**Country needs to Develop Spiritually as well to achieve Real Progress**

- President Maithripala Sirisena at the IESL National Engineering Conference

National Engineering Conference 2015 organized by the IESL was held at Hotel Galadari on 2nd April, 2015 with the country's first citizen, His Excellency President Maithripala Sirisena gracing the event as the Chief Guest. This is the second such conference after the resounding success of the inaugural event held in October, 2013 and had an impressive lineup of some of the top business executives in the country among them eminent panel of speakers in addition to guest speaker, Eng. Edwin Khew Teck Fook, President of IESL – President Elect of Institute of Engineers, Singapore who shared their experiences with the audience.

Stressing that Sri Lanka should utilize the skills of its own engineers for the country's development, President Maithripala Sirisena in his speech also spoke of the country's glorious engineering traditions of the past as seen in the magnificent irrigation schemes of Anuradhapura, Polonnaruwa and Dambulla demonstrating the skills of the indigenous engineers of those times.

Referring to the present era President Maithripala Sirisena pointed out the lack of spiritual progress required for real achievement and recognition despite the physical development in the country in terms of megaprojects of roads, ports and buildings. In the same line of thinking Eng. S.B.Wijekoon, President of the IESL, earlier on in his welcome speech had mentioned about the Engineering Council Act the mentioned about the Engineers of the past and the present and the future of Engineering profession.

To expedite decision making and improve quality and standard of our activities of the IESL, I proposed three main activities to implement in my tenure. Firstly I proposed to develop and implement a hybrid model for speedy administration and financial matters with adequate transparency including improving efficiency and effectiveness of the staff. Secondly I proposed a high level ICT system to have an effective information management system and speedily flow of information to improve the activities of the IESL. My third objective was to strengthen and increase the membership of the IESL by providing more facilities and benefits to members, especially those living in the provinces and overseas.

I am happy to note that significant achievements have been made in all these thrust areas. The introduction of an electronic document management system for the first time to the Call For Papers for the 109th Annual Sessions saw our members, in numbers as large as in previous years electronically submit abstracts and the abstracts being reviewed and accepted or rejected being sent to authors swiftly and efficiently through the system. My special appreciation goes to the Eng. (Dr.) KED Sumanasiri, Editor Transctions for his initiative and hard work in making this entire thing possible. Similarly the electronic version of the 'ENGINEER', quarterly journal of the IESL now gets dispatched directly to the inbox of members. My appreciations go to Professor TM Pattewatta, Editor Journal, for making this possible. I believe that submission of technical papers to the journal too would very soon be electronically possible and that it would acquire more visibility through being internationally indexed and published in international recognized publishing platforms.

The streamingline of administrative and financial matters are being carried out to make them speedy and efficient and they are a continuing processes. Their success requires the co-operation of our members and I appeal to the members to give utmost support by following laid out procedures so as to achieve best results without inconveniencing the staff.

I am pleased to note that there has been significant increases in the number of Associate Members in the provinces with more and more candidates sitting for the exam in the provinces. The National Engineering Conference 2015 held on 2nd April, 2015 under the theme "Engineering: The Change Agent" was another huge success following the successful inaugural event held in October, 2013. Gracing the event as the Chief Guest, H E The President, Maithripala Sirisena spoke of the proud engineering heritage of the country and expressed his desire to utilize skills of local engineers in development projects and also undertook to expedite the process of getting the National Engineering Council Bill passed by the parliament to strengthen the local engineers and preserve the local engineering heritage.

**MISSION STATEMENT**

1. To expedite decision making and improve quality and standard of our activities of the IESL
2. To strengthen and increase the membership of the IESL by providing more facilities and benefits to members, especially those living in the provinces and overseas.

**ENGINEERING NEWS**

The Newspaper of The Institution of Engineers, Sri Lanka Vol. 51, No 02, March / April 2015

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The Institution of Engineers, Sri Lanka”

Session 2014/2015
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(MANUFACTURES OF ANTON PVC PIPES AND FITTINGS)

Two competitions will be held this year for the award of certificates and cash prizes. The competition soliciting original Technical Papers on research and case studies are accepted from members of IESL who are above 35 years.

There will also be another competition for members who are 35 years and below on 01 October 2015. This competition is open to members of IESL and final year students of Faculties of Engineering of Universities in Sri Lanka who are student members of IESL or who obtain such membership before submitting their technical papers.

AWARDS & PRIZES

ABOVE 35 YEARS ON 2015.10.01
35 YEARS AND BELOW ON 2015.10.01

| First Prize - Rs. 50,000/= | First Prize - Rs. 25,000/= |
| Second Prize - Rs. 25,000/= | Second Prize - Rs. 15,000/= |
| Third Prize - Rs. 10,000/= | Third Prize - Rs. 5,000/= |

The members (Fellows, Members, Associate Members, Associates, Companions and Students) who wish to participate must obtain the application forms from IESL and submit bio data & full Technical Papers to reach the Executive Secretary, The Institution of Engineers Sri Lanka, No. 120/15, Wijerama Mawatha, Colombo 07 on or before May 30, 2015.

Further information could be obtained from the Chairman, Steering Committee on Water Resources Development of The Institution of Engineers, Sri Lanka, on Tel: 077 35 40 350 or Manager -Publicity-IESL 011-2685490, 011-2698426 or 011-2699210, ext-232, 207, E-mail: dir.pub@iesl.lk, ieslpub@gmail.com, Fax : 011-2699202.

Note: Forms, Rules & Details and Full paper format could also be downloaded from the IESL Website, www.iesl.lk or obtained from the IESL Secretariat.
IESL, JIY Competition Promotes Global Competition through Intel ISEF

by Eng. Jayavilal Meegoda
Vice President, The Institution of Engineers Sri Lanka
Deputy General Manager, Ceylon Electricity Board

The Sri Lanka Science and Engineering Fair (SLSEF) 2015, for selecting the cream of creative and innovative among Sri Lankan school children for participation in the Intel International Science and Engineering Fair (Intel ISEF) 2015 to be held in Pittsburgh, Pennsylvania, USA was conducted at the Wimalasurendra Auditorium of the Institution of Engineers Sri Lanka on 20th February 2015. The Intel ISEF is where the best of world’s best young scientists and inventors from over 60 countries come together each year to share their ideas, showcase their cutting edge science and engineering projects and win awards and scholarships.

