INTRODUCTION
Transformer is essential equipment in the electrical power generation, transmission and distribution system, used to transform the voltages of alternating current supplies. Normally industries are supplied with electricity from the high grid at high voltages such as 66kV and 33kV. The supply voltages, therefore has to be step down or step up by the transformer as to meet he equipment’s operational voltages. This particular course is designed to provide the most advance knowledge and guidance appropriate method of maintenance to continuously sustain the transformer efficiencies, voltage stability throughout the operation with the objective to achieve optimum output performance. The transformer is a static equipment which has no moving parts, but neglecting appropriate monitoring and maintenance may lower down the operational output performance in a very short period of time. Everyone in the industries especially those involve in the operation and maintenance of electrical installation has to be seriously aware of obtaining a very extensive knowledge and fully understanding the transformer operation and maintenance.

OBJECTIVES
Our main target objectives is to ensure participants will be:-

- Able to understand in details basic working principles of transformer.
- Able to monitor and operate transformer in accordance to the right standard operating procedure (SOP).
- Able to perform the right approach of transformer maintenance.
- Able to identify fault and troubleshooting transformer.
- Able to reduce down time due to failure of transformer.

CONTENTS

DAY 1
Introduction
- Definition of transformer.
- Components and functionalities of each component.
- Basic working principles of transformer.

Types and rating of transformer
- Oil Immersed Type
- Dry type
- Sealed type

Components of transformer and their functionalities
- name plate,
- main tank,
- conservator tank,
- radiators,
- cable box,
- disconnection chamber,
- LV and HV bushing,
- transformer mineral oil,
- dehydrating breather,
- tap changer,
- laminated core, windings,
- Transformer accessories.

Transformer Loss
- No-load loss
- Load loss

Transformer Efficiency
- Definition of efficiency
- Percentage of efficiency and the advantages

DAY 2
Transformer Protection
Differential protection
Earth fault protection

Testing of Transformer
Insulation test
Pressure test
Short circuit test

Transformer common faults
Internal fault
External fault

Operation and maintenance of transformer
Daily operation
Scheduled maintenance
Breakdown maintenance
Corrective maintenance
Preventive maintenance
Record, analysis and cost accounted.

Conditional Base Monitoring of Maintenance (predictive maintenance)
Check and inspect the status of performance.
Check the life history of transformer (installation record (diagrams, details of operational limitations due,
maintenance record, number of failures that has occurred, average maximum temperature, efficiency)

Inspecting and maintaining transformer
Regularly inspected and tested in accordance with the manufacturer’s instruction

COURSE HIGHLIGHT
Technical personnel who are directly/indirectly involved in the maintenance of electrical installation (involving substation/transformer) should not miss attending this course, it is of great advantages that they will gain out of this course, such as upgrading knowledge and increase of confident level in the maintenance and testing of transformer, promote comfortable and safe working environment, ability to lengthen the lifespan of transformer, promote increase of production and minimize cost of maintenance.

WHO SHOULD ATTEND
Technical personnel such as Manager, Engineer, Technician, Chargeman etc. who are directly/indirectly involved in the operation and maintenance of electrical installation in the manufacturing industries, service industries, building maintenance (commercial, hospital, education, security etc.) The first party to approach for marketing purposes is the Human Resource Department, followed by Engineering/Technical Department. The 1st. Priority should be manufacturing industries as publicly known in the country as an essential industries in the manufacturing sectors.

Trainer Profile:
Tuan Haji Rozali bin Ayed is a training consultant with over 40 years of experience in the electrical and mechanical engineering services. He began his career as an Electrical Apprentice and Chargeman in Malayan Tin Dredging Ltd. Later on, he worked with Gula Perak Berhad (as Senior Chargeman/Chargehand), Jabatan Kerja Raya Malaysia (as Senior Chargeman, Senior Technician, Electrical Foreman and Assistant Engineer), Yukiniaga (M) Sdn Bhd (as a Project Manager), Isometric Innovations Sdn Bhd (as Head of Electrical Department and Project Director) and Powercool M&E Sdn Bhd (as Technical Manager).

With his vast experience in electrical and mechanical engineering services, he was invited to be a Consultant/Trainer/Lecturer for several engineering and technical training institutions such as IKRAM, Universiti Sains Islam Malaysia, Putrajaya Corporation, Institut Teknologi Petroleum Petronas (INSTEP) and Community Colleges, Ministry of Higher Education Malaysia. Tuan Haji Rozali is a Competent Personnel and has obtained Competency Certifications awarded by Suruhanjaya Tenaga Malaysia as “Supervisor in Electrical Engineering”, “Chargeman Category B4 - 33KV” and “Wireman Category PW4 with Three-Phase Testing and Endorsement”. He is currently appointed as “External Verification Officer (EVO) for Skills Certificate of Malaysia (SKM)” by Department of Skills Department, Ministry of Human Resource Malaysia.

ADMINISTRATIVE DETAILS
(All fees are exclusive of 6% GST charge and inclusive of course materials, lunch & refreshments.)

Date : 27-28 Jan 2015 (Tue-Wed) Time : 9.00 am – 5.00 pm
Venue : Park Avenue Hotel, Sungai Petani Fees : RM850.00 (Members);
       Telong 1/4, Bandar Laguna Merbok RM950.00 (Non-Members)

Attendance is by prior registration only. Registration form must be completed and returned to FMM Institute by 20 Jan 2015 with correct payment by cheque made in favour of “FMM INSTITUTE” and crossed “Account Payee Only”. Payment by cash is acceptable during the day of registration. Registration is on first-come-first-served basis.

ENQUIRIES & REGISTRATION
Contact: Meeza/ Zai
FMM Institute Kedah/Perlis Branch,
No.2, Lorong BLM 1/4, Bandar Laguna Merbok
08000 Sungai Petani, Kedah
Tel: 04-4403628 / 4403273
Fax: 04-4426876
E-mail: meeza@fmm.org.my / rozainiza@fmm.org.my

CANCELLATION & REFUND

- No refund for cancellation within 2 days prior to the programme
- 50% refund for cancellation between 3-6 days
- Full refund for cancellation 7 days prior to the programme
- Registered participants who do not turn up will be charged accordingly
- No additional cost for replacement
- Cancellation must be made in writing

TRANSFORMER, OPERATION, TESTING AND MAINTENANCE
(33kV and Below)
REGISTRATION FORM

To : FMM Institute (Attn: Meeza / Zai) Fax: 04-4426876

Please register the following participants:

1. Name & Designation : __________________________
2. Name & Designation : __________________________

(Please attach separate list if space is insufficient)

Submitted by : ___________________________ Designation : ___________________________

Company : ___________________________ Tel : ___________________________

Fax : ___________________________ Address : ___________________________

Email : ___________________________ Membership No.: ___________________________