

Drop test

Background

Shocks by impacts, bumping or collisions are normal during the logistic life cycle of a product. Shocks with or without packaging can seriously damage the product. No matter what the industry, no matter what the product; if you are developing electronics, drop testing is needed to make sure the quality is sufficient and the product is robust enough. It is a great way to differentiate a product from similar devices with lower quality. Also, by using drop testing, different designs and materials can be tested, to give the manufacturers the best information to make the correct choices. It is not only the products that need to be drop tested, the boxes and containers needs to be tested as well to make sure the packaging is good enough.

Without the correct tools it is very expensive, time-consuming and difficult to conduct drop tests to directly detect the failure mechanisms and identify their drop behaviors. But testing and analysis is needed to ensure that the products have the necessary quality so that they can be transported and used safely without risking breakage upon drop.

Solution

By combining the use of high-speed cameras, with the TEMA analysis tools, velocity, position and deformation of a product can be measured. By using software for testing and analysis, it reduces the amount of tests being needed. The results can be analyzed in full by using the acquired images and not having to drop component after component after component.

An important factor when doing drop testing is repeatability. By using TEMA, the user can make sure the results are comparable for every drop test and that the tests are operator independent. By using the included overlay tool, several test sequences can be viewed as overlays to make sure the same result is obtained in every drop test.

By doing drop testing, critical errors can be found, such as construction weaknesses, which can be reported and corrected during the development of later prototype series for a more reliable product. Also, better materials can be chosen to make the product lighter which can reduce packaging- and transportation costs.

Modules needed:

TEMA Motion *or*
TEMA Lite

Optional:

Viewer

Report Generator

Data presentation

The acquired data can be exported to an image sequence, as well as tables and graphs of all kinds, for easy-to-use presentation possibilities.

By including the Viewer option, a TEMA test can be exported to a self-running CD that allows the recipient to rerun the tracking with the images, graphs and spreadsheet data synchronized. The viewer files can be shared to users without a full TEMA installation so that the analysis can be done in several divisions and locations.

The Report Generator makes it possible to automatically generate reports making it possible to present a designed report including tables, graphs and comments with a single command. It is the perfect presentational tool. Together with the Viewer option this gives extraordinary capabilities to share the test results.

Example apps

- Durability testing of electronic devices, for instance mobile phones, laptops
- Material selection and testing
- Packaging construction and casing testing