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IEM Presidential Address 2005

MEETING REALISTIC CHALLENGES AND MAINTAINING BENCHMARKS

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One of the major driving force towards the formation of IEM was the need to be independent and to decide things in our own ways following the early days soon after our country gained independence. Another need was to qualify engineers for the submission of plans to local authorities. Our founder president Tan Sri Haji Yusoff b Ibrahim mooted the idea after seeing that local professional engineers needed to pass examinations set by British Engineering Institutions in order to gain promotion in the civil service. The need to form an institution to address those issues was strong then but are they the same needs for IEM today? What are some of the paradigm shifts which have since made us in a way redundant? IEM needs to meet these challenges in order to remain relevant.

Ever since my early involvement with IEM as a Council member, Honorary Treasurer, Honorary Secretary, Vice President and subsequently Deputy President, I have not been able to fathom what IEM truly represented except as a learned society which provided its corporate members a ticket towards registration as a Professional Engineer with the Board of Engineers, Malaysia (set up to enforce the Registration of Engineers Act). If that is the only attraction about joining IEM, no wonder not many of the present disciplines join IEM as shown in present day statistics. The reasons are obvious, as there is no necessity to do so. Being an organisation which membership is multi-disciplined, has IEM effectively looked after the needs of ALL its members? Can IEM effectively look after the multitude of needs today? Where's the competition? I suppose the answers are already obvious and if we have amongst us today volunteers who still feel that IEM is as relevant as when it first started, we need to recognise the paradigm shifts which have since taken place and take steps to address those challenges.

LIFE CYCLE OF ANY LEARNED SOCIETY

As with any professional learned society, it inadvertently would have been started by a group of founders who had a vision and mission to accomplish. They provided governance and volunteer efforts (including effort by spouses) to see that their mission is accomplished. As the society grew, a secretariat was formed which was supposed to complement the efforts of the governing council in taking action on items decided by the governors. The governing council enlarges and newer members join the council as guided by a constitution. Gradually, the major functions of governance by the volunteers occupying council seats and action by secretariat not only widens but at times went in diagonally opposite directions. As

experienced by me, certain recently elected council members with all the enthusiasm and dynamism find themselves quite at a loss as to what his/her role is and had to seek the more permanent secretariat staff members for guidance. Henceforth institutional politics is born and the society loses its original sense of purpose as well as relevance with council members addressing micromanagement rather than focusing on the MEGA issues which the society faces.

Certain societies which produce standards for use by the industry they represented, are luckier and may continue to survive their relevance by the sale of such products. However, as the subscriptions contributed by members gradually became too prohibitive to meet secretariat expenses (which size grew by leaps and bound due to well meaning innovations), the deficit shall have to be met from the earnings of the business entities within the new setup. With institutional expenses outgrowing income from subscription, (which IEM shall face in the near future), the contribution of subscription diminished, (presently in certain NGOs to less than 15% of total expenses), there is but only one sure route towards irrelevance when corporate decisions prevailed and business decisions are the order of the day.

As members of such societies, authors not only pay to get their technical papers published but members also needed to pay to view the same papers. Indeed as a member of the academic community, my sympathy goes to those who are faced with the paradigm shift from Publish or Perish to Publish and Perish. Such learned societies also often faced the question of membership loyalty and wonders why members are deserting them! Their well patronised and respected publications also faced direct competitions from publishers abound. No learned society can stop an established publisher from offering a platform of a journal similar to any learned society's to be published commanding a good set of readers/researchers. As universities also need to "do business", they too become IEM's competitor as well in certain areas. Members of the institution who are from these establishments often face with and have been questioned about the direct conflict of interest (although a few may not understand that question!) and till now, IEM has not been able to address this and other issues effectively.

GLOBAL AND REGIONAL CHALLENGES

I shall not dwell on the global challenges which faced IEM presently for I have read much of my predecessor's address last year in which Ir. Professor Abang Abdullah

Abang Ali took pains to highlight. What I shall perhaps highlight here are the local and regional initiatives which IEM should undertake as well as further strengthening existing initiatives.

RATING OF ENGINEERING FACULTIES

On the issue of engineering education, perhaps one of the major regional challenge facing the ASEAN Federation of Engineering Organisations (AFEO) and IEM is the need to rate engineering educational establishments regionally and locally so that a degree of comfort is provided to the public as to which engineering faculty is best for a particular discipline for students to begin his/her pursuance of an engineering career. Historically, due to the practice of sending students to universities overseas, a level of comfort is achieved when such graduates returned to work within the country. This de-facto recognition grew out of respect for such qualifications due to the remarkable performance of overseas returning graduates.

