



Press Release

14th International Congress of Metrology
22nd to 25th June 2009 in Paris

**Measurement as the decision-making and progress
element in the industry and the society.**

Information :

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As the science of measurement, Metrology is a vital quality factor and a source of performance for a growing number of business activities.

The International Congress of Metrology held every 2 years is to date the only event of its kind in Europe, with a large number of lecturers and participants attending from many industrial sectors.

The 14th International Congress of Metrology to be held in Paris (France) 22 – 25 June 2009 will focus on the improvement of the measurement processes as a condition to guarantee product and process quality.

Participants attending this event are practitioners of the field facing the challenge of measurement control in industry and laboratories and bodies, members of the health professions, measuring instruments manufacturers and users, quality officers, executives and decision makers, and teachers and researchers.

This 3-day congress is a unique opportunity to meet with other professionals of around the world and choose from among a wide variety of scheduled events:

- Round tables dedicated to industrial themes
- oral and poster conferences, and
- A unique **Exhibition of the latest equipment and advanced technologies** in the field of metrology.

The aim of the Congress is to gather in Paris between 800 and 1 000 participants from about 50 different countries.

The Congress is organised by the “Collège Français de Métrologie » in partnership with :

- Major companies users of metrology : Eurocopter-EADS Group, Renault
- Technical centers and providers : Acac, BEA Métrologie, Cetiat, Cetim, IMQ
- National Metrology institutes : LNE for France and NPL for UK
- Representatives from university
- European and international key organisms : EA, Euramet, BIPM and OIML

The Collège Français de Métrologie (CFM) is a French Law 1901 association which objective is to create a network of skills and exchanges of experiences and information in the field of measurement.

Measurement, an essential element of the society

Whether it is in a private frame or in a professional environment, measurement is omnipresent in our life. It allows to make of multiple decisions, more or less heavy of consequences.

While the current tools (robots, equipments in all the domains) are more and more spread and successful, the concern of the value of what we measure arises as ever.

Remember yourselves of your mathematics professors who always asked you to question the value given by the calculator!

So, metrology is a universal tool which touches all the physical and chemical sizes and the incidences of which in term of economy, health, safety or environment can be very important.

Let's see some examples.

Classic applications in the Industry

In that case, the measures serve above all for declaring the conformity of a product to its specifications, either by direct measure on the product, or through the tools of surveillance of the manufacturing process. The objective is clear: to make a product shapes straight off to sell it to our customers, wherever they are located in the world. The measures have to be reliable and they have to be comparable between them

The measures have to be reliable and comparable between them whatever is the body which realizes them (the supplier or the customer).

While the term metrology, some years ago still made reference only to the dimensional, electric, time and mass measures, today, it covers all the parameters or the sizes susceptible to be measured.

The sectors of the environment, health, biology, chemistry, food-processing industry, nanometrology and sensory metrology, are a part of this new landscape in which big evolutions remain to come.

Applications for Health and Safety of citizens

Let us begin with a case in a family environment. When the brilliant witness of warms feeding-bottle goes out, you decide that the temperature of the feeding-bottle is correct and that it's time to give it to the baby. Certainly, we are not 1 °C near there but it is necessary to be able to all the same have a sufficient confidence in the thermostat. Moreover, the moderate confidence which you have in the device led you to establish a procedure of check by pouring some drops of milk on the back of your hand.

A second example: when you make a biological analysis, your doctor uses the results to establish his diagnosis. You imagine the consequences of an error of

diagnosis due to insufficiently reliable measures: health of the patient, the psychological state of the patient and his environment, the cost for public utilities and society.

Finally, the recent current events of the over-irradiations applied to patients during medical treatments in hospitals in France, is also the typical example of the interest to measure and thus to validate the calibration of devices, and to guarantee the training of the user staffs of these devices.

Applications for Environment and Profitable Development

This example applies to the environment with possible fallouts on the health.

Indeed, the rate of air pollution of our cities is estimated from made takings all $\frac{1}{4}$ an hour in some meteorological stations positioned on specific points of the town. From the measures made on these samples, we calculate an average rate of pollution per hour and on day and it is on the basis of the results of the day that authorities decide on if there is or not ozone pollution with all that it engenders in term of protection of the populations, limitation of traffic, etc.

Besides the reliability of the measures, in that case, we are also confronted with the representativeness of the sampling.

Economical applications

Can the company Metrology Department be as profitable as the Marketing Department?

Such a question would undoubtedly make any industrial company manager smile, as Metrology is most often regarded as a so-called "unprofitable" activity. But such a statement can be challenged.

Let us consider a company with M€20 annual turnover and a scrap rate estimate of about 4% of sales, i.e. k€800 per year. Despite the fact that this rate, although not uncommon, can be considered high, the company can still expect a profit of 5%, amounting to M€1 a year. Typically, Management would provide the sales staff sufficient incentive to increase sales turnover by 10% to bring an additional profit of k€100 (provided the profitability ratio remains the same). But this could be a challenging task! In that particular cas, the Metrology Department set out to study the sources of rejects and came up with the following figures: 70% of all rejects came from three main sources. The first (and main) cause was due to inadequate initial definition of customer requirements, with acceptance criteria specified somewhat by chance rather than as a result of a comprehensive analysis. In fact, more than half of the products rejected for this first reason met customer requirements and were conforming. The second reason was related to the acceptance test used: it was essentially subjective, based on operators' experience. They applied a hand tear test, with no measurement of the test load. After determining the useful values and setting up a suitable measurement

process, the Metrology Department found that 70% of scrap was rejected by error. The third reason of rejection was related to tolerances specified essentially for functional reasons, and based on aesthetic criteria provided by the Marketing Department. This resulted in an excessive quality standard, well above customer requirements, and with about 50% of scrap rejected based on inadequate criteria. In fact, a survey showed that tolerances could be substantially lowered. Here gain, more than half of the products were wrongly rejected. As a result of these actions by the Metrology Department, the company was able to lower its defect rate and save about k€320 per year, a profit increase which would have required 30% additional sales revenue. Two basic questions were raised: What are Customer Requirements? And is the measurement process suitable to the characteristics to be measured?

The above story was a real case that has occurred in a SME, and happily, the Manager selected the right strategy, demonstrating that Metrology can be a profitable investment!

The Scientific Level

The metrology is also a science in full evolution, which has to adapt itself to new constraints connected notably to the miniaturization of the systems as well as to the improvement of the searched exactness.

So, numerous research works aim at developing the tools of tomorrow and at decreasing the uncertainties of measure.