The SLSEF is a joint effort where the Ministry of Education, National Science Foundation (NSF), Intel® EM Limited-Sri Lanka Liaison Office and the IESL had joined hands since year 2007 to promote creativity and innovation among the country’s younger generation. Every year 20 competitors are selected from two separate competitions, the Junior Inventor of the Year (JIY) competition conducted by the IESL and the Science Research Project Competition (SRPC) conducted by the NSF, to compete at the SLSEF to select three of the best among them to participate at an international level in the Intel ISEF held in USA.

Since beginning to participate in the Intel ISEF, student of Sri Lanka, who has been selected through Junior Inventor of the Year (JIY) competition organized by Institution of Engineers, Sri Lanka, has done the country proud by managing to win awards and recognition winning the 3rd place grand award in 2009 on their 2nd appearance and clinching the 1st place grand award in Computer Engineering at their 3rd appearance (2010). The latter achievement earned the distinction of a newly discovered planet being named after the winner who was also the Junior Inventor of the Year 2010 nominated to the Intel ISEF competition by the IESL. JIY finalists were able to win the IEEE Award and Intel Excellence award in computer science in Intel ISEF at 5th appearance (2012) and also won the 1st place grand award in category of Electrical & Mechanical Engineering and Special award from the Ashvadvahani Vidwan Ambati Subbaraya Chetty Foundation at 6th appearance (2013). At 7th appearance (2014), JIY winners won the 2nd place grand award in category of Electrical & Mechanical Engineering, 4th place grand award in category of Computer Science and two Special awards from the American Intellectual Property Law Association & U.S. Agency for International Development. The fame and recognition achieved so far has led to a rapid rise in the popularity of the competition among school children all over the country.

Welcoming the participants to this year’s SLSEF the Vice President of the IESL, Eng. Jayavilal Meegoda pointed out the significant contributions JIY programme is making to the students and the country providing motivation to be creative and innovative. Also Eng. Jayavilal Meegoda said that the SLSEF is being held for the seventh time and that the country has to be proud of the way its school children have performed in the face of international competition. He pointed out the exhaustive preliminary selection process undertaken by the IESL in selecting 50 finalists from the nearly 1000 school children projects demonstrated to panel of judges at Colombo and all the provinces. He said that 20 of the finalists were given the opportunity to exhibit their inventions to the industry and the public at the National Engineering Exhibition (TECHNO) in October 2014 at the BMICH. The top 10 of these finalists have been nominated to the SLSEF 2015 he concluded.

Master Mahendiran Sivatharshan
Miss Subodha Sewwandi
Master Mahendiran Sivatharshan & Miss Subodha Sewwandi were selected to represent Sri Lanka at the Intel ISEF in Pittsburgh, Pennsylvania, USA in May 2015.

Further information could be obtained from the Chairman, Steering Committee on Water Resources Development of Institution of Engineers, Sri Lanka, on Tel: 077 35 40 350 or Manager Publicity-IESL 011-2685490, 011-2698426 or 011-2699210, ext - 232, 207, E-mail: dir.pub@iesl.lk and ieslpub@gmail.com, Fax : 011-2699202.

Note: Forms, Rules & Details and Full paper format could also be downloaded from the IESL Website, www.iesl.lk or obtained from the IESL Secretariat.
Udeni Nawagamuwa
Hindu New Year!
I wish all our readers a Happy and Prosperous Sinhala and We are ready to change to improve the quality of the SLEN. Please send us your comments and constructive criticism.
the mistakes.
critics and that forces you to know your facts to correct because when your write incorrectly you hear about it from because you learn from others. Writing makes you exact talking to others) makes you ready to deal with situations Reading makes you full (of knowledge). Conference (or MAKETH A FULL MAN; CONFERENCE A READY MAN; us, your article will be published. Don’t forget this “READING

As you know, I have been requesting you to write to me (to the editor) as you are the best person to give us your feedback. Sometimes I have got lot of comments from seniors, but they are mostly the people I know. But how about others who have come to know me only through the SLEN? Are they accepting in Toto the contents in the SLEN? When ever, we do not get any feedback, we tend to assume that the content in the SLEN is accepted. Last year we did a small search on the number of readers of SLEN and found it to be around one thousand. We know at least that they had browsed the site, but no information whether they actually went through the content. Anyway this is very discouraging when our membership is beyond 12000 and less than 10% are browsing the SLEN. We need your feedback, and then only we know we are in the right track.

Further, in addition to your feedback, we need your write-up to be included in the SLEN. We all are authors; write to us, your article will be published. Don’t forget this ‘READING MAKETH A FULL MAN; CONFERENCE A READY MAN; AND WRITING AN EXACT MAN-SIR FRANCIS BACON’. Reading makes you full (of knowledge). Conference (or talking to others) makes you ready to deal with situations because you learn from others. Writing makes you exact because when your write incorrectly you hear about it from critics and that forces you to know your facts to correct the mistakes.

Please send us your comments and constructive criticism. We are ready to change to improve the quality of the SLEN. I wish all our readers a Happy and Prosperous Sinhala and Hindu New Year!

Udeni Nawagamuwa
nawagamuwa@gmail.com

“Challenges and opportunities in Electronic Warfare operations of developing Navies - A Sri Lankan Perspective”
by Capt (L) Prashantha Anthony
psc. MSc(DS)Mgt, C.Eng(SL),MIE(SL),C.Eng(India), MIEEE

Introduction
Electronic warfare is defined as the Military action involving the use of electromagnetic energy to determine, exploit, reduce, or prevent radar’s use of electromagnetic spectrum. Electronic Warfare is organized in to two main categories, EW Support Measures(ESM) and Electronic Counter measures(ECM). When EW community tries and degrades the radar capability, the radar community on the other hand uses techniques for successful application of radars by utilizing Electronic Counter-Couter measures.

