# SEMINAR ON AUXILIARY POWER SUPPLY

Reported by: Sdr. Low Chee Yin, Building Services Technical Division

The Building Services Technical Division organised a Seminar on Auxiliary Power Supply on 23 March 2004 to inform participants about the current technologies and solutions available to ensure reliability of power supply to facilities that are being built. 18 participants attended the seminar. The seminar also covered the specific requirements of a mission critical facility. In this instance it was a critical computer data center.

The seminar was divided into four sessions:

(a) Generators
(b) Kinetic Powered UPS (Uninterruptible Power Supply)
(c) Static UPS
(d) Operating a Critical Computer Data Facility

The session on generators covered the range and types of generators available for different applications and the various considerations for sizing and specifying generators as a source of back up supply.

The speaker introduced the idea of using Kinetic Powered UPS systems and made comparisons between this technology and the more commonly known Static UPS systems. Kinetic Powered UPS systems essentially uses a flywheel as a means of energy storage as opposed to a battery system. In doing so, it offers the advantage of having a smaller footprint and negates the necessity to change the battery bank after its designed life span.

In the afternoon, the speaker reviewed the standard terminology used in specifying and defining UPS systems, and presented the various static UPS topologies that are typically used to provide various levels of redundancies. The speaker also discussed the advantages and disadvantages of the various topologies.

In the last session, the presenter gave a good and informative overview of the requirements of a mission critical computer data center from an owner/operator point of view. In particular, he covered the requirements from both a technical and organisational perspective, in order to achieve the uptime that is defined in the Uptime Institute Classifications. Table 1 outlines the four tiers of reliability mentioned.

The seminar provided participants with a good overview of the various systems that are currently used to provide back up power supplies and how redundancy is achieved for critical loads. Perhaps a good extension to this seminar is to discuss the techniques that are available to switch critical loads from generator back up power supply upon the return of mains power. ■


## ANNOUNCEMENT

**Booklets for Sale**

(a) The new IEM Arbitration Rules (2003) – RM10.00

(b) Training Scheme for Arbitrators – RM5.00

(c) Rules for Admission to IEM Panel of Arbitrators – RM5.00

(d) Guidelines of Good Practice for Arbitrators – RM2.50

These documents can be obtained from IEM on payment of the above charges.


**Table 1: Four tiers of uptime reliability**

| | Definition | Availability (%) |
|---|---|---|
| Tier 1 | Single path for power and cooling distribution, no redundant components | 99.67 |
| Tier 2 | Single path for power and cooling distribution with redundant components | 99.741 |
| Tier 3 | Multiple power and cooling distribution paths, but only one active path. Redundant components concurrently maintainable | 99.982 |
| Tier 4 | Multiple power and cooling paths, redundant components, fault tolerant and concurrently maintainable | 99.995 |