



Your True Partner in Attaining
Professional Excellence

A 2-Day Technical Seminar on

Electromagnetic Compatibility (EMC) in Substations & Power Plants



Seminar Objectives

Participants will benefit at the end of the seminar course by:

1. Understanding the basic principles involved in an EMI scenario
2. Developing an appreciation of associated high-frequency effects
3. Learning common EMI control and mitigation techniques
4. Being aware of published guidelines and measurement methods
5. Developing an ability to assess and manage potential EMI situations

Seminar Overview

Electromagnetic interference (EMI) can cause errors and/or failures of operating electrical/electronic equipment. This two-day technical seminar on electromagnetic compatibility (EMC) is intended for personnel working in power plants and substations, particularly in the areas of automation and control, and installation of protection devices. It explains the principles and characteristics of EMI, and common mitigation techniques. Design and installation guidelines and standards are introduced, and measurement methods are explained for the evaluation of electrical/electronic apparatus and systems. A number of practical demonstrations are designed to enhance participants' understanding of EMC principles.

Who should attend?

Technical personnel who are involved in the specification, design, procurement, installation and maintenance of electrical/electronic equipment, particularly in the areas of automation, control and protection, such as:

- Automatic and Control System Designers and Engineers
- Communications Engineers
- Installation and Maintenance Technical Staff
- Reliability/Compliance engineers
- Staff having involvement with EMI matters

About the Course Leader



Dr Tee Tang, *BE(Hons), PhD, MIEEE, MIEAust, CPEng, RPEQ*

Tee Tang is currently Adjunct Associate Professor at the Queensland University of Technology (QUT). He has more than twenty years of university teaching experience and six years experience as a professional electrical engineer in traffic control. He has extensive experience in the areas of digital and analog electronic circuits, communications, electromagnetic fields, antennas and electromagnetic compatibility (EMC). His current research interests include active antennas, EMC and application of ultra-high-frequency (UHF) technique in high-voltage partial-discharge detection, identification and location. He has published more than 80 journal and conference papers. He established the EMC Laboratory at QUT in 1990, and has been an industry consultant in his research areas. He jointly developed (with AEDC) the EMC Awareness course for the Australian Government in 1997, and has presented many EMC short courses in Australia, New Zealand and South-East-Asia. Tee Tang is a technical assessor for the National Association of Testing Laboratories (NATA) in the area of EMC.

CPD Recognition

This training program is especially designed to meet the Continuing Professional Development (CPD) needs of participants. A Certificate of Attendance will be awarded at the end of the program. This serves as evidence of your personal and professional commitment to your career.

SEMINAR OUTLINE

1. INTRODUCTION

- Basic concepts of EMC and EMI
- EMC Terms & Acronyms

2. EMI SOURCES IN POWER PLANTS AND SUBSTATIONS

- Power Frequency Electric and Magnetic Fields
- High-Frequency Fields
- Switching, Faults and Lightning Transients
- Electrostatic Discharges (ESD)
- Others

3. EMI COUPLING AND MITIGATION

- Common Impedance, Capacitive, Inductive and Radiation Coupling
- Cables and Terminations
- Shielding
- Grounding and Bonding

4. PRACTICAL IMPLEMENTATION

- Characterisation of Disturbance Types and Levels
- CIGRE Guidelines for HV Substations and Generating Plants
- EMI on Automation and Control Systems
- EMC Control and Design Techniques
- IEC 61850-3 for Power Substation Designers

5. EMC MEASUREMENT

- EMC Emission measurements
 - Conducted
 - Radiated
 - Measurement uncertainties
- EMC Immunity measurements

6. EMC MANAGEMENT

- EMC Management
- EMC Control Plan
- EMC Test Plan

7. PRACTICAL DEMONSTRATIONS

Demonstration sessions will be distributed throughout the 2 days course:

- Measurement of Conducted & Radiated emissions
- Stray inductance and capacitance
- Effect of bypass capacitors
- Transfer impedance of cables
- Magnetic and capacitive coupling and mitigation
- Application of magnetic pickup loops and current probes
- Use of ferrites for EMI control
- Shielding

Customised In-House Course Available

This program can be customised to suit specific needs of your organisation at significant savings. Please contact us on (02) 8448 2078 or email enquiry@cpdint.com.au for more details.