It is interesting to analyze how the Electronic warfare has affected the developing Navies in general and Sri Lanka Navy in particular. My intention is to highlight the challenges to deployment of Advanced EW capabilities and to suggest ways and means to counter those barriers by few “counter-counter measures” that can be adopted to ensure the system manufacturer and the user understand the gaps and successfully bridge them for a mutually beneficial EW effort.

EW Systems used in Sri Lanka Navy
Sri Lanka Navy since its formal inception in 1950 has developed steadily in Naval force projection capability. The role of the Navy was more concentrated on the mounting pressures of terrorism in the country since late 1970s and the acquisition of Naval assets was based on countering terrorism rather than force projection as an Island Nation. At present in Sri Lanka Navy most of the large ships such as Offshore Patrol vessels, Fast Missile Vessels and Fast Gun Boats are fitted with mid size ESM systems. ECM capability is available in limited number of large ships and Remote Controlled Improvised Explosive Device jammers were effectively used in countering terrorist activities against land based naval convoys. Sri Lanka Navy has a very large component of Naval Patrolmen who were enlisted and trained to occupy coastal defense bases and Northern islands. Thus the Land based ECM systems were a much needed tool during the times of conflict. ECCM capabilities were largely nonexistent due to fact that there was minimal or no threat of ECM from the terrorist outfit and Navy’s priorities were focused mainly on developing the fighting capability at sea and land.

Who is the real enemy?
In the absence of a major conflict with any other country, Sri Lanka Navy has been strengthening its counter terrorism capabilities over the past 30 years. The government has now placed much emphasis in developing overall Naval force projection capabilities with the acquisition of new platforms and systems.

The threats posed by Non State actors such as human and arms smuggling, piracy, terrorism, drug trafficking and poaching in the vast maritime domain encompassing the Exclusive Economic Zone of 530,000 square kilometers is cause for much concern as well as the added responsibilities in the assigned Search and Rescue Region, which amounts to 27 times land mass including the main Sea Lines of Communication.

Being a standard Navy, it is envisaged that new platforms with ESM and ECM capabilities and new systems with ECCM capabilities will be acquired in near future to engage in legitimate Naval Electronic warfare.
“Electrified Transportation, Now or Never”
Say the experts at EESoc Panel Discussion

by Ms. Guvanthi Abeysinghe
Student Member IESL
Undergraduate, Department of Electrical Engineering, University of Moratuwa.

Approaching fossil fuel crisis, growing demand for transportation, requirement of improved modes of transportation, all have been insisting ‘Electrified Transportation’ in Sri Lanka from a long time. This requires collaborative efforts of both power and transportation sectors. So far, experts have carried out their own research and policy makers have taken their own decisions either with or without the recommendations of the experts, but none were implemented yet.

This issue was the topic for the annual panel discussion organized by the Electrical Engineering Society (EESoc) of the University of Moratuwa, which was recently held at Water’s Edge, Colombo. A panel of professional experts presented their views and recommendations on the subject and also followed an open discussion with the audience of the corporate sector and University academics.

Minister of Power & Energy, Hon. Patali Champika Ranawaka taking part as the chief guest of the event emphasized the importance of changing the present non-sustainable economy based on the service sector to a sustainable knowledge-based economy demanding technological and innovation.

The Former General Manager of the CEB and the immediate past President of the Institution of Engineers Sri Lanka, Eng. Shavindranath Fernando, delivering the key note speech gave an insight into the role that the relevant authorities have so far played for electrification of transport.

“In 1983, I was doing some work in the energy sector and I had to analyse the CEB load profile and the demand projections. To my surprise, there was an electricity demand component for railway electrification and 32 years later, we are still talking about railway electrification. Railway electrification was first proposed by none other than one of our great visionary engineers, D.J Wimalasurendra somewhere in the early 1920s,” he said.

Further, Eng. Shavindranath, noting that even though the hybrid cars have been flourishing, electric cars have been imported only by a few, pointed out that “with the tax reductions for importation of electric vehicles, it is imperative that we all in the transport and energy sectors get together and address the myriad of issues that necessarily will have to be addressed urgently.”

The panel discussion with the professional experts gave the opportunity for each panelist to present their views in their fields of knowledge on the subject. Dr. Lalithasiri Gunaruwan, Secretary to the Ministry of Internal transport and former General Manager of SLR was the first panelist to address the gathering.

Being a leading Economist, Dr. Gunaruwan speaking on the ups and downs of Sri Lankan economy came to the point that enhancing the productivity is the way to relieve the country from the middle income trap and energy should gain due focus as it is directly proportional to productivity. Dr. Gunaruwan said that 11% of the petroleum imports can be saved through productivity and efficiency. It will save approximately 40 million USD per year, which is nearly one and half times the annual loss to Sri Lanka Transport Board and more than the annual operating loss of Sri Lanka Railway and electrification of transport operations might be a society friendly solution in this regard, to improve the productivity and competitiveness in the transportation sector.

Expressing the views on future trends of transportation, Prof. Amal S. Karunaratne, Senior Lecturer of the Dept of Transport & Logistics Management, University of Moratuwa and Former Chairman of the National Transport Commission mentioned that “The demand for mobility is increasing all the time, it has increased with population over the years but it has been noticed that even when the population stops growing the demand for mobility increases. In fact, it’s found now that it’s almost directly proportional to income” referring to the statistical details.

Looking into the future in case of Western province, he said that in order to maintain the present road speeds by 2030, the road capacity should be increased by 100% and highways will still be a requirement. Prof. Karunaratne further stated that encouraging public transport, influencing to shift from road to rail and from private modes to public modes of transportation, providing a variety of transportation modes, saving energy and achieving cost effectiveness will resolve these issues.

