# TEEAM SERIES OF TECHNICAL TALK 02/2025 "LOW VOLTAGE SWITCHBOARD DESIGN & INSTALLATION AND LOW VOLTAGE SWITCHGEAR FAULTS & SOLUTIONS"

**TEEAM SEMINAR HALL,** 

OFF JALAN KENANGA,

**KUALA LUMPUR** 

24<sup>th</sup> June 2025

(Tuesday)

NO. 5-B, JALAN GELUGOR,



Approved with BEM 3 CPD Hours & CIDB 5 CCD Points

**IR. CHEW SHEE FUEE** 

Causes of Low Voltage Switchgear Failures and Solutions

## **REGISTER NOW**

Fee: RM30 for TEEAM Member

https://forms.gle/zRZEAfujz5XgPmSx5

**RM60 for Non-TEEAM Member** 

9.00am - 1.00pm



### **IR. JOHNNY LING SIEH KIENG**

Practical Insights on Low Voltage Switchboard Design and Installation: Challenges for Engineers and Contractors **Topic : Practical Insights on Low Voltage Switchboard Design and Installation:** 

**Challenges for Engineers and Contractors "** 

#### Synopsis

Low Voltage (LV) Switchboards are essential in power distribution systems, supporting a wide range of electrical installations from high-rise buildings to large commercial and industrial complexes. Their primary function is to provide a stable, reliable, and uninterrupted power supply to meet operational demands. A well-defined design specification is essential, as it ensures the switchboards meet safety, reliability, and performance standards while addressing the specific needs of the installation. Equally important is high-quality workmanship during manufacturing and installation, where skilled engineers and technicians ensure proper assembly, wiring, and testing. The same level of expertise is required for site installation. Poor workmanship can lead to severe operational failures, such as internal short circuits or overheating, resulting in equipment damage and safety hazards.

This presentation will address some common challenges encountered during the design, construction and installation of LV switchboards, while emphasising the importance of quality workmanship. Some practical recommendations will be provided to assist engineers and contractors overcome these challenges. The presentation will specifically focus on the correct selection of Form classifications and the appropriate IP codes in accordance with IEC 61439 and IEC 60529 Standards. Real-life case studies of site installation incidents will be presented to highlight the consequences of inadequate design and poor workmanship, including examples of a single-phase-to-earth fault on a 3200A switchboard and a three-phase fault on a 5000A switchboard. Additionally, there will be a discussion on plant tripping caused by voltage dips, along with proposed and implemented mitigation measures.

#### **Speaker's Profile**

Ir. Johnny Ling Sieh Kieng holds a BSc (Hons) in Electrical & Electronics Engineering from Herriot-Watt University, Edinburgh, Scotland. With over 45 years of experience, he has worked extensively in the Power utility, Oil & Gas and Services industries. He began his career as a Protection engineer, specialising in system studies, protection relay settings, testing and commissioning of electrical equipment from low voltage up to 275 kV system. His expertise also encompasses the execution of projects involving diesel, gas turbine, hydro power stations and EHV substations up to 275 kV. This includes tasks such as preparing specification, tendering, project award, execution, testing and commissioning final handover to Operation. Additionally, his experiences in the Oil & Gas industry sector, covers both Off-shore and On-shore mega projects with focus on electrical system especially on explosion-proof equipment for hazardous environments. He spend 15 years of his career in the Middle East, gaining valuable experience working under the challenging harsh desert environment.

**Topic : "Causes of Low Voltage Switchgear Failures and Solutions"** 

#### **Synopsis**

Low Voltage (LV) switchgear plays a very significant role in power distribution. The performance and reliability of LV switchgear cannot be ignored. Other than a comprehensive and well-designed switchboard there are still many causes of failures in operation.

The Talk will consider the various important issues involved in the failures of LV switchgear. Some solutions will be introduced to address the problems. There will be a discussion on upgrading the conventional design of LV switchboard to achieve a more secured and reliable power distribution.

#### **Speaker's Profile**

Ir. Chew Shee Fuee KMN B Sc (Hons) (Strathclyde), PEng, CEng, FIEM, MIEE Member, IEEE Member, 1st Grade Electrical Engineer (Competent up to 500 kV). Ir. Chew was President of The Electrical and Electronics Association of Malaysia (TEEAM) for 2001-2005 and 2013-2017. He was a Past Chairman of the ASEAN Federation of Electrical Engineering Contractors (AFEEC) for 2016-2018. Past Chairman of The Institution of Engineering & Technology (IET) Malaysia Local Network. Ir. Chew is the Managing Director of G H Liew Engineering (1990) Sdn Bhd and Chris Chew Electrical Consultant. He graduated from the University of Strathclyde, Glasgow with a B Sc (Hons) in Electrical & Electronics Engineering. He is a Professional Engineer and is also licensed by the Energy Commission as a Competent Engineer (without voltage limits) and a Service Engineer to carry out electrical testing up to a voltage of 500 kV. Ir. Chew has more than 40 years of industry experience in electrical fault investigation, service and maintenance of electrical switchgears and relays. His work also includes electrical supervision of sub-stations and electrical audit. He also presents lectures on electrical apparatus and the protection system. He was Vice-Chairman of MyENC (Malaysian Electro-Technical National Committee) and is a Member of Technical Committees (TCs) and Working Groups (WGs) in Standards Development. He can be reached at E-mail: sfchew@ghliew1990.com