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Measurement Uncertainty and Risk of False Decisions in Conformity Assessment

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In the majority of cases conformity assessment is based on measurement results, since human activity is related to measurements and measurement results are considered as the main source of information about the characteristics / parameters of any object or subject. Since true values of measurement results are unknown, the Guide to the Expression of Uncertainty in Measurement (GUM) suggests to express a measurement result as the best estimate of the measurand, associated with the measurement uncertainty. Measurement uncertainty is one of the important quality characteristics of any measurement. When measurement uncertainty is large, the probability of a false decision in conformity assessment is large also. As the measurement uncertainty depends on such factors as the measurement procedure, operator qualification, parameters of the measurement system, each testing laboratory should understand which measurement uncertainty is fit for which purpose, and when there is the necessity to reduce the measurement uncertainty.