



THE INSTITUTION OF ENGINEERS, MALAYSIA

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Technical Talk On “The Niche Role of Traction Power System in the Electrical Power Engineering Profession for Malaysia's electric-based Railway Public Transportation Infrastructure Projects”

(Organised by the Electrical Engineering Technical Division, IEM)
BEM Approved CPD/PDP Hours: 2 Ref No: IEM14/HQ/295/T

Date : 30th September 2014
Time : 5.30 pm– 7.30 pm (*Refreshment will served in 2nd Floor*)
Venue : Tan Sri Chin Fung Kee Auditorium, 3rd Floor,
Wisma IEM, Petaling Jaya
Speaker : Ir. Dr Amir Basha Ismail

SYNOPSIS

The principal objective of the Talk is to provide a general understanding of the specialized role of traction power/energy system which is becoming a major sectorial consumer of the electricity supply industry, in tandem with the Government pushing ahead several major railway infrastructure projects for mass public transportation service. The Talk will outline the basic electrical structure of traction power supply system for Malaysia's railway infrastructure projects which utilize **both** the 750V DC Railway scheme for the KL Metropolitan Light Rail Transit (LRT) and My Rapid Transit (MRT) public transportation systems and the 25kV AC Railway scheme for both the KTMB Klang Valley Commuter Service and the Express Train Service of the North-South Double-Track Railway Systems.

The supply of rail traction vehicles (moving electrical loads) through contact lines represents a most unique challenge to the design consultant, the client/customer and the public utility company TNB in terms of power system modeling, simulation, analysis and performance specifications of the equipment/sub-systems of the electrical train system.. The electrical train system is the most important deliverable component of the railway infrastructure project. The Talk is referenced on **two projects** which the Author's Team undertook as part of the design consultancy works for the Government that is:

- i. Electrical system design for traction power and power distribution of the Kelana Jaya LRT Extension Project which uses the four-rail 750V DC Railway scheme (for this part of the Talk, we will highlight the use of the Linear Induction Motors (LIM) for gear-less linear propulsion on the KLJ LRT Line compared to the more conventional rotary propulsion squirrel-cage induction motors with gearing systems on the train wheel-axes of most railway traction which are of three-rail configuration such as the Ampang Line LRT and the new KVMRT. Line 1 Sg. Buloh-Kajang Line.
- ii. Power System Assessment of the Existing KTMB Klang Valley 25kV Traction Power System Adequacy to Support the new 6-car Train with Shorter Headway Commuter Service Operation (for this part of the Talk, we will describe the necessary Traction Power Simulation (using industry-standard Software) of the moving accelerating/braking electrical loads (the electrical trains) that receive their power supply through single-phase AC 25kV contact lines and to assess the adequacy of the existing single-phase AC 132/25kV traction power sub-stations that feed the 25kV overhead catenary system equipment (OCS).

BIODATA OF SPEAKER

Ir. Dr Amir Basha Ismail served LLN/TNB for 33 years (1974-2007). He was one of those several local pioneer engineers who were involved in the planning, design and operation of the 500kV/275kV/132kV National Power System Grid (1979-1993), holding positions of senior engineer and System Operation divisions of TNB. In 1994, when TNB was instructed by the Government to set up its own university, Dr. Amir was one of those several engineers from TNB who were entrusted to the university project and was made the Founding Dean of College of Engineering, Universiti Tenaga Nasional (UNITEN). When TNB Research Sdn. Bhd. (another subsidiary of TNB and located next to UNITEN), and its associated laboratories were being set up at about the same time as UNITEN, Ir. Dr. Amir was then assigned to TNB Research as its General Manager and later became its Managing Director from 1998 -2002. He was then assigned again to UNITEN as the Dean of College Graduate Studies/Professor of Power Engineering Centre until his retirement from TNB in 2007. From 2008, he joined Minconsult Sdn. Bhd. as the Senior Consultant/General Manager leading/assisting teams that were involved in power system projects, such as power generating plants, electric traction railway projects (LRT/MRT and KTMB), renewal energy projects (large-scale FIT Solar PV projects, mini-hydros), Management & Engineering Audits of electricity supply industry and formulation of Feasibility Study Reports/Master Plan Study Reports related to Energy/Electricity Planning. In 2013, he was appointed by University Malaysia Perlis (UniMAP) as the Visiting Professor at the School of Electrical Engineering Systems.

Ir. Lam Sing Yew
Chairman
Electrical Engineering Technical Division, IEM

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