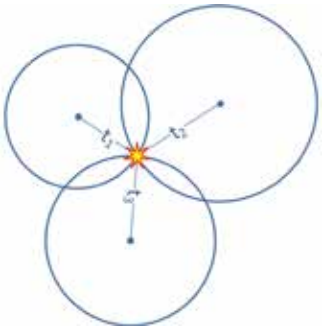
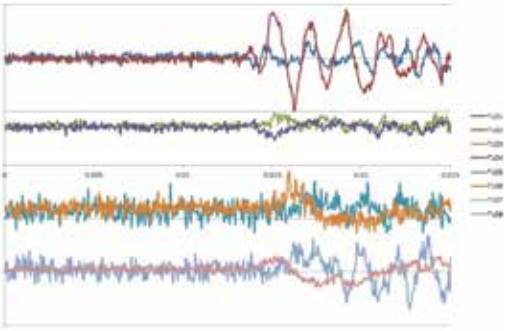
IMPACT DETECTION

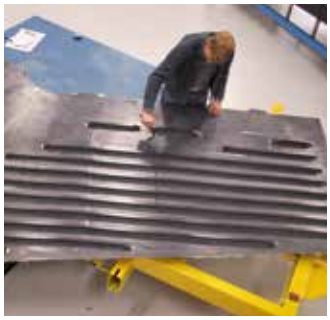
Impact detection in aeronautical structures allows predicting their future reliability and performance. An impact can produce microscopic fissures that could evolve into fractures or even the total collapse of the structure.

FBG sensor networks applied for damage detection can also be applied as impact detection system during flight and even on the ground to determine the location of any significant impacts. Subsequently, based on the results from the less accurate impact detection system (using the same sensor network); a damage detection can be performed on the part of the structure where the impact was located.

In the Dutch national program TAPAS (Thermoplastic Affordable Primary Aircraft Structures) Technobis successfully performed impact tests on a thermoplastic composite aircraft wing structure, e.g. an overburdened torsion box representative for the load carrying box of an airliner flap of the tail of a business jet. The objective of the test was to obtain more information about impact detection on composite structures by measuring the time of arrival of the signals to the various sensors (Time Difference of Arrival, TDOA).







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