Such is no longer true when commercialisation of education is in place as seen today. Whilst universities still provided the necessary education for those who qualified and needed it, the comfort level one has with these are no longer benchmark-able. Henceforth there is a dire need for rating to be conducted by professional bodies which are independent and not influenced by any party. The spirit of this rating employing a standard set of criteria agreed by members of AFEO, for example, should set the benchmark for the region. The comfort we gained from such an exercise would be similar to the Washington Accord which purpose is to provide mutual comfort in each participating signatory's accreditation methods and standards to be achieved for graduate engineers. This exercise is one which is continuous and require long term commitment on the part of all signatories.

ROLE OF REGIONAL REGISTERS

The list of IEM's involvement with regional and international bodies can be found in our annual report. What is relevant is the role played by IEM at these regional and international forums. For this the Standing Committee for Corporate Affairs is created to undertake the job. Under this Standing Committee, the register for ASEAN Engineers, Asia Pacific Economic Cooperation (APEC) and Engineers Mobility Forum (EMF) have been developed. The ASEAN ENGINEER REGISTER (AER) being a trade register for professionals within ASEAN is set up by AFEO in which IEM is a founder member. The APEC and EMF registers are separate registers set up respectively by APEC economies, namely countries which reside around the Asia Pacific rim, and from Washington Accord Countries. The aim of these registers are to benchmark professionals within each region as having substantial equivalence. These regional benchmarks should be maintained so that a regional level of comfort can be assured when clients utilise services of the professionals in these registers. A system of maintenance and continuous recognition of competency should be instituted so that those who are no longer in active engineering practice should be gracefully phased out.

POSITION STATEMENTS

At the home front, IEM has since Ir. Dr Gue See Sew's presidency in 2002 set up many Position Paper Committees which addresses current and future issues facing the profession. There are presently more than 15 position paper committees working within the IEM set up, the latest being on Design for Earthquake. The purpose of such document is to express, in no uncertain terms, IEM's position on various issues which affect the nation and the engineering profession. Members of the Position Paper committees are drawn from our membership as well as experts from outside IEM. As these are statements of support for certain technical issues, they also provided necessary data for writers of Policy Papers to quote when needed. This is an ongoing process in which reviews shall be carried out at regular intervals to update the document albeit another long term commitment which IEM has undertaken. We have seen that some of these Position Statements have served its purpose by providing the much needed professional stand of engineers to those who needed it to make policy decisions.

MEETING THE REALISTIC CHALLENGES

Every non-profit society faces external and internal threats. For IEM in particular, the internal threat sometimes overwhelms the external threat via differing views amongst Council and Executive Committee members with secretariat staff caught in the middle. I would like to put forth the idea that key positions within the IEM structure should seek the person instead of the present method of the candidate seeking the post for whatever reasons. What are the tools available for the membership to identify future leaders and yet at the same time train the younger members to become future leaders as well? We have a constitution which is sufficiently flexible for this to be implemented but then the will to do so must prevail. How do we enhance technical relevance and competency and look after the professional well being of our members?.

INITIATIVES TAKEN BY IEM COUNCIL

IEM recognises that today it faces many interesting challenges in order to remain relevant. In 1995, IEM Council, recognising the challenges ahead, embarked on the preparation of an IEM Strategic Plan to formulate strategies to proactively move IEM to the fore-front to be the PREMIER professional organisation pivotal to Malaysia achieving Vision 2020. Those were at least our intentions in words. Somehow action speaks louder than words and I must confess that we have not truly done enough, due in part to the question of ownership by those who proposed the plan. There must be champions for each item in the plan and in this, we are lacking. Perhaps one of the real reasons for the lack of follow-up may be the presence of "disoriented" new Council members. As our Hon Deputy Minister of Works (who is also an engineer) rightly put it "even in golf, when one tees off, there must be a follow through failing which your ball either strays left or right except going where it was intended to go".

RELEVANT ISSUES

Recognising the five needs, namely to orientate new Council members, provide leadership training, identify new leaders and to promote fellowship and build teamwork amongst Council members, the last IEM Council had gone for a brainstorming retreat to address the above issues. The major issues discussed at the October 2004 council brainstorming could be divided into four major areas although there were more issues facing IEM council at present. Further similar activity shall target towards addressing the remaining issues in the near future. I shall share with you some of the issues which were addressed by IEM Council at the October 2004 outing.

