

**ELECTRONIC PRODUCTS METERING SCHOOL****TENTATIVE AGENDA**

October 6-10, 2008

MONDAY

Class Rooms TBD

TIME	SUBJECT	INSTRUCTOR
5:30 PM	Reception – Main Entrance Gallery - NECCE	Don Perreault and Course Instructors
6:30	Dinner - Main Dining Room at NECCE	

TUESDAY

TIME	SUBJECT	INSTRUCTOR
8:00 AM	Welcome & School Overview	Russ Grenier
8:05	Reactive Metering & Power Definitions	Les Rosenau
9:30	Break	
9:45	Harmonics, Distortion, & their effect on Metering	Les Rosenau
10:45	Break	
11:00	Encompass Meter Family Features & Functions	Russ Grenier
12:00 PM	Lunch	
1:00	Encompass Meter Family (cont'd)	Russ Grenier
2:00	Break	
2:15	MeterMate 5.3 Software Overview	Larry Waters
3:15	Break	
3:30	Creating a kV2c Measurement Profile	Carl Chermak
4:15	Adjourn	
5:30	Bus Departs NECCE for Nubble Lighthouse Tour & Bill Foster's Clambake	Don Perreault
6:30	Dinner - Bill Foster's Downeast Clambake, York, ME	

WEDNESDAY

TIME	SUBJECT	INSTRUCTOR
8:00 AM	KV2c Modem & RS232 / 485 Communications	Russ Grenier
9:00	Break	
9:15	Totalizing Pulse Inputs using the kV2c	Larry Waters
10:00	Break	
10:15	Digital Meters – How they work	Bob Lee
11:00	Break	
11:15	I-210 Singlephase Meter	Carl Chermak
12:00 PM	Lunch	
1:00	Creating Programs using MeterMate Software	Russ Grenier
2:00	Break	
2:15	“Hands-On” Programming	Russ Grenier
3:15	Break	
3:30	Introduction to Programming the Meter	Larry Waters
4:30	Adjourn	
6:00	Dinner – Main Dining Room at NECCE	

**THURSDAY**

<b>TIME</b>	<b>SUBJECT</b>	<b>INSTRUCTOR</b>
8:00 AM	Working with MM Meter Comm 5.3	Russ Grenier
8:45	Break	
9:00	Metermate Load Profile Software (MMLP)	Larry Waters
9:45	Break	
10:00	Introduction to Phasor Diagrams	Les Rosenau
10:45	Break	
11:00	Troubleshooting Exercises with Phasor Diagrams	Les Rosenau
12:00 PM	Lunch	
1:00	Factory Tour	Don Perreault
4:00	Return to NECCE	
5:30	Graduation Reception – TBD	
6:30	Graduation Banquet -- TBD	

**FRIDAY**

<b>TIME</b>	<b>SUBJECT</b>	<b>INSTRUCTOR</b>
8:00 AM	Power Quality and Today's Electricity Meters	Larry Waters
9:00	Break	
9:15	ANSI Forms and the kV Fitzall Meter	Les Rosenau
10:30	Adjourn	

**Instructors:**

Carl Chermak	Meter System Engineer, Liverpool, NY
Bruce Derr	Engineering Technician
Russ Grenier	Marketing Application Engineer
Jim Heminway	Marketing Manager
Bob Lee	Firmware Design Engineer
Les Rosenau	Application Engineer (Retired)
Larry Waters	Meter System Engineer, Atlanta, GA

# Course Synopses

## Tuesday

### **Reactive Metering & Power Definitions**

- Review of reactive metering concepts and related measurements: why it is important, definitions, and mathematical derivations. How reactive metering is accomplished with electromechanical and electronic meters. Also, a review of various power definitions, including Phasor, Apparent, Arithmetic Apparent, Fictitious (Fuzzy vars), etc.

### **Harmonics, Distortion, & their effect on metering**

- Explore the concept of harmonic analysis as applied to non-sinusoidal, periodic waveforms, and discuss the impact of non-sinusoidal current and voltage signals on metering equipment. Discuss implications of effects on revenue measurements.

### **Encompass Meter Family Features & Functions**

- A comprehensive discussion on the features, functions, and available options of the Encompass Family which includes the kV2c, kV2c+ and kV2n meters.

### **MeterMate 5.3 Software Overview**

- An overview of MeterMate version 5.3 software. Includes a high level look at the different software components that make up MeterMate (MM Program Manager, MMCOMM for reading/programming, MM Profile Manager, MMLP), as well as an introduction to working with the program development portion of MeterMate.

### **Creating a kV2c Measurement Profile**

- A hands-on session that provides the foundation for developing kV2c meter programs. Students will use MeterMate Profile Manager to define the quantities to be measured by the kV2c meter, and learn how to effectively utilize this essential part of the new MeterMate software.

## Wednesday

### **kV2c Modem & RS232 / 485 Communications**

- An introduction to remote communication with the kV2c meter using the internal modem option board (for land-line or cell phone use) or the RSX (RS-232/485 or external modem modes) option board. Includes a demonstration of their operation, and focuses on the practical information needed to successfully use these option boards.

### **Totalizing Pulse Inputs using the kV2c**

- Exploring the external pulse input and totalizing features of the kV2c meter. Instruction will be provided on wiring up the input circuits, programming the meter, and reporting/displaying the results.

### **Digital Meters – How they work**

- A discussion of how solid state digital sampling meters operate, with a comparison to induction meters. Block diagram representations of major components and operations, operational logic and calculations, as well as practical information on testing these types of meters will be discussed.

### **I-210 SSSinglephase meter**

- A Look at the new Solid State Singlephase meter. Basic operation, theory and AMR compatibility.

### **Creating Programs Using MeterMate Software**

- A detailed look at creating programs for kV2c meters using MeterMate Software. Build a functional program in class as a group, making sure all the relevant support table parameters are understood.

### **Hands on Programming**

- The use of Case studies to create a kV2c program from scratch.

### ***Introduction to Programming the Meter***

- This session allows students to work with MeterMate Meter Comm 5.1 and learn the basic process used to program a kV2c meter using the program developed in the previous session.

## **Thursday**

### ***Working with MM Meter Comm 5.3***

- A comprehensive review of MeterMate Meter Communication software (MMComm). Includes reading, programming, and reporting functions as well as essential configuration settings. MMComm command structure, screen information, and reading file maintenance features will also be discussed.

### ***MeterMate Load Profile Software (MMLP)***

- Review the MeterMate Load Profile data translation software, exploring the features and functions of the software used to generate reports and graphs on recorded interval data from kV2c meter.

### ***Introduction to Phasor Diagrams***

- Defining what phasors in metering represent, how they are developed, and how they are applied in metering applications.

### ***Troubleshooting with Phasor Diagrams***

- Builds on the previous session to work with phasor information provided by new solid state electricity meters to troubleshoot new or existing metering installations. Includes some interactive exercises diagnosing miswired meters.

## **Friday**

### ***Power Quality and Today's Electricity Meters***

- This session covers, in more detail, the power quality measurement features and diagnostics in the kV2c and the more advanced features of the V-1270 meter. What tools are available, how to set them up correctly using MeterMate and separate V-1270 software. Time is also spent understanding how to interpret and apply the information provided by the meter.

### ***ANSI Forms and the kV Family Fitzall***

- This session demonstrates the value of the kV Fitzall Meter and how this concept can dramatically reduce the number of different ANSI Forms that need to be stocked to cover a broad range of applications.