

The Certified Measurement & Verification Professional (CMVP®) Program

Date: March 19-23, 2017 / Venue: Riyadh

Saudi energy efficiency center (SEEC) organize with cooperation of the Association of Energy Engineers (AEE), and in conjunction with the Efficiency Valuation Organization (EVO), this comprehensive training course is designed to provide a useful preparatory vehicle for those seeking to achieve the status of **Certified Measurement and Verification Professional (CMVP)**, awarded by AEE to pre-qualified M&V professionals who complete this seminar and successfully pass the CMVP examination administered by AEE at the close of instruction.

Program Of Study

Proven energy savings are now playing a significant role in financing energy management programs, whether through energy performance contracts or through emission trades under schemes such as the clean development mechanism of the UNFCCC. While interest in savings data is growing, the state of the art in determining savings has also been rapidly evolving. This seminar will examine current best practices for determining and documenting savings, specifically reviewing the current edition of the International Performance Measurement & Verification Protocol (IPMVP). Attendees will learn the process of designing a proper M&V program for their projects, including cost/accuracy tradeoffs, baseline adjustments, interactive effects, types of savings, maintaining transparency, and analysis methods. Examples of specific techniques will be presented, along with common pitfalls which can result in unreliable savings reports. These techniques are central to management under the new ISO 50001 standard for Energy Management Systems. Class time will include problem solving and debate. Bring a calculator and any M&V challenges you may currently face for general discussion. Through participating in a "fundamentals" course, persons experienced in M&V will also appreciate the assembly of all of the issues, the debates, and engagement at their own level with expert instructors.

Registration & Fees

- Application: download from www.seec.gov.sa, complete, and email to: training@seec.gov.sa
- Inquiries, email: training@seec.gov.sa, Mobile: +966 55 615 5466
- Cost: SR 7500 per attendee

Payment methods:

- Deposit to SEEC Account IBAN No. SA2015000999100002080008, Al-Belad Bank
- Certified check made payable to SEEC

The Certified Measurement & Verification Professional (CMVP®) Program

Date: March 19-23, 2017 / Venue: Riyadh

Course Outline

REASONS FOR M&V

- Types of uses for M&V
- M&V's role in financing

CURRENT M&V PROTOCOLS

- Relationship of IPMVP and other guidelines

IPMVP

- Its evolution
- Overview of IPMVP Options A, B, C & D

DEVELOPING AN M&V PLAN

- Principles of M&V
- Scope of energy to be monitored
- Differences between M&V for industry and for buildings
- "Cost avoidance" or "normalized savings?"
- Choosing independent variables for routine baseline adjustments
- Sources of data
- M&V budgets
- Selecting the baseline period and data
- Measurement systems design, commissioning & maintenance
- Baseline analysis methods
- Various forms of savings computation
- Valuing savings
- Routine procedures and QC
- Managing the uncertainty created by sampling, metering, modeling and unknowns
- Bias and rounding
- Reporting procedures
- Coordinating with other purposes
- When to do the M&V Plan

CURRENT ISSUES IN M&V

- Coping with missing data
- Cost/uncertainty tradeoffs
- Monitoring IAQ

BASELINE ADJUSTMENTS

- Why they are necessary
- Who does what, when

KEY ELEMENTS OF SUCCESS: THEORY & EXAMPLES OF IPMVP OPTIONS

- Details of IPMVP methods
- Retrofit isolation (IPMVP Options A & B): Instrumentation issues
- Whole facility (IPMVP Option C): Utility billing issues
- Calibrated simulation (IPMVP Option D): Simulation issues
- Lessons from tough experience

SELECTING OPTIONS: WHICH ONE IS BEST SUITED FOR MY PROJECT?

ADHERENCE WITH IPMVP

Certification Eligibility

The CMVP exam will be administered at the close of instruction on day three to those who have qualified in advance to sit for the exam by submitting a completed CMVP application and fee.

Each applicant for the CMVP certification is required to attend Fundamentals of Measurement & Verification: Applying the IPMVP training program in order to sit for the exam. Prior to sitting for the exam, each candidate must complete an application. Each candidate must also pass the four-hour written exam as well as meet one of the following criteria:

- A 4-year degree from an accredited university or college in science, engineering, architecture, business, law, finance or related field and 3 years of verified experience in energy or building or facility management, or measurement and verification
- A registered Professional Engineer (PE) or Registered Architect (RA) and 3 years of verified experience in energy or building or facility management, or measurement and verification
- A 4-year non-technical degree from an accredited college or university in a field not specific above and 5 years of verified experience in energy or building or facility management, or measurement and verification
- A 2-year technical degree and 5 years of verified experience in energy or building or facility management, or measurement and verification
- No degree and at least 10 years of verified experience in energy or building or facility management, or measurement and verification
- Current Status of Certified Energy Manager® (CEM®)

Course Instructor



Steve Kromer

STEVE KROMER, P.E., is an energy efficiency consultant focusing on energy savings verification (program evaluation and M&V) and energy efficiency data management systems. He is treasurer of the Efficiency Valuation Organization (EVO) and current chair of the CMVP certification board. Formerly a senior engineer at the Lawrence Berkeley National Laboratory (where he is presently a guest researcher) and a director at Enron Energy Services, Mr. Kromer currently consults internationally on M&V implementation and training.