Eng. Lakshitha Weerasinghe, Chief Engineer (Business & Operational Strategy) of CEB said that “As the national income is spent on importing petroleum, 66% of this is for the transport sector and 98.5% transport sector petroleum usage of the country is to power road transport. If we can gradually transform our vehicle fleet into electricity what would happen is, the petroleum demand in the transport sector will transfer to the load.” Further, he explained that this can be encouraged by introducing a ‘Time of Day’ tariff for electricity with a low off peak rate to charge electric vehicles and renewable energy sources like wind are eligible to absorb this load. Eng. Lakshitha also spilled the beans on CEB’s considerations to set up rapid charging stations in the country.

Presenting the same concept of electric vehicles, Dr. Narendra De Silva, the Head of Engineering, LECO said, “There will be a smart meter where the vehicle will demand the number of hours of charging and we will dynamically allocate the capacity to the vehicles. Considering the efficiency issue, when you look at the overall efficiency of the entire lifecycle efficiency of this business, probably at the highest efficiency we’ll be converting the primary energy to electricity at about 35-38%, then at the electric vehicle we’ll be converting that efficiency at about 70-80%, this should be contrasted to the vehicle efficiency of somewhere lying about 15%. If you work these numbers you will see that transmission losses should be less than 10% to make this efficiency pump economy... so even if the battery or the other we may need to provide a connection to maintain the reliability of the network”. Further Dr. Narendra also commented on the need to increase the capacity of the transformers to meet the increased demand of the consumers.

Following the same concept of electric vehicles, Dr. Tilak Siyambalapitiya, a premier Energy Consultant in the country and a Former President of Sri Lanka Energy Managers Association showed that its implementation can be started by electrifying Panadura to Veyangoda railway line. Dr. Siyambalapitiya explained that a 25kV overhead line can be used to supply power to the train and one of the rails can be used as the re-
Electrified Transportation - The Step towards Future

Key Note Speech: by Eng. Shavindranath Fernando

"Hon. Minister of Power and Energy Eng. Patali Chamika Ranawaka MP, our Chairman and Chief Guest this evening, Hon. Minister of Internal Transport Ranjith Maddumda Bandara MP, our Guest of Honour, Prof. Ananda Jayawardene Vice Chancellor University of Moratuwa, distinguished invitees, Panel members, members of EESOC, Ladies and gentlemen, I am very pleased to stand before you and deliver this key note speech. Knowing very well that I am not the best person to do so in the midst of a very distinguished and a highly knowledgeable audience and a panel.

In 1979 when I joined CEB I was attached to Kelaniya Power Station and the Pettah power station was looked after by our staff. There were several outgoing feeders from this power station allocated for the tram lines and trolley bus service as was the Pettah Power station was primarily put up in 1902 for the Colombo Electric Tramways and Lighting Company. So here we are re-opening the topic of electrification of our transport system once again more than half a century after the electrified transport system that we had in Colombo operated by the Colombo municipality was scraped. It defies me to find the reasons for these decisions as I was told by none other than Mr. Late John Subasinghe former General Manager of CEB and the first Chairman of LECO, that they had to canvass the tea factories during the same period to electrify their own factories scrapping the large number of mini hydro power stations that were powering them. So it is not uncommon for Sri Lankans to do one thing in one hand and undo it at the same time from the other.

In 1983, I was involved in doing some work in the energy sector and I had to analyse the CEB load profile and the demand projections. To my surprise there was an electricity demand component for railway electrification, 32 years later we are still talking about railway electrification. Railway electrification was first proposed by none other than one of our great visionary engineer D J Wimalasuriya somewhere in the early 1920s.

When I was small we had green coloured electric trolley buses silently moving in Pettah and Fort with their characteristically horn. My grand mother used to talk about the tram cars. The rail lines laid in the middle of the roads in Colombo were still visible until recently. These tram cars were taken off the roads I believe in 1959 or so and the trolley buses too were taken off in 1964. I believe have most of them were made due to mismanagement, unionism and politics at that time and may not necessarily be for economic reasons.

In 1992, we in Sri Lanka Energy Managers Association organized a roundtable on transportation, I organized this event with the experts at that time, late John Diandas, Dr. Jayawardane (?), Prof KKYW Perera and few others including DIG (Traffic) Mr. Perinmanayagam as main contributors. It was a very successful one at that time and some SLEMA members made even slide presentations that led to immediate leveling of some road humps that were put up near the pedestrian crossings of the universities, when everyone realized university students were not Montessori students! Then few bus bays were also constructed on Galle road, though at that time late Mr. John Diandas was against this concept where he argued the busses should stop on the main road while private vehicles should veer away from the main line traffic giving priority to buses. I don’t think this will ever happen though it has a very rational base, perhaps until all of us travel in buses. Once again last year too SLEMA had its annual sessions dedicated for sustainable transportation.

Then in 2008 the Institution of Engineers Sri Lanka sponsored a study of railway electrification and we even got the assistance from the Institution of Engineers India to send an expert in railway electrification and I am sure Tilak who was involved in the study will dwell on. The study had very clear conclusions and a cabinet paper was drafted by the Ministry of Power and Energy and our minister at that time none other than our chief guest signed it and sent it to the Ministry of Transport in which I believe is still there to be signed by the minister! This cabinet paper never saw the light of the day.

These are some of the attempts made by the professionals of this country to address the efficiency improvements in the transport sector. I must admit the other sectors nothing much has happened in the electrification of the transport sector though it seems to be the obvious solution to many problems in this sector. I am sure those who are involved in this sector know only too well why nothing rational can be done. I do not want to go into details as they are bound to come up in the later discussion session.

So it is very opportune to talk about this topic today and I congratulate EESOC for taking the initiative.

