

# Temperature Metrology

*A 4-day intermediate course in practical lab skills for comparison calibration of thermistors, RTDs, thermocouples, and other thermometers.*

Fluke South East Asia Pte Ltd is pleased to organize a 4-day intermediate course – TRC 2009 : Temperature Metrology.

## Descriptions

This is a 4-day intermediate course in practical lab skills for comparison calibrations of various sensor types, along with other calibration techniques for greater accuracy. You'll leave knowing how to use SPRTs and other high accuracy standards to keep your working standards performing at their highest levels.

### Course Outline

#### Introduction to Temperature Metrology

- Scales, ITS-90, and fixed points
- Uncertainty and traceability

#### Thermometer Types

- SPRTs, PRTs, RTDs, and thermistors
- Thermocouples – noble vs base metal
- Liquid-in-Glass: procedure for accuracy
- Reference thermometers

#### Components of Uncertainty

- Heat sources
- Readouts

#### Common Calibration Techniques

- Thermistors & PRTs
- Thermocouples – ASTM, spool testing
- LIG – ASTM – specific requirements

#### Optimizing Your Measurement

- Test uncertainty ratios
- Error budgeting
- Profiling a heat source
- Mathematics

#### Maintaining Your Standards

- Frequency of calibration
- Uncertainty analysis and SPC

#### Compliance Issues

- Reports, table – pleasing the auditor
- ISO/IEC17025, incorporating the new requirements

#### Demonstrations & Hands-on

### Who Should Attend?

Those responsible for calibrating in-field standards. Metrologists who do not work heavily with ITS-90 fixed points, but who seek lower uncertainties through comparison calibrations.

Attendees should have some experience in sensor calibration.



### Course Information

Training Date: 25 to 28 August 2009

Course duration: 4 days

Trainer: Mr. Tom Wiandt  
Director of Metrology  
Hart Scientific

Guest Speaker: Mr. Victor Tan  
Head of Temperature & Mechanical Metrology Dept.  
SPRING Singapore

Location: Fluke South East Asia Pte Ltd  
60 Alexandra Terrace  
#03-16 The Comtech (Lobby D)  
Singapore 118502

Course Fee: Pls refer to your local Fluke Representative for course fee.

Certificate: This course has been approved for 24 PDU units under the Professional Engineer Board (PEB) Continuing Professional Development program.

A certificate of training will be issued upon successful completion of the course.

Registration: Ms. Stephanie Quek  
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For more information, please call us or log on to our website at [www.fluke.com.sg](http://www.fluke.com.sg).