



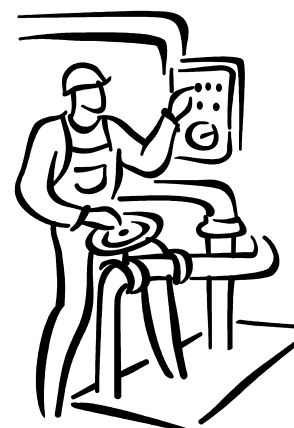
# FLOW METER TRAINING COURSE

## with focus on thermal heat applications in power plants

You are invited to our 2-day training course on flow measurement, that this year will be arranged **November 2-3 in Cambridge, England**. The event is arranged in cooperation with Cambridge University, and the conference will take place in the new building of the Institute for Manufacturing, where we will also have a chance to see some of the laboratories.

The programme will include:

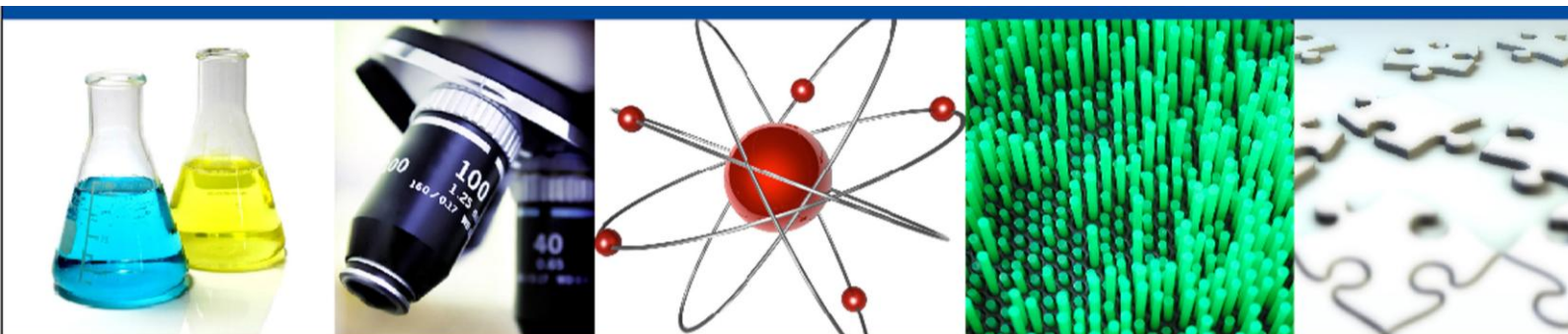
- History and basics of flow measurement technology
- Measurement of thermal power (flow and temperatures)
- Comparison of ISO and ASME standards
- Flow meters for applications with hot water (above 100 °C)
- Non-intrusive test methods for flow
- Balance analysis – the complete picture



The focus and basic theme of the seminar is the overall question “How can we be sure on the measuring results?”. Quality assured measurements require not only good instruments and equipment, but most important is knowledge and skilled personnel. To select, install, analyze results and maintain a measuring instrument require trained and experienced persons.

If measuring results are to be used in calculation of power limits, or other permits of various kinds, measuring uncertainty can be of extreme importance because the uncertainty will reduce the limit. Smaller uncertainty in such cases can result in a higher efficiency of the power plant, a benefit both for economy and safety.

Presenters are representatives from SP Technical Research Institute of Sweden, Cambridge University, the Finnish calibration company Indmeas and a number of European flow meter manufacturers. These two days will offer a mix of practical and theoretical information.



## Program

### Tuesday November 2, 2010

- 08.30 Registration, tea and coffee
- 09.00 Introduction and background to this seminar
- 09.30 Flow metering, history and technical overview
- 12.00 Lunch
- 13.00 Measurement uncertainty – a thermal power calculation example
- 14.30 Tea & coffee
- 15.00 In-line calibration of flow meters using tracers  
- 16.00 (approx)
  
- 19.00 Dinner and walking tour of central Cambridge

### Wednesday November 3, 2010

- 09.00 Differential pressure flow meters according to ISO or ASME
- 10.15 Tea and coffee
- 10.45 Ultrasonic type flow meters
- 11.30 Clamp-on ultrasonic type flow meters
- 12.00 Test and calibration facilities for high Reynolds numbers
- 12.30 Lunch
- 13.30 Flow measurement using the cross correlation principle
- 14.15 Improved calibration results with data reconciliation and energy balances  
- 15.30 (approx)

## Cambridge



Cambridge is within easy reach from London and train connections are frequent to/from Kings Cross station. Ryan Air connects Stansted Airport with many cities around Europe, and from Stansted a direct train to Cambridge is available. During your stay you will see parts of the amazing town with old university buildings, colleges and chapels.

**Fee: 985 GBP** (incl documentation, lunches, dinner, tea & coffee)

*Please register by e-mail latest October 11 to [britta.stalhammar@sp.se](mailto:britta.stalhammar@sp.se).*

*Do not forget to include company name, address and phone no.*

*Regarding questions on the programme or any other issues, please contact [anders.andersson@sp.se](mailto:anders.andersson@sp.se) (or phone +46 10 516 43 49).*

**General conditions** The fee will be invoiced prior to the event. Any cancellations must be received at least 21 days prior to the event. In case of absence, a substitute delegate may take your place. We reserve the right to cancel the event due to unforeseen circumstances. The programme may be subject to minor changes without notification.