

One-Day Seminar on Electrical Safety

ELECTRICAL ENGINEERING TECHNICAL DIVISION

reported by



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The Electrical Engineering Technical Division (EETD) and Suruhanjaya Tenaga (ST) jointly organised a one-day seminar on Electrical Safety on 7 December, 2017, at Wisma IEM. It was attended by over 70 participants.

The aim was to present a holistic view of the evolving electrical safety landscape by bringing together regulators, industrial experts, equipment manufacturers and suppliers, building and plant owners, developers, engineering firms and the academia.

After IEM Vice President Ir. Prof. Dr Jeffrey Chiang Choong Luin welcomed the participants, Encik Mohd. Elmi bin Anas, ST's Director of Safety Regulation, presented electrical safety statistics accumulated in studies done by ST. He also thanked EETD for its support in promoting electrical safety through awareness seminars, workshops and forums.

He then presented the roadmap for electrical safety enhancement which encompassed enhancing permit to work, ironing out issues with registration and tracing back the certificates issuance to competent persons especially via manual registration at one time. He also stressed that 11kV was now defined as MV (medium voltage) and 132kV and above as HV (high voltage). He then talked about ST's on-going initiatives, such as integrated registration with CIDB, enforcement on failure consignment test, increasing the

frequency of written exams (from once to twice annually), a clear definition of high/low risk equipment, suspension and revocation of certificate of competency as well as accreditation of institution.

Next, he provided an overview of the way forward for ST, which included establishing guidelines for live working procedure, overseeing cable colour coding transition to as per IEC standards, mitigating the issue of insufficiency of competent persons in utilities, conducting root cause analysis of electrical accidents and crafting guidelines for high risk special locations. Finally, he concluded by reiterating the importance of electrical safety.

The second speaker, Encik Shahrilnazim, head of Unit Undang-Undang, spoke on Electricity Supply Act 1990 (Act 447) amendment 2015, saying that this was the second amendment; the first was in 2001. The amendment was done to ensure relevancy of the Act, to optimise electrical supply infrastructure to increase economic return, to improve competitiveness in electricity supply as well as to enhance safety aspects, customer protection and law enforcement. The amendment included governance framework, electrical safety management system, consumer protection, law enforcement, changing the term equipment to consumer electrical appliance, defining electrical product as other than electrical appliance, function and responsibility of ST,

allowance of utilising electrical supply line for communication purposes and increasing the penalty for negligence and power theft. He ended his presentation by summarising the way forward for his unit.

The head of electrical safety development unit, Iffah Hannah Muluk, then presented facts and statistics on electrical safety: 35.5% of electrical incidents were due to improper installation and maintenance while 30.4% were due to the failure to practise safety work procedures. ST had been collecting this data from 2002.

She elaborated on the guidelines for electrical safety management plan and programme. The custodian, legal requirement, design and selection of material and equipment of installation have to be clearly defined. She emphasised that safety was paramount in installation design. Means of isolation have to be provisioned. Safety considerations according to relevant standards and regulations have to be given. To compute Maximum Demand, suitable diversity factors should be applied at design stage.

Three phase symmetrical short circuit current has to be calculated at the design stage. Electromagnetic disturbance, overcurrent and earth fault current should also be taken into consideration. Mechanical protection for cables inside walls, space factor, different circuit for different voltage level, cross sectional area of neutral and protective conductor and earth



The speakers



Ir. Prof. Dr Jeffrey Chiang Choong Luin presenting a token of appreciation to En. Mohd. Elmi bin Anas

wires, allowable voltage drop and cable colour should also not be omitted.

She also spoke about permit to work, Hazard Identification Risk Assessment and Risk Control (HIRARC) and emphasised that all electrical and fire incidents must be reported to ST.

Next, Ir. Rocky Wong delivered a talk on "ASEAN Standards-centric Arrangements for an Integrated and Cohesive AEC". AEC replaced AFTA since 31 December, 2015. This was accompanied by AEC Blueprint 2025. He highlighted the Agreement on the ASEAN Harmonised Electrical and Electronic Equipment (EEE) Regulatory Regime aimed at deepening and broadening cooperation in the electrical and electronic sectors to contribute to the realisation of the ASEAN Economic

Community. He concluded by stressing on the aspirations of ASEAN stakeholders. This involves the mobility of electrical engineering works which requires electrical engineering services professionals certified to have the skills sets to deliver electrical engineering works power generation, electrical installations in buildings, electrical facilities as well as repair, overhaul and maintenance (ROM) services.

This was followed by a talk by TEEAM President Ir. Yong Ah Huat on "Electrical Safety – Contractors' Perspective". Electrical engineering contracting is a regulated industry. The handling of electricity must be done by competent, skilled and experienced electrical engineering services professionals. Electrical contractors must take heed of OSHE at work. Ir. Yong also highlighted a vital point, that the electrical engineering industry needs a team of certified skilled workers under the supervision of professional engineers. But the reality is that the industry is highly dependent on foreign workers, so the registration of these foreign workers must be enforced.

After the lunch break, Ir. Lim Kim Ten presented "Electrical Installations Standards & Electrical Safety Engineering" by introducing a wide range of standards pertaining to electrical installation such as protection, energy efficiency, power quality and installations in special locations, just to name a few. He

then emphasised the importance of adherence to MS IEC 60364, MS 1979 and MS 1936.

After this, Ir. Ng Win Siau delivered a presentation on "Improving Electrical Safety Management in Operation and Maintenance". He talked about regulatory requirements, key considerations, strategies and competency. The level of risk shall be pre-determined before strategising on operation and maintenance works. He said engineers should continue to improve the electrical safety management process by keeping abreast with available technology and methodology.

Next, Puan Sharifah binti Jusoh, the head of Electrical & Electronics II Section in SIRIM QAS International Sdn. Bhd., presented "Electrical Products Testing and Certifications". She showed videos of how testing was carried out at SIRIM.

The last speaker, Prof. Dr Chandima Gomes from Universiti Putra Malaysia, presented "Safe Lightning Protection System" and explained the fundamentals of a lightning protection system which consisted of air termination, down conductor and earthing. He demonstrated a simple calculation to compare the potential which may build up when lightning strikes concrete or a conductor. He then gave a brief explanation on how surge protective devices (SPD) work and how these should be installed.

IEM EETD presented tokens of appreciation to the speakers. ■