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Professional Resources

NIST Sharpening the Charpy Test for Improved Precision

A cooperative research program at the National Institute of Standards and Technology (NIST) has scientists working to significantly improve the Charpy test.

Instrumented strikers offer the possibility of greatly enhanced accuracy. At present, however, "there is no international agreement on the shape and configuration of the striker, where the strain gages are placed, how many gages are used, how close to the striking edge they are located, and more", said Enrico Lucon, a veteran engineer and testing expert in NIST's Charpy lab in Boulder, Colo. "We've been working for a couple of years now, and we're about halfway to the point of proposing an optimized design for instrumented Charpy strikers".

The researchers are also working on an important related problem: accuracy concerns about the present widely used method of calibrating the strain gages. It is a static process (static calibration) in which an exactly known force is applied to the striker and the resulting voltage is recorded. "But impact is a highly dynamic process", said NIST physicist Akobuije Chijioke. "We are developing an SI-traceabletrue dynamic calibration". The process employs a dynamically calibrated force transfer standard, brought from the Dynamic Force Metrology Lab in Gaithersburg, Md.

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