Estimation of Measurement Uncertainty in Test and Calibration

Organized by

FICCI QUALITY FORUM

May 13 - 15, 2019

Mumbai

1. Introduction

The purpose of measurement is to determine a value of quantity of interest or the measured. However, when any measurement is made, the measurement process involves the use of standards, work piece, instruments, persons, procedure and environment. This gives rise to variation in every measurement. The sum total of this variation is known as the uncertainty of measurement, which must be estimated for reliable result.

According to ISO/IEC 17025**,** clause 7.6.2 **"***A laboratory performing calibrations, including of its own equipment, shall evaluate the measurement uncertainty for all calibrations"*. And clause 7.6.3 states *"A laboratory performing testing shall evaluate measurement uncertainty"*. Further, as per cl. 5.5.1.4 of ISO 15189:2012 Standard on accreditation of medical laboratories, *"The laboratory shall determine measurement uncertainty for each measurement procedure in the examination phase used to report measured quantity values on patients' samples. The laboratory shall define the performance requirements for the measurement uncertainty of each measurement procedure and regularly review estimates of measurement uncertainty"*.

2. Course Objectives

The main objective of this course is:

- ✓ To understand the concept of measurement uncertainty and its implication in measurement
- ✓ To learn how to estimate the uncertainty associated with measurement results of tests & calibration.
- ✓ To practice the estimation techniques through a workshop with live examples so that a participant can perform the calculation at his/her work station.

3. You should attend this course if,

- ✓ You want to understand the concept of measurement uncertainty.
- ✓ You want to implement concept of measurement uncertainty in measurement procedures in your testing and calibration laboratories.
- ✓ You want to learn to evaluate uncertainty associated with measurement results of test and calibration.
- ✓ You want to reduce measurement process variation in order to improve reliability of your test and calibration results.
- ✓ You are looking to expand your skills in the area of measurement management system

4. Course Material

Course kit comprising detailed course material with several worked out examples which will help participants in estimation of Measurement Uncertainty in their tests.

5. Methodology & Certification

A judicious mix of class room presentations, exercises, case studies and hands-on practice will be used. Participants will be encouraged to relate the learning to live situations.

Participants who successfully complete the continuous assessment during the course and also the written examination conducted on 3rd day of the course will be issued a certificate by FICCI.

6. Course schedule & registration procedure

Date: May 13 - 15, 2019

Timing: 09:30 hrs – 17:30 hrs

Nature: Non residential

Venue: Mumbai

Participation Fee: Rs. 13,850 + 18% GST (Total amount of Rs. 16,343/- includes cost of training, course kit, lunch, tea etc.)

7. About our Faculty

Our faculty of this course Mr. Basudev Bhattacharya has rich experience of 47 years in the field of designing, functioning, & managing testing laboratories. He was one of the founder members of Pilot Test House of the Government of India, Ministry of Commerce, a premier test and calibration centre for testing export product from the country.

Mr Bhattacharya was trained on Laboratory Management in UK in 1988 under the Indo-EEC Co-operation. He has been an International consultant in the field of laboratory accreditation on behalf of International Trade Centre; a Geneva based UN Agency, and also the Sr. Laboratory Expert of BSI, UK group. He was Chairman of Technical Committee on Photometry of NABL and member of the NABL technical committees on Clinical & Food Testing Laboratories.

He has presented and published more than 30 papers on a variety of technical subjects in National and International Journals, seminars and conferences. He has conducted more than 295 in-house workshops and training programmes on LMS, Measurement Uncertainty, Quality Assurance, Calibration in India, Bangladesh, Mauritius, Dubai, Abu Dhabi, Kuwait, Rwanda, Maldives, Bhutan & Nepal and has trained more than 2900 persons. He has been providing auditing services to accredited laboratories and certified organizations as per ISO/IEC 17025, ISO 15189 & ISO 9001 Standards, and has conducted more than 75 such audits.