Coming to the topic of the day, it is timely and opportune to take up this matter as a priority due to more than one reason.

a) For quite some time now hybrid cars are sought after by many car users and there is very little effort to track down the energy efficiency of these cars and come out with a policy to encourage them and to see the possibility of off line supplementary charging if it can be done or if it need to be encouraged.

b) For at least 10 years electric cars have been imported by enthusiasts and not really as a need, to be introduced especially for urban commuting for which in my own mind has a tremendous advantage of not only the efficiency gains in running on congested urban roads but also as a measure to reduce urban pollution from fossil fuel powered vehicles. With a capacity of 100kw and a range of 100km this is something else. So I leave it to the experts to argue this out.

c) We also have to see the same time see the validity of imposition of increase of custom duty on hybrid vehicles in the light of the argument that it favours the electric cars, of which I am not quite convinced if it had been done with this objection in mind or the real reason is something else. Politics aside, I categorically mentioned that the biggest mistake we have done in the energy sector in Sri Lanka was the separation of the ministries of Petroleum, Power and the renewable energy sector was discussed. Politics aside, I categorically mentioned that the biggest mistake we have done in the energy sector in Sri Lanka was the separation of the ministries of Petroleum, Power and the renewable...
I too is Canadian, but not ‘The Canadian’, which ter minology can only be used in referring to one class of lo comotive in Sri Lankan railway parlance, the legendary M2. It is not the M2 that is being discussed here, but “The Other Canadian”, the Montreal Locomotive Works (MLW) built Class M4, now entering its fortieth year of service on the railways of Sri Lanka.

Large and ponderous, they may lack the athletic good looks and flamboyance of the M2 to thrill the hearts of rail fans. Nor can they boast of the M2’s deep two stroke thunders to announce their imminent arrival from miles away or even split asunder the quiet of a warm Wanni night with a blast from triple Airchime horns. Yet in their inimitable way the M4s have established a quiet reputation as one of the most durable classes of locomotives on the Sri Lankan railway system. The fact that they continue to provide yeoman service still is a testimony to the excellence of their design and the standards of their manufacturer.

The M4 Class arrived in Sri Lanka in 1975, a total of fourteen locomotives in all. These

Class M4 MLW ALCO Locomotive

peering the factory tests prior to shipping the locomotives. The locomotives came, but not the engineer, apparently he stayed behind and joined Canadian Pacific, or so they say!

On arrival they began taking over the running of crack expresses such as the “Yal Devi” and “UdarataMenike”, which train had hitherto been the reserve of the hydraulic W2s, already showing signs of impending and premature breakdown. Unfortunately for the M4s, the tight reverse curves of the Up Country Main Line did not take kindly to their im mense wheelbase and weight. Soon it became apparent that track dis placement was taking place, especially at the curves. Sadly, the M4s had to be withdrawn from the Up Country line and confined to the more gentle curves of the flat lands, which duties they handled admirably. It was indeed an impressive sight to see a huge M4 at speed, galloping down the parched Dry Zone plains with the “Yal Devi” in tow!

It is pertinent here to briefly explore the history of their manufacturers and design.

Class M10 DLW ALCO Locomotive

The American Locomotive Company (ALCO), established in 1901, was a well known steam locomotive builder in the US. They rose to the pinnacle of locomotive building when in 1941 they unearthed the colossal “Big Boy”, the largest steam loco
down their Schenectady Locomotive Works, became defunct in the US. However, MLW in Canada, already a subsidiary of ALCO, continued the manufacture of ALCO locomotives even in to the 1980s, not withstanding a take-over by Bombardier in 1975. Fortunately for ALCO, de spite their demise in the US, manufacturing of their design had been established overseas, in Australia by Goodwin and in India by the Diesel Locomotive Works (DLW) in Varanasi. The Indian Railways (IR) owned DLW had been established in 1961 and turned out their first locomotives in 1964 to a then current ALCO design. DLW have not looked back since and today is one of the largest manufacturers of loc

Contd. on page 11...
I was a debatable matter in the legal field few years back regarding the validity of contesting for third term by the previous president. The argument from one side is that he was not qualified because of not following the procedure correctly to get qualifications for contesting. The other party denied it saying that the intention or objective is one thing and hence the adherence to the procedure is a secondary matter. That seems to be a very simple argument because; a simple mistake or deviation of one party should not make a chance for the other party to defeat the intention & to change the whole scope or the whole matter. (Not only in this case, but in general also (will be discussed upon the prominence in law when deciding the cases (especially the contractual cases))then on one hand, the above argument is not a new thing to the law.

Hence the writer has taken the above particular issue and mentioned the importance in this instance not to favour any party (those who are involved), but solely to extend it to the Civil Engineering field also & only to get the above dilemmas in clearing the disputes in this field.)

Contractual claims are formed based on the conditions of contract, according to the provisions therein & interpretations.

Contract agreement comprises of a set of conditions of which agreed upon by the contractor & the client to perform & fulfill during the construction is going on. Both the parties of the agreement are with the common general norm that no party is coming to the agreement, with a willful intention of loosing or falling the other party in trouble & they are in good faith. In the context of contractual claims, there are very obvious claim situations such as delay in instructions & decisions, machines idling due to work stoppage, idling due to shifting of services, due to attending for extra work, instruction for acceleration, etc. This is the first category of claiming. In addition to these obvious situations, claims are seems to have been lodged for some other situations also, which are not much clear & not straight forward as above. Some of the loop holes in the clauses, some of the discrepancies, ambiguities in contract clauses, when some requirement is not very specifically stated or writing or covered situations in the document, laps in the contractual procedure (not following & fulfilling the correct contract procedures), deviations & omissions, way of interpreting, ignoring implied terms, general practice, norms, back ground, innocent mistakes, wrong assumptions etc. are the examples to such uncertain situations. It can be considered as the second document & included in the rates.

With regard to the occurrences of the first category, claim situation is very obvious & no arguments; hence the contractor is entitled for claiming extra. Compare to the first, mostly for the second category will be having strong points to be argued by the both parties for & against the claim. It is resulted; because of this unclear & disparity nature of the claim. Hence, mostly the second category; due to this unclear nature will lead to extend (drag-on) the matter till arbitration for a final decision. Hence this paper will look into the latter type (second category) of claims which mentioned as unclear situations, ambiguities etc & solving of the claims promptly by stressing the intention & with due respect to the same (as in above category) without dragging –on till arbitration.

