

**Monitoring and Targeting  
Measurement and Verification**

**2 Days Workshop and Seminar**

**Athens**

**25 - 26 April 2016**

**Monday, April 25<sup>th</sup> 2016 – 16:00 - 20:00**

**Workshop – Technical Lecture | 50 – 70 participants**

**Akadimias 7, Athina 106 71 (ACCI) – 8<sup>th</sup> floor**

**The major elements of energy management**

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1. **Strategic view:** the major elements of energy management
2. **Primary technical aspects**
  - building fabric
  - space heating
  - ventilation
  - refrigeration and air conditioning
  - boilers
  - burners
  - fans and pumps
  - electric motors and drives
  - hot water
  - lighting
  - catering
  - compressed air
3. **Avoidable waste**
  - Staff vigilance
  - Monitoring and targeting
  - Relationship with maintenance
  - Awareness-raising and motivation campaigns
4. **Improving efficiency**
  - energy audits
  - ranking opportunities
  - measuring and verifying savings
5. **Organising the corporate programme**
  - Staffing requirement; benefits of a collegiate approach
  - Training needs
  - ISO50001
6. **Procurement policies**
  - Technical specifications
  - Design standards
  - Bogus energy-saving products

**Closure:** Open discussion with participants

**Tuesday, April 26<sup>th</sup> 2016 – 10:00 - 18:00**

**Training workshop | 15 participants**

**Energy monitoring and targeting | Measurement and Verification**

**Venue: NTUA, Old buildings Electrical Engineers – Office 0.2.7.**

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**Effective Analysis of Consumption Data** has to be the foundation of any energy management programme. Merely reporting how much you have used is not sufficient: at the very least, users should be routinely comparing actual consumptions with reasoned estimates of what they should have used (given the weather, levels of activity, or other variable influences prevailing at the time) Managers and engineers who know how to do this enjoy several advantages:

- They can detect, investigate and promptly rectify excess consumption caused by malfunctions or inappropriate maintenance or operation (like it or not, even in the best run organizations, hidden but avoidable energy waste strikes at random and eats up energy budgets needlessly).
- They are better able to quantify opportunities for energy-saving projects. Effective analysis reveals buildings and equipment with anomalous consumption patterns and trends.
- Only they are in a position to verify objectively the savings that their efforts generate, and just as importantly, to identify projects that did not perform as expected. Users who do not understand how to allow for something as obvious as changes in the weather are left uncertain as to the truth, which means that effective projects are not recognized as such (and replicated) while, at worst, bogus products earn endorsements they do not deserve.

This course explains how to compute expected consumption using information about the weather, production levels, attendance figures, mileages, hours of darkness and any other 'driving factors' relevant in particular circumstances.

It introduces and explains two simple but critically effective reporting and analysis tools. **Cusum analysis** reveals past changes in behaviour and thus identifies best achievable performance and enables diagnosis of anomalous consumption; while the **overspend league table** is a routine management report which, in a few lines of text, tells you at a glance where all your most significant deviations have occurred in the past day, week, or month.

With a maximum class size of twelve enabling an interactive exercise-based approach to teaching, this workshop has always enjoyed outstanding feedback. Whether you are drowning in data or feel you don't have enough, whether you are responsible for buildings or industrial processes, whether you are an end user, a consultant or an energy software developer, and almost regardless of your professional background, you can expect to get tremendous value from the day—augmented by free software tools with which to put the principles into practice, and backed up with a money-back satisfaction guarantee.

#### **Content of the day**

- Avoidable energy waste
- Calculating "expected" consumption
- Accounting for the weather
- Energy performance indicators
- Detecting and prioritizing exceptions
- Cusum analysis
- Making good use of automatic meter readings
- Forecasting consumption
- Reckoning savings
- Implementation

#### **Free software:**

All participants will receive three Excel workbooks providing functionality described during the course. Participants will be able to use them to improve their own "home-made" M&T schemes or to demonstrate the features required from M&T software suppliers.

**Tutor: Vilnis Vesma**

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**Vilnis Vesma** MA CEng MEI has many years' continuous experience of designing, installing, supporting and operating energy monitoring and targeting schemes, and providing training for existing or potential users. This includes creating spreadsheet-based tools for energy management. He wrote a textbook on the subject (*Managing Energy with a Desktop Computer*, Energy Publications, 1987) and presented his first Energy Spreadsheet Masterclass in 1988.

The organisations to which he has supplied M&T tools and know-how span a wide range of sectors including manufacturing industry as well as commercial and public sector organisations. He has written numerous articles on the subject. As well as authoring the government advice booklet *Fuel Efficiency Booklet 13: Waste Avoidance Measures* (1995) and the Carbon Trust's *CTG008: Monitoring and targeting* (2008), he has been a specialist contributor on M&T to Croner's *Energy Management* and Gee Publishing's *Energy Saver*, and publishes the definitive guide to M&T techniques on the web. The UK's former Action Energy programme retained Mr Vesma as a strategic advisor on energy monitoring and targeting.

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**INSTITUTE OF ZERO ENERGY BUILDINGS - INZEB**

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**Institute of Zero Energy Buildings - INZEB** is a Social Enterprise and was founded in January 2014. The Institute serves as an **aggregator, operator, documenter and disseminator of knowledge and expertise on issues related to energy saving in the building sector**. The aim of INZEB is to serve as a platform for two-way communication and close dissemination of knowledge, contributing to research, adaptation, adoption and widespread construction standards with the aim of reducing the energy consumption and emissions of "greenhouse gas" pollutants.

The fundamental aim of INZEB is **the study, evaluation, training, coordination and promotion of practices, standards and actions** which relate to the concept of nZEB and energy efficient buildings.

As part of its activities, **Institute of Zero Energy Buildings** has developed synergies and partnerships with recognized European bodies and organizations.

INZEB performs as the National Supporting Partner of **Renovate Europe Campaign** (since January 2014), serves as the Official Partner of **European Alliance to Save Energy** (since February 2015) and has a close collaboration with **Buildings Performance Institute Europe – BPIE** (since September 2014). Furthermore INZEB is responsible for the development of the **Greek Chapter of the Association of Energy Engineers** ([link](#)).

INZEB has established a partnership with **RenoValue** (April 2015). RenoValue is a 2-year project funded by the **Intelligent Energy Europe Programme of the European Union**. The project will develop a training toolkit for property valuation professionals on how to factor energy efficiency and renewable energy issues into valuation practices, understand the impact of building performance and property values and advise their clients accordingly. As a part of this agreement, INZEB has agreed to promote RenoValue in **Greece** and **Cyprus** and make all the training material available in Greek language.