1121, and has remained one central piece of Muslim physics. The treatise of Kitab Mizane al-Hikma was written in 1121-1122 for Sultan Sanjar's treasury by Al-Khazini, and has survived in four manuscripts, of which three are independent. It studies the hydrostatic balance, its construction and uses and the theories of statics and hydrostatics that lie behind it and other topics. It was partly translated and edited by the Russian envoy Khanikoff in the mid nineteenth century.

Without too much elaboration, it is important to mention that the first of its eight chapters deals with his predecessors' theories of centres of gravity, including al-Biruni, Al-Razi and Omar al-Khayam. Al-Khazini most particularly draws attention to the Greeks' failure to differentiate clearly between force, mass and weight, and shows awareness of the weight of the air, and of its decrease in density with altitude. By looking at his predecessors' science, al-Khazini provides crucial records of their contributions that could have remained unknown or lost.

Most of the remaining treatises deal with hydrostatics, most particularly the determination of specific gravities. Al-Khazini goes to extreme length in describing the equipment necessary to obtain accurate results. His scrupulousness in the preparation of his equipment and materials, and in carrying out varied applications of his balances make his book one of the best examples 'of rigorous attention to scientific accuracy.' His interest is devoted to the determination of the specific gravities of metals, precious stones and alloys with commercial purposes in mind, so as to determine the purity of various substances and to detect fraud. To determine the specific weight of a specimen, its weight has to be known in air and water, and the volume of air and water displaced by the specimen. Hence, most Muslim researchers used water balances in their experiments. Using the same instrument as al-Biruni, Al-Khazini made repeated trials with several metals and gemstones. He also measured the specific gravities of other substances: salt, amber, clay etc, noting whether the substance sank or floated on water. All in all, he records the specific gravities of fifty substances that include precious stones, metals and liquids. The accuracy of such measures is impressive and is offered by Hill, together with modern values. Mieli sees the determination of specific weights by al-Biruni and al-Khazini as some of the most outstanding results obtained by the Muslims in experimental physics. The strict definition for specific weight is given by al-Khazini:



"The magnitude of weight of a small body of any substance is in the same ratio to its volume as the magnitude of weight of a large body (of the same substance) to its volume."

Page from Khazini's manuscript: The book of the Balance of Wisdom.

Taken from: MuslimHeritage.com

Lantikan Baru



Rahmatul Hidayah Salim in
(Pensyarah)



Norhafizah Md. Sarif
(Pensyarah)



Nurulfadzilah Hasan
(Pensyarah)



Mohammad Fadhil Abas
(Pensyarah)



Nasrul Salim Pakheri
(Peg. Latihan Vokasional)



Nazriyah Hj. Che Zan
@ Che Zain (Peg.
Latihan Vokasional)



Mohd Zahir Salim
(Pen. Peg. Latihan
Vokasional)



Raja Mohd Taufika
Raja Ismail
(Pensyarah)



Mohd Shawal Jadin
(Pensyarah)



Norman iha Abd Ghani
(Pensyarah)



Ezrinda Mohd Zaihidee
(Tutor)



Nurul Hazlina Noordin
(Pensyarah)



Mohd Zamri Ibrahim
(Tutor)



Mohd Hisyam Mohd Ariff
(Tutor)



Rosmadi Abdullah
(Tutor)



Mohd Anwar Zawawi
(Tutor)



Muhammad Hamka
Embong (Pen. Peg.
Latihan Vokasional)



Siti Fatimah
Hj. Ahmad Zabidi
(Pensyarah Kanan)

Tahniah

En. Badaruddin Muhammad yang mendapat cahayamata lelaki pada 12 Januari 2006.

En. Addie Irawan Hashim yang melangsungkan perkahwinan pada 14 Januari 2006.

En. Muhammad Sharfi Najib yang mendapat cahayamata perempuan pada 28 Mac 2006.

En. Amran Abdul Hadi yang mendapat cahayamata lelaki pada 6 Mei dan En. Norizam Sulaiman yang mendapat cahayamata lelaki pada 16 Mei 2006.

Pn. Nor Azila Wati Mohd Amin kerana selamat melahirkan cahayamata pertama perempuan pada 29 Jun 2006.

Pn. Maznida Mohamad kerana selamat melahirkan cahayamata kedua perempuan pada 10 Julai dan En. Razali Muda yang mendapat cahayamata lelaki pada 22 Julai 2006.

Pn. Siti Murzalina Sh. Murad kerana selamat melahirkan cahayamata lelaki pada 4 Ogos, En. Ahmad Zainuddin Mohamed yang mendapat cahayamata lelaki pada 5 Ogos dan En. Nidzamuddeen Ishak yang mendapat cahayamata lelaki pada 26 Ogos 2006.

Takziah

En. Mohamad Azlan Mat Hussin di atas pemergian adik dan bapa beliau ke rahmatullah pada 21 Januari dan 28 Februari 2006.

Pn. Maziyah Mat Noh di atas pemergian bapa beliau ke rahmatullah pada 17 Sept. 2006.

*Semoga roh mereka
dicucuri rahmat.*