In contractual claims, some times the contractor is trying to get the advantage of the situation by claiming from the client in extra sum of money & some times the client is trying to get the advantage by requesting the contractor to do at his cost while assuming that it has been covered in the contract & included in the rates. Sometimes the

we may feel un happy about our past because we have missed several things which could have been accomplished in the past! In reality, we may not be able to fulfill each and everything that we planned but if we don’t have proper plans and enthusiasm then we will surely miss things and moments of our lives, that will lead us to feel unhappy about our past!

To live happily at present, you should have done things that you should do in the past. (It does not mean that we should think of our successful past and be happier but it is nice to have a successful past to move forward) If I elaborate on it further, you must concentrate on doing the appropriate work at the appropriate age. You should learn what you should and what you like to learn (school education, higher education, technical education and so on) when you are young. You should try to enjoy music, read novels, play music instruments, write poems etc. in your spare time. Likewise we need to do things that we want to do in the appropriate period in our lives.

We should not let ourselves suffer when we are old; thinking about the missing aspects in our youth. We should always keep in mind that there is time and place for everything. We need to accomplish things at the right time. We have to be good children, need to be lovers and have to be responsible parents to our children at the right time of our life span. If we always accomplished those goals at the right time then we are successful as laymen/women.

I have several examples to emphasize that we should have accomplished most of the things that should have been done during our childhood and youth age. I feel sad about me sometimes because I can’t play any musical instrument and I can’t swim. I really do think that I have missed learning and practicing those two things during my childhood and I do believe that I am not too late to accomplish those as I am still in my early thirties. But slowly but surely, when you are being loaded with responsibilities, you may not have flexibility of doing what you like to do, frequently.

Extracurricular activities

When I was in the university, I engaged in many extra curricular activities related to arts, public speaking and cricket. I was keen on being popular among the campus crowd as an aesthete engineer in the university. Because of that I may have missed a first class honors. [I ended up with a second (lower) class honors] Now I have 60%- 40% feelings of guilt and pride; guilt, because I didn’t make it towards a 1st class and; pride because, I was a popular/air-round under-graduate in the university.

Anyway, I still wonder why I have missed a first class or second upper….But as a professional, now I am happy about the way that I appear in the society and about my past also, but I should have paid more attention towards studies during my university life.

With experience, now I know my strengths and weaknesses. So what do I do now? I make my strengths stronger and weaknesses, lesser...

Duties

We must take care of our parents. When they get old and weaker we are the ones who should look after them. Otherwise we may feel the guilt when our parents are not with us anymore. Sometimes due to our busy schedules we tend to forget our parents’ needs. Our busy schedules are not an excuse for not taking care of our parents. We should organize our time tables in a way that we are able to look after our parents. As citizens, we must be loyal to our country. We should not carry any harmful feelings to destroy the sovereignty of this country. We should act timely when the motherland needs us! If we are late then we may feel the guilt!

As professionals we must be loyal to our professions. We must have the dedication and integrity to be successful professionals. If we are late then may feel the guilt! Start thinking about you now! If you think that you are late in some episodes, and then make sure that you are not, anymore! Identify where you were and where you should have been; that will help you to be at the right place at the right time! Thus, it is obvious that there is time and place for everything. To avoid sorrow at present, you must have a proper past, [proper gives the meaning of well managed!] here I have shared something which I experienced over the last 15 years and they taught me good lessons! This existence is very short; as laymen we need to get the maximum output of it. Have proper plans, arrange them, execute them, optimize them, maintain them - then you will become a person of success! We must be people who do things right, at the right time! To end this article, I must recall something that the Lord Buddha has mentioned: I will write it as I have understood it: “Don’t be late! People who are late will suffer; People who are not will win!”
“A Beautiful mind” – A movie worth seeing

by Eng. Thushara Dissanayake
Department of Irrigation

The movie “A beautiful mind” is based on the biography of the great American mathematician John Forbes Nash. He won the Nobel Prize in economics for his work on Game Theory together with his colleagues Reinhard Selten and John Harsanyi in 1994. Born in June 13, 1928 John Forbes Nash has worked on differential geometry and partial differential equations as well to provide solutions to many practical complexities of real world. Today, the Game Theory is used in strategic decision making especially in conflict resolution.

The movie “A beautiful mind” was directed by Ron Howard and it won four Academy Awards, for Best Picture, Best Director, Best Adapted Screenplay and Best Supporting Actress in the 74th Academy Awards held in 2002. Russell Crowe portrayed as John Nash and Jennifer Connelly acted as Alicia Nash, the spouse of Nash.

The story of this sentimental biographic drama film starts with the university life of John Nash at Princeton University in 1947. This handsome genius is a recipient of the prestigious Carnegie scholarship for mathematics. During his early life in the university Nash begins to develop paranoid schizophrenia. Nash publishes an article on new concept of governing dynamics which paves him and Soviet agents he feels that his life is at risk. While delivering a lecture at the Harvard University he flees from the place as he develops a sudden anxiety as a result of paranoid schizophrenia. Nash believes that all men who wore red ties are agents of communist conspiracy against him. Later he is forcibly kept at a psychiatric facility and he believes that it belongs to Soviet agents. The treatments cause side effects like lethargy and Nash stops taking his medicine. Nash becomes more obsessed leading to many conflicts in his family life as well. Finally, with Alicia’s help he recovers his mental strength and regains his status as a great mathematician. With the gradual improvement of his mental condition he is able to start his academic activities again. In 1994, he wins the Nobel Memorial Prize in Economics for his revolutionary work on game theory.

A beautiful mind is one of the best biographies I have ever seen. It is a real example of a courageous man, in fact a mathematical genius, who ultimately reaches to great heights surpassing all agonies and obstacles. Russell Crowe and Jennifer Connelly perform their roles excellently. Russell’s role as a person suffering from schizophrenia is almost real. I wonder why he could not win the prize for the best actor even having been nominated for the same at the Academy Awards. However, there are some popular criticisms on the movie. The critics say that some aspects of Nash’s life are not portrayed in the movie. One such criticism is that he has had an other family with a son born out of wedlock. According to the filmmakers they have not expected to literally represent all life events of Nash.

