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Analysis of Input Multiplicity in Producer Risk Estimation for Non-Automatic Weighing Instrument Manufacturing

This study addresses the implications of multiple inputs in estimating overall risk for Non-Automatic Weighing Instruments (NAWI) manufacturers. Conformity assessment of NAWI involves various controls, such as type approval, initial and subsequent verifications, and in-service inspections. Producer risk, i.e., the probability of rejecting a compliant device, is significantly affected by the assessment of measurement uncertainty.

Current practices often rely solely on the Maximum Permissible Error (MPE) requirement for standard weights, which can lead to erroneous estimates of overall producer and consumer risks. We compare this approach with scenarios that incorporate both standard weight uncertainty and the use of guard bands. Our analysis reveals that ignoring standard uncertainty and guard bands results in inaccurate risk estimates for both the producer (underestimates) and the consumer (overestimates). Furthermore, multiple inputs are present for the overall producer risk, implying that the same producer risk value is obtained for different values of the NAWI manufacturing process centring. No multiple inputs were observed for the overall consumer risk.

Special/ Invited session

Classification

Both methodology and application

Keywords

producers global risk, input multiplicity, conformity assessment

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