He has also provided LMS implementation support to 15 laboratories in different disciplines (viz. Chemical, Clinical, Mechanical, Electrical testing etc and Calibration of Mass-Dimension-Thermal-Pressure which have successfully achieved NABL accreditation.

8. About FICCI Quality Forum

FICCI Quality Forum (FQF) is a specialized division of Federation of Indian Chambers of Commerce and Industry (FICCI) set up with objective to sharpen the competitive edge of Indian Industry. FQF provides training, consultancy and research services focused on enhancing the quality quotient of clients and partner organization.

For the past 20 years, FQF is providing training on various ISO management systems and has a pool of highly competent & experienced trainers to conduct training courses.

FQF has collaboration arrangements with Intertek India for providing IRCA, UK approved Auditor/Lead Auditor training courses on ISO 9001 Quality Management System (QMS) ISO 14001 Environment Management System (EMS), ISO 22000 Food Safety Management System (FSMS) and Occupational Health and Safety Management System (OHSAS) 18001 standards. A summary of feedback given by past participants of these courses is included in this brochure.

In addition we also provide training on Six Sigma Green and Black belt certification, and Project Management. We also provide consultancy support on effective implementation of above management systems including LMS leading to certification/accreditation.

Registration: Send registration form along with Cheque/DD in favour of "FICCI Quality Forum". The seats are limited to 20 and registration will be done on first come first serve basis

For further details & to reserve your seat, please contact:

Ashish Dhiman
T: +91-11-2348 7392
M: +91 - 70424 83366
E: ashish.dhiman@ficci.com; nimisha.anand@ficci.com

9. Course Content

- Fundamentals of Measurement
- Concept of Measurement Uncertainty
- Method of Estimation of Measurement Uncertainty as per ISO Guide of 1995
- Basics of Statistics as applicable to estimation of measurement uncertainty
- *Syndicated Exercise on estimation of type-A & type-B evaluations*
- Case Studies involving Test situations
- Case Studies involving common Calibration parameters
- Model for estimation of measurement uncertainty in testing of common parameters
- Model for estimation of measurement uncertainty in calibration
- *Workshop on estimation of measurement uncertainty in physical and chemical measurements*
- *Workshop on estimation of measurement uncertainty in Calibration of common parameters*
- Method of estimation of Measurement Uncertainty in Microbiology as per ISO 19036
- *Syndicated Exercise on estimation uncertainty associated with quantitative microbiological measurements*
- Application of Measurement Uncertainty in testing & calibration
- Asia Pacific Laboratory Accreditation Cooperation (APLAC)'s interpretation of estimation of MU in calibration & testing
- Development of a Standard Operating Procedure (SOP) for the estimation of measurement uncertainty
- Workshop on estimation of medical examination

Some Comments from participants of previous Training Program conducted by FICCI

- The course and the manner in which it was delivered certainly deserve high grades on the scale. It has gone beyond what I had actually expected before being part of it
- After training I am able to know the basic knowledge of uncertainty. More knowledge will be with the practice. Overall experience is good
- An interesting and educative program. Got to know many parameters for the calculation of uncertainty. Would certainly try to implement in our measurement process
- I came to understand concept of uncertainty and now, I am at a level where I can do uncertainty measurement
- Learned a lot during training program via training session, group exercises, group discussion etc.
- This is the best experience for me because measurement of uncertainty training is beneficiary for me and my company. That is the wonderful job and experience of my life
- The friendly and tension free environment created by the trainers
- The training program was very effective and now I have come to know about uncertainty measurement and how and where it can be used
- Very beneficial for me. Now I am able to understand all other things which are associated with the testing, equipment and reports as an analyst
- Calmness of trainers in answering all the queries.
- The learning that comes with each course is always good but the way it is given is really important. The Course material/learning were very well disseminated and the ease with which I could learn was good. I enjoyed learning.
- I had wonderful experience which is full of knowledge and information which will not only help in my professional life but also personal life.
- Programme was very good especially both faculties were extremely good having full knowledge about the concept