All in all, this is a great movie with a mix of humor, romance and sympathy. If you are a movie lover this will be a movie worth seeing.

Eng. Shanmugampillai Chandrapalan, Senior Project Director in Road Development Authority and well known personality in social and religious activities passed away on 15-03-2015 at private hospital in Colombo after a brief illness at the age of 59.

He had his primary education at Nalavilapitai Kathiresan Kumara Maha Vidyalaya and Gampola Zahira College.

He entered the Moratuwa University in 1976 and passed out in 1980 with B. Sc. Eng (Hons) in Civil Engineering and completed his Master Engineering in Construction Management in 1991 at the same University.

From December 1980 he joined the Keangnam Enterprises Ltd as Site Engineer on New Town Development Project and later in 1981 March he decided to join in Central Engineering Consultancy Bureau (CECB) and seconded to the Balfour Beatty Nultall Joint Venture and served as Road Engineer in Victoria Hydro Electric Power Project.

In May 1983 he served as a design engineer in CECB and Seconded to Sir William Halcrow Partners on Kotmale Hydro Electric Power Project.

In April 1984 Eng Chandrapalan joint Target L.L.C Sultanate of Oman as Site Engineer and served two and half year in 2.4 km Gabbion Wall Project Site.

When he returns back to Sri Lanka in October 1986 he joins the Balfour Beatty International Ltd as Senior Eng. at Victoria Randenigala Road Project. Later in January 1988 he joined Road Development Authority as Resident Engineer and served in many Local & Foreign Funded Projects in various capacities such as Senior Engineer, Project Engineer, Chief Engineer, Dy. Director and Project Director.

During the period of March 2000 to March 2012 he served in Bangladesh Wilbur Smith Associate as Pavement Engineer in Road Project. Engineer Chandrapalan can best be described firstly as a gentleman to the core and true friend who will go the extra miles for you. He had disciplined himself and the family. He was the man of the highest integrity and belonged to that rare breed of government servants who were in a class by themselves.

His was a life that exemplified brilliance and inspired all who crossed his path. With his dedicated service as a Charted Engineer to the local & foreign countries since its inception Eng Chandrapalan touches the lives of many with his kind and gentle nature, his soft spoken words in all three languages and his ever smiling face. He was sincere, earnest and loyal in his service. His was living proof of how fine a Project Director can be. He was not only cheerful in himself but he gave much cheerfulness to others, especially to his family.

The management and the staff of the Ministry of Highways, Higher Education and Investment Promotion and Road Development Authority are deeply saddened by the death of Eng Chandrapalan. He was indeed an extraordinary engineer, a true friend and most of all a great humanitarian.

Though Eng Chandrapalan is not among the living today, memories of him will remain for the rest of our time.

Eng Jayantha Gunathilake Addl. Secretary (Eng) Ministry of Highways, Higher Education and Investment Promotion

Reference:
Photos courtesy of Rail Pictures Net.
“Challenges and opportunities...”

Information Warfare is still un-chartered waters in the case of developing Navies such as Sri Lanka Navy. Some countries believe certain military forces are employing Cyber warriors capable of stealing sensitive data, engineering computer viruses, launch attack and counterattacks on the Net, develop software for info-blocking, paralyzing and deception etc.

The threat of Internet, vulnerability of Navaldata networks and secure strategies are being studied continuously for possible solutions and counter actions by the respective authorities of developing nations.

EW as a tool of Network Centric Warfare

Network Centric warfare, rather Network Centric Operations are being looked at very seriously at higher levels of Naval leadership. Electronic Warfare plays a major role at the conduct of Network Centric Operations. Although the deployment of NCO in developing countries is at its infancy, unknown enemy is already utilizing high end counter measures against possible Network Centric ambitions. The current drive is much centered on securing the information infrastructure on which limited number of high end Network Centric sensors are viewed, controlled and maintained.

Asymmetric warfare stand point

Sri Lanka had its share of asymmetric warfare during its 33 years war against terrorism. Terrorists used strategies and tactics which are un-conventional such as the use of human shields, Suicide jackets, Suicide small boats, suicide stealth boats, suicide semi submerged vessels, and Kamikaze style light air mother ship would have been an effective force multiplier for this RABS operation but time was not enough for an acquisition of such multi-faceted capability. Also no incidents were reported where enemy had used Jamming or deception equipment.

Sri Lankan EW experience in 30 years of war against terrorism

The Initial phase from late 1970s to 1990, only HUMINT (HUMINT) was utilized. The use of amateur RF communications by terrorists prompted authorities to acquire small scale Electronic Intelligence (ELINT) systems.

The Middle Phase from 1990 to 2006, saw heavy use of ELINT by both sides. Induction of jammers in to the Navy also occurred during this phase. The Military started using ESM systems to analyze enemy activities. On the Joint Military aspect there was better coordination between individual EW arms of the Military.

During the final phase from 2006 to 2009 the Military used ECM heavily and Research and development was done to develop in-house RCIED jammers by MOD. Locally developed RCIED jam- mers proved very effective against road side IEDs, targeting troop and civilian movements in the Northern and Eastern parts of the island. In fact due to indiscriminate use of IEDs, government was compelled to use the RCIED jammers in other areas as well. Few integrated ESM systems entered into service and Joint EW doctrine was practiced under a central body under MOD which saw greater coordination and operational success.

Challenges in deploying advanced EW capabilities

The main challenge in deploying advanced EW capabilities in developing Navies is the lack of interested in studying requirements of advanced militaries. Complexities in procedures of high cost purchases will discourage EW procurement staff to engage in and manage a large scale procurements. This may be exaggerated by the lack of reputed local agents who can be trusted to provide efficient after sales service support.

Problem of skill levels of Operators is another bone of contention. Most EW systems are so complex thus operation, maintenance and training are very difficult tasks to sustain over a long period of time in a system of periodic transfer of operators. Sensitivity of Advanced Electronics to extreme weather and quality of Power supplies in developing countries are also a major factor where systems designed for advanced militaries fail once it is subjected to harsh conditions. There have been many examples of defects in power supplies of advanced electronic systems when deployed in Sri Lanka.

