

"Large Crash Test Simulator SWACS2"

Description

SWACS2 is an invention which allows the simulation of different crash cases while also being a precision transducer used for the optimisation of the safety performance of several transport units.

Prior solutions for crash testing guided the object under test e.g. a vehicle to a special wall, a barrier or other vehicles. These methods have proven to be very complex especially in the case of airplanes.

This approach is based on elastic and plastic stress wave propagation measurements in the vehicle structures. The apparatus allows to send to the structure (car, airplane, train etc) a well known compression pulse which allows to simulate a crash test without moving the structures to be tested. The main principle is to use transducer bars instrumented with strain gauges which have as a specific function to locally drain and collect with precision the local flow of energy which passes through the critical points of the structure. These unique energy flow transducers allow precise experimental stress and strain analysis in any point of a structure subjected to impact loading.

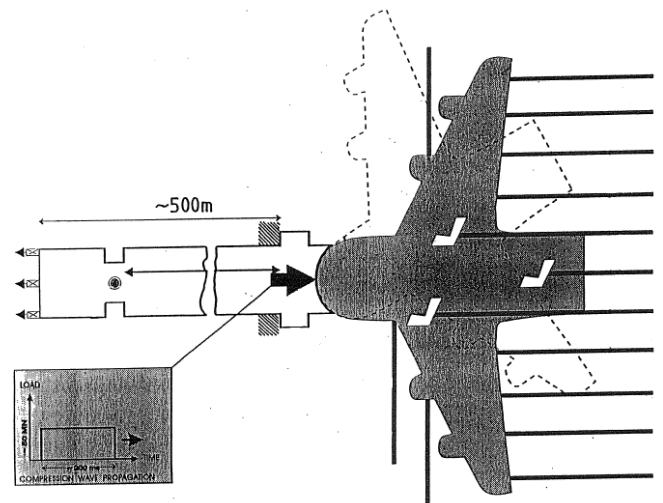
The main advantage of this invention is that large scale structures can be precisely tested at lower costs than simulating the real accident. A particular unit of a system can be moreover tested in white without being incorporated to it. Furthermore the measures from different sensors are facilitated since the specimen is not required to be moved before or during the testing. Finally by means of the energy flow transducers, the flow of energy can be measured at any cross section of a structure.

Innovative aspects and main advantages

- Precise testing of large scale structures at lower costs.
- Elements of the system can be tested in isolation.
- Energy flow can be measured at any cross section.
- Static specimen facilitates testing.
- Very large deformations can be achieved.

Areas of application

- Automotive industry
- Aeronautics industry
- Material Testing and structural analysis



Stages of development

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