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Editorial

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Dear Reader,

the other 6 papers published in this last issue of 2015 are related both to IMEKO TC1 and TC12 and to another scientific event that took place in Italy (the 2015 Italian Conference on electrical and electronic measurements organized by GMEE and GMMT). The last paper in this issue is a freely submitted paper.

The paper by Crenna et al. covers the topic of measuring human movements in the expanding area of measurements for biomechanics. The authors present a disciplined approach to the assessment of a metrological procedure applied to measurement of forces and kinematic quantities associated to human movements. The aim is that of allowing reproducibility of results by controlling and estimating all major sources of uncertainty.

The next paper by Rainer Feistel is a technical note about the thermodynamic role of water in the determination of climate changes. The role of salinity and relative humidity is of great importance in this case and the metrological requirements for the determination of such quantities must be determined more precisely if data are to be compared over decade long periods of time. This note describes the activities done at the international level to promote traceability of measurement results in this research area.

The next paper by Rolle et al. is a technical note covering again the topic of measurements for environmental purposes and, in particular, the problem of metrological traceability for the analysis of atmospheric pollutants. It describes the procedures and activities done in this scientific area by the Italian Metrological Institute, *INRiM*. They deal with the preparation of gaseous reference material and with traceability issues for measuring the particulate matter.

The paper by Lancini et al. is related to reliability of railway components and to the measurements needed for this scope. By using vibration measurements authors show how to detect high wear rates in rolling contacts. The procedure and the experimental results are presented in depth with a large level of detail. It is shown that it is possible to assess wear phenomena of wheel and rail steels by using vibrational analysis.

D'Emilia et al. consider the uncertainty in the calibration of three-axis low frequency accelerometers. They analyze both static and dynamic calibration up to 4 Hz and present both an analysis of the used mathematical model and experimental results. They identify the main sources of uncertainty and provide suggestions for an effective calibration of these sensors.

J. Bongiorno and A. Mariscotti authored the last paper in this issue. It describes the techniques used to measure the real-to-earth conductance and the insulating efficiency in railways. In the paper it is reported the application of IEC 62128-2 for performing such measurements and experimental results are also described. Several practical considerations are made, including description of the effects of measurement uncertainty.

This issue contains a very interesting set of papers offering an ever increasingly wider view on the possible applications of metrology and instrumentation. We are looking forward to the issues in 2016, including the extended versions of papers presented at the last IMEKO World Congress held in Prague this year.

Have a fruitful reading of this last issue of ACTA IMEKO in 2015!