Opportunities for EW system designers for customized solutions

Having looked at the challenges to deploy advanced EW capabilities, I would now like to consider the opportunities for EW designers and manufacturers for providing customized solutions to developing navies. Modular system design can be employed by the system designers with customized blocks so that threat perception of developing militaries can be addressed more effectively. Adapting simple technology transfer mechanisms shall pave way for win-win situation for both the manufacturer and EW user. Measures have to be adopted to increase awareness of EW utilization in the Information age with applicable examples and real life situations.

It is also prudent to make the advanced systems more affordable using COTS modules where more user replaceable units are included in system design. Even the most rudimentary operator knows how to use a smart phone app. It will be much beneficial if the User Interface of EW systems were designed to look and feel more like apps in a smart phone. System designers can make equipment more robust to cater for low power quality, surges and extreme environmental conditions prevailing in developing countries.

There are three additional considerations that I would like to mention. Firstly, The EW manufacturers should encourage research in developing Navies into deployment of advanced technologies. Such research can bring about the benefits of advanced EW technologies and work out the modalities for effective deployment. Secondly, Long term Payment options and funding mechanisms proposed along with the offers will make them very attractive in case of limited fund situations in most of the procurements. Finally, more live demonstrations and providing trial systems for a short duration will ensure increased user experience with advanced technologies thus creating more opportunities to make a positive procurement decision.

Conclusion

In conclusion, I would like to emphasize that there are many challenges that exist in advancement of EW operations in developing Navies. I have analyzed the subject under consideration with my experience in managing the deployment of advanced technologies at staff level as a staff officer and at line level as a systems engineer. I have proposed strategies to overcome barriers from a user’s point of view. It is my suggestion that more knowledge sharing mechanisms shall be in place between developing Navies and system designers. The most important fact is that EW system penetration in developing navies is at a very low level therefore more opportunities exist for increased deployment for the mutual benefit of the system designer and the user.
together. Let us not collectively sin by prolonging this discussion any more let us map out a strategy as I always say to quote from the Bible: “knowing what is right to do and not doing is a sin”.

9. Decentralization of the electric power generation and distribution systems for various reasons. These include: (a) the high capital costs that can be associated with large centralized power generation plants, (b) the need to have power generation facilities in different parts of the country to meet the varying load demands, (c) the need to have power generation facilities in different parts of the country to meet the varying load demands, and (d) the need to have power generation facilities in different parts of the country to meet the varying load demands.

These decisions have been made for various reasons. These include: (a) the high capital costs that can be associated with large centralized power generation plants, (b) the need to have power generation facilities in different parts of the country to meet the varying load demands, (c) the need to have power generation facilities in different parts of the country to meet the varying load demands, and (d) the need to have power generation facilities in different parts of the country to meet the varying load demands.

10. The Dept of Electrical Engineering at the University of Moratuwa has conducted a study on the electric power sector in Sri Lanka. The study provided some interesting results and conclusions. A survey was conducted on Public Perception on Electrical Power Supply. It was said that majority of the respondents are willing to accept electrically powered travel. Now the requirement of the travelling fare is less than 25%. The conclusion also got to the stage where the public has a general idea, but lacks detailed knowledge about electrically powered travel.

The panel discussion ended up with a number of valuable recommendations to electrify the transportation sector and of course the relevant authorities have already stated that they have given a fresh start in this regard. Let’s hope that this time the long standing dream of electrified transportation will come true.

I am not going to dwell on statistics or forward any definite blueprints how this should be done but there is enough expertise in this room to do that. Further I am not in any way an expert in the railway sector other than that. I am not going to dwell on statistics or forward any definite blueprints how this should be done but there is enough expertise in this room to do that. Further I am not in any way an expert in the railway sector other than that.

Striking the intention/one objective) is seems to be a very strong concept & a technique, to solve the conflict situations which are debatable. Since this concept works in conflicts beyond logic, same can be used to solve the conflicts which are debatable and hence this solution is valuable & feasible. This will give rise to more sensible ground for the solutions beyond logical mechanism & back ground. Hence through this mechanism of giving preference to the intention) will facilitate for both justification/nullify & evaluation of the claim in balance manner.

Some times for the sake of arguing it seems that even very obvious situations are not considered & ignored intentionally. As a result of this, role of fairy play is disappeared. It is not relevant to limited to an one party only. This is the case of intention which is relevant to both the parties & the claimant. This is why wherever there is a willful (wrong)intention are the three types which taken up. Similarly this is not limited to one organization or one particular client but is common in the construction field as well. Hence this mechanism has a very broad application & therefore the claim departments are maintained separately for this purpose. Bidding less to win the bid with the intention of claiming extra later on is the technique they follow usually. How to counter this as a measure & the care must be taken to find the direct as well as the hidden intentions of this contractors who lodge the claim, before proceeding. Then this suspicious looking it will give the access to find their hidden objectives & intention & also more factors which were hided intentionally perhaps which nullifying the claim at all. Hence the concept of “giving preference to the intention” has been implemented in three different ways in these cases. Role of domination, as a basis for the evaluation, hidden/intention & decisive factors to be find out, these are forms which highlighted here.

Above situations shows that, through this method will be able to solve many claim situations without resorting for arbitration. However, technically it is an issue which connected to the documentation. Further, as far as considering the difficulties & time spending, prevention as much as possible is the best than trying to solve the claim once it occurs. It seems that most of the ambiguities, discrepancies, doubts etc. are avoidable & these can be addressed at the document stage. Hence the document updating is essential with regard to the prevention of claims are concerned. Mostly the occasions & situations where the need for this concept of the documents will give rise to the claim situations. Hence inclusion of all possible situations & its combinations (combined situations) to the documents, giving preference. Furthermore, through this method, we will get further details of what is right & not right, what is to be analyzed & what is to be interpreted will be very meaningful & become the major steps to be taken at the documentation stage, in order to mitigate the claim situations.
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