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Application of the Bayesian conformity assessment framework from JCGM 106 to lot inspection on the basis of single items

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The ISO 2859 and ISO 3951 series provide acceptance sampling procedures for lot inspection, allowing both sample size and acceptance rule to be determined, starting from a specific value either for the consumer or producer risk. However, insufficient resources often prohibit the implementation of “ISO sampling plans.” In cases where the sample size is already known, determined as it is by external constraints, the focus shifts from determining sample size to determining consumer and producer risks. Moreover, if the sample size is very low (e.g. one single item), prior information should be included in the statistical analysis. For this reason, it makes sense to work within a Bayesian theoretical framework, such as that described in JCGM 106. Accordingly, the approach from JCGM 106 is adopted and broadened so as to allow application to lot inspection. The discussion is based on a “real-life” example of lot inspection on the basis of a single item. Starting from simple assumptions, expressions for both the prior and posterior distributions are worked out, and it is shown how the concepts from JCGM 106 can be reinterpreted in the context of lot inspection. Finally, specific and global consumer and producer risks are calculated, and differences regarding the interpretation of these concepts in JCGM 106 and in the ISO acceptance sampling standards are elucidated.

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ISO 2859, ISO 3951, prior information

Special/invited session

Standardisation Session

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