THE INSTITUTION OF ENGINEERS, MALAYSIA

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TALK ON "A SIMPLIFIED EQUATION FOR VOLTAGE DROP" (OR IS VOLTAGE DROP = IZ?)

(Organised by the Electrical Engineering Technical Division, IEM)
BEM Approved CPD/PDP Hours: 2   Ref No: **IEM16/HQ/049/T**

Date	:	**9th April 2016 (Saturday)**
Time	:	**9.00am to 11.00am**
		(Refreshment will be served in 2nd Flr from 8.30am onwards)
Venue	:	**C7S & TUS Lecture Hall , 3rd Floor, Wisma IEM**
Speaker	:	**Lee Chong Kiow**

SYNOPSIS

The talk begins with a survey of the following:

• Constant impedance, constant power and constant current loads
• Why a power supply has an internal impedance, which limits its fault current contribution
• When the shunt admittance Y of a cable or line may be significant
• The measurement and significance of the %Z of a power transformer
• The 16 reactances of a generator which include combinations of saturated and unsaturated direct- and quadrature axis data – which five data are to be used for the different types of power system studies

When a current I flows through an impedance Z, is the voltage drop V = IZ? The answer may surprise you!

The talk will show that it is possible to transform the classical voltage drop equation

$$V = I (r \cos \phi + x \sin \phi)$$

into a more elegant and meaningful equation. Using a simplification, it is a relatively easy task to estimate the motor starting voltage dip in transformers and generators.

The talk will then use per unit data to show that the highest impedances in a power system are the loads, transformers and generators. Using a software, the talk then continues with examples of load flow and motor starting studies.

Does power in an AC system always flow from a higher voltage to a lower voltage? A combination of the simplified voltage drop formula, phasor diagrams and computer simulation is then used to show the Ferranti effect, i.e. under certain load conditions in a transmission system, it is possible to have a receiving end voltage which is higher than the source voltage

BIODATA OF SPEAKER

Lee Chong Kiow is currently a director of VI Power, which specialises in providing technical training on electrical equipment and performing power system studies. He holds a BSc (Hons) (Electrical & Electronic Engineering – 1974) and an MSc (Power System Engineering – 1977), both from the University of Strathclyde, Glasgow.

He was previously the Engineering Manager of a company manufacturing indoor MV and LV switchgear. Prior to that, he spent more than five years as an Associate Director in a large consultancy practice and another 15 years working as a protection engineer in the former National Electricity Board. He is also a Suruhanjaya Tenaga competent/services engineer up to 275kV.

Over the last 19 years, he has trained more than 5,500 technical staff from utilities, petro-chemical, multi-national and other industrial companies throughout Malaysia and South-East Asia. China, India & Oman as well as Mauritius, Zimbabwe and Botswana on a variety of power engineering topics.

CPD HOURS CONFIRMATION

Name : ....

Membership No: ....

Signature: …………………......……..

Ir. Yau Chau Fong
Chairman, Electrical Engineering Technical Division, IEM