The objectives of the brainstorming were fourfold, addressing the IEM's value to the general membership, IEM's leadership and the competition, IEM's nimbleness and responsiveness to current issues and IEM's issue of volunteerism, education, marketing and certification. The topics discussed include:

- Future Role of IEM as a membership driven society
- Empowerment and Delegation
- Council Effectiveness and Governance
- Products and Services to meet Membership/Society needs

On the future role of IEM as a membership driven society, the questions addressed included how IEM fared in the past, its present performance and how it should fare in the near future. The reality is that our membership has stagnated (number of delinquents equals the number of new members) and that is an immediate challenge for IEM Council to address.

To make the society more nimble and responsive to current issues, a certain degree of empowerment and delegation is needed. Always easier said than done! However, with such empowerment, there must also be in place a reliability centre scheme so as to ensure that such delegation of council's authority does not lead to lengthy litigious issues.

The Council should also address the issue of Council effectiveness and governance by the Council. Is Council and its Executive Committee into too much micromanaging whilst missing the mega issues facing IEM? Are we providing the right kind of products and services for the members so as to retain membership loyalty. Even the more successful societies of the west do face the question of ageing membership and the loyalty of its current crop of members as highlighted earlier.

Volunteerism is very much alive amongst our membership both new and old. We need to address the role of our Past presidents more effectively and orientate new volunteers so that they know when and how to steer clear of issues of conflict of interest.

Arising from the brainstorming, an action plan has been drawn out. If we could fulfill 30% of those identified critical areas, I would have been more than satisfied as president of the day.

SPEED OF CHANGE AND ADVOCACY

Suffice to say that we now live in a fast moving world. For those who do not see it, planet earth makes one revolution in 24 hours and if one were to look at the diameter of earth, our

tangential velocity is well in excess of the speed of sound on the surface of the planet moving at Mach 1.6 on a relative scale. Taking this further to the motion of earth around the sun and the distance which separates us from the sun, compared with the speed of sound in air on the surface of earth (345m/s) we are moving at about 86 times that value. On the other hand the speed limit of 110 km/hr which converts to 30.5m/s on our highway is rather insignificant but sufficient to break our bones when we smashed into a concrete wall. With such fragile features, no wonder the human race could easily be wiped out when we misuse the forces of nature which engineers harness for the benefit of mankind. Even without harnessing, certain natural disasters do befall upon us from time to time as witnessed by us on the 26 December 2004 - tsunami disaster. Change is constant and if we were aware of changes which surround us, we can advocate suitable responses to meet these challenges. A particularly important area which IEM can look at is the realm of advocacy. Like it or not, in order to be broadband, engineers need to face the challenges of advocacy to achieve one's eventual objectives. Again being a learned society, the issues in advocacy runs contrary to our very existence perhaps another MEGA issue for Council to address.

BENCHMARKS

Serving the needs of members first and society second, we are faced with major challenges ahead, some of which requires review of existing strategies and benchmarks. The first which comes to my mind is the elusive benchmark of engineering education standards. Through our accreditation practices of the past and our present involvement with the Engineering Accreditation Council (EAC) hosted by the Board of Engineers, efforts toward maintenance of minimum engineering academic achievement have been made.

However, with the world trend of moving towards an outcome based evaluation of engineering programmes, universities shall have to closely monitor the performance index of their products even after the student graduate so as to see their competitiveness and relevance to industry. In addition to serving as a partner in the Engineering Accreditation Council (EAC), IEM should also work closely with overseas learned societies to directly accredit engineering programmes requested by local and regional universities so as to complement EAC's effort. On a personal note, I feel that EAC would be redundant when it fails to get Malaysia into the Washington Accord as a Full member within a specific timeline.

IEM has with the BEM been conducting an annual examination for the working technical sub-professionals to acquire the basic qualification for becoming a professional engineer. In this respect, the Engineering Council of UK (EC) examinations for which we adopted as a ready benchmark have served its useful purpose. With the recent sub-contracting of EC examinations to City and Guilds, a profit body with some conflict of interest, it would be wise for IEM to develop its own local benchmark with the assistance of local Institutions of Higher Learning of acceptable standards. This is another MEGA issue for Council to address.

On the professional interview for corporate membership of the institution, there is a need to define the benchmark which corporate members needed to meet and not leave it to be benchmarked against the experiences of the professional interviewer so appointed. In this age of IT and computer power, can our practices of yesteryear stand up to the challenges of the present? The question of revisiting the benchmarks is a MEGA issue to be resolved.

TARGETTING NON-CORPORATE MEMBERS

The non-corporate members category of the recently amended IEM constitution needs to be addressed. We have a larger body of engineering based workforce which IEM should embrace so that they too have a platform to voice their priorities. In the UK two models are available. The Chartered Technician and Incorporated member category is spelt out within the Institution of Civil Engineers Charter whereas a new Institution of Incorporated Engineers (IIE) is formed specifically to cater for members of non-civil discipline.

The IEM has followed the ICE model in as far as the Incorporated member category is concerned but much effort needs to be done to get this category of membership expanded in our register. Perhaps with the active participation of the Graduate and Student's Section we can see some movement of membership in this category.

DIVERSITY

Due to the diverse membership categories which formed IEM, we do have the need to constantly safeguard against fragmentation. As such it had been a gentlemen's agreement to rotate the Presidency amongst the 3 major disciplines, a practice in place in the past and until the present. Recent trends have tended to lean more towards Civil Engineering due perhaps to the larger number of active civil engineers within IEM's membership. We need to safeguard that the Council and Excomm speaks and

expound the views of all engineers and not one discipline alone. Our strengths and weaknesses lie in our diversity. On the one hand, we do not duplicate efforts by the formation of more institutions each representing a different discipline, we somehow have to respect the aspirations of all members other than the majority.

ROLE OF IEM/BEM

Although IEM assisted in the setting up of the Board of Engineers with the enactment of the Registration of Engineers Act, 1967 which has since been amended, the role of these two bodies are significantly different, one addressing the issue of public safety whilst IEM is the society representing the engineers. Complementary rather than competitive functions are seen here and sometimes these functions appear to overlap. I do see the need for IEM and the BEM to work together towards fulfilling the aspiration of the nation but sometimes it is the players who needed to be reminded regularly.

CLOSURE

In conclusion, I hope I have done justice to everyone who is present here to listen to this address and that we need more volunteers to serve the Institution for the reasons highlighted. IEM is merely a vehicle, the subscriptions being payment for its fuel, to be steered by its membership and I wish to reiterate that one should not ask what IEM can do for you but what you can do for IEM to make it a worthy body which represents the engineers here. ■

Note:

This Presidential Address had been delivered at Sunway Pyramid Convention Centre during the 46th IEM Annual General Meeting held on 26 April 2005.

ERRATA

Paper Title: "TRANSIENT HEAT TRANSFER ANALYSIS ON A SATELLITE IN AN ORBIT"

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- On page 51, under section on Numerical Model, the subscripts x, y, z and symbol " p " in equation (1) should be corrected as follow:

$$\frac{\partial}{\partial x} \left(k_x \frac{\partial T}{\partial x} \right) + \frac{\partial}{\partial y} \left(k_y \frac{\partial T}{\partial y} \right) + \frac{\partial}{\partial z} \left(k_z \frac{\partial T}{\partial z} \right) = \rho c \frac{\partial T}{\partial t}$$
- On page 52, line 4, "...solar absorptivity ..." should be corrected as "...solar absorptivity α^s ...". (The symbol to be used in the sentence is the Greek letter alpha (α) followed by a superscript S.)
- On page 52, line 22, "A tolerance of +38 ..." should be corrected as "A tolerance of ± 38 ...".
- On page 52, line 33, "...the numerical would..." should be corrected as "... the numerical work ...".
- One page 52, line 7, the symbol in equation (3) α^s should be corrected as follow: S^a (unhindered) = $\alpha^s S \cos \theta$
- One page 53, Figure 6, the caption "Temperature distribution of actual model of satellite of thickness 2mm" should read as "Plot of 2 complete orbits with the 3 nodal temperatures versus time".
- One page 53, Table 5, the caption "Different shell's thickness against the maximum nodal temperature" should read as "Different satellite's emissivity against the maximum nodal temperature".
- One page 54, Figure 8, the caption "Plot of the maximum temperature versus the shell's thickness for Al-6061" should read as "Plot of the maximum temperature versus the emissivity for Al-6061".
- On page 54, under Nomenclature, the symbol " r " for density should be corrected as the Greek letter " ρ " for density.