



Talk on Arc Flash Protection

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On 11th August 2018, the IEM Electrical Engineering Technical Division (EETD) has successfully organised a technical talk on “Arc Flash Protection” at Wisma IEM. The speaker was Ir. Lee Teck Hock and the talk was attended by more than 40 participants.

Ir. Lee started the talk by defining what is an arc flash. An arc flash is the product of electrical discharge through air to ground or another voltage phase in an electrical installation. It usually appears in the form of light and heat. An arc flash has the potential to cause damage to equipment and plant as well as loss of human lives as the worst case scenario. Hence, understanding arc flash is imminent. The most common source of arc flash is the switching of electrical circuits and especially tripping of circuit breakers.

The speaker then introduced IEEE-1584 “IEEE Guide for Performing Arc Flash Hazard Calculations” which is a comprehensive standards outlining the assessment method of arc flash hazard. Nonetheless, this study requires knowledge of both electrical power system and power system protection. Full understanding on arc let-through energies is important as well.

Ir. Lee then shared some of the protection methods to minimise the hazards due to arc flash. The risk of arc flash hazard can be reduced at both design and operational stage. At the design stage, reduction of fault currents, good coordination of protection systems, provision of arc detection systems, barriers of primary circuits, arc-resistant switchgear and system redundancy shall be achieved. During the operational stage, arc flash hazard can be minimised by having electrical workers to wear appropriate arc-rated personal protective equipment (PPE), de-energise the system completely before performing any switching operation, identify flash protection boundary, use temporary barriers and insulated tools, abide by safe work procedures and use remote racking devices where possible.

In order to assess arc flash hazard, energy source identification and incident energy analysis have to be completed. Incident energy analysis may be done by risk based assessment or incident energy calculation depending on the voltage and kVA level. PPE requirement shall then be set based on the quantified incident energy. Proper documentation of arc flash assessment is also important for

competent personnel to keep track of the history and make references when necessary. Ir Lee then presented some of the examples of arc protection implementation.

Figures below depict the participation rate as well as the presentation of a token of appreciation to the speaker.



The participants



The speaker



The speaker demonstrating the makeshift panel with OCEF protection relay and circuit breaker



EETD Committee presenting a token of